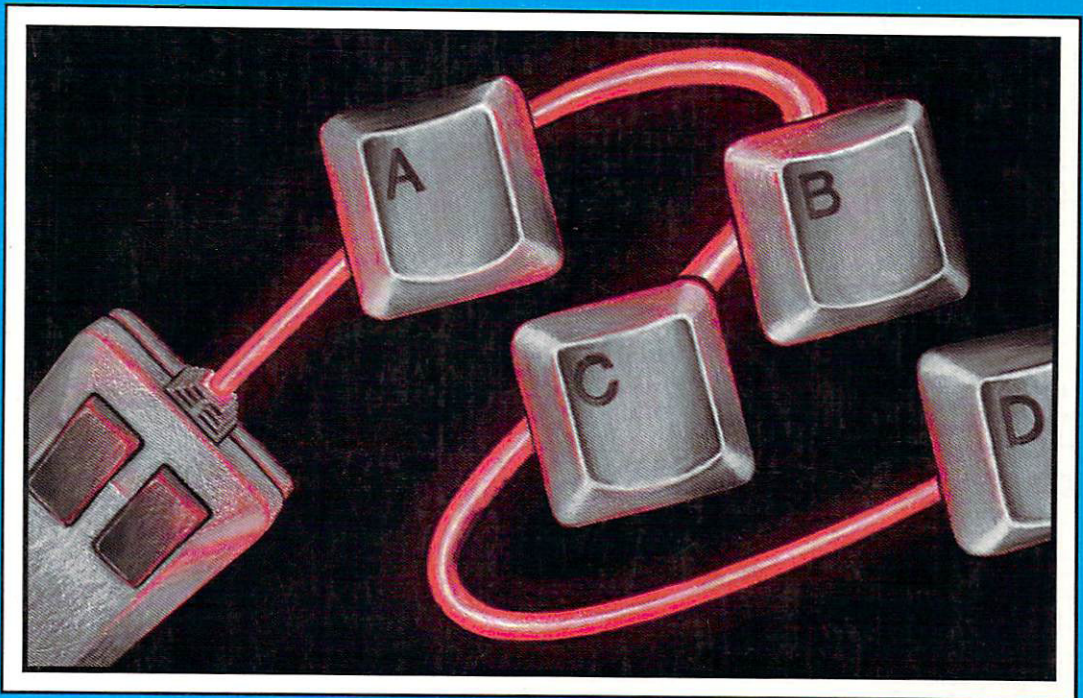


Amiga[®] for Beginners

A complete guide to learning
and applying the Amiga

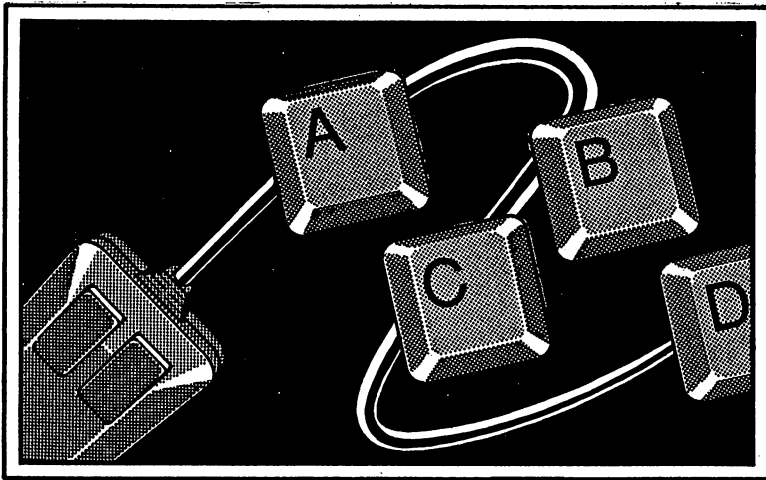


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A Data Becker Book

Amiga for Beginners

Christian Spanik



A Data Becker book

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Introduction

Introduction

There are two groups of people who use computers. The first group already knows a lot about computers. The second group lacks previous experience with computers. Commodore designed the Amiga for both types of computer users.

Most computer manuals aren't written with the absolute beginner in mind. That's where this book comes in. Here you'll find ideas, tips, suggestions and more to help you learn about your Amiga.

There are three types of Amigas. The original model, the Amiga 1000, is no longer manufactured by Commodore Amiga. The Amiga 500 is a self-contained unit, with a disk drive, central processing unit and keyboard built into one case. The largest model, the Amiga 2000, has similarities to both the Amiga 500 and Amiga 1000, except that the 2000 can be made compatible with the IBM PC. *The Amiga for Beginners* was written specifically for Amiga 500 and Amiga 1000 owners.

With this book are programming examples as well as instructions for connecting and operating the Amiga. Programming isn't just for programmers. This book shows you the basics of simple programming for your Amiga.

The Amiga for Beginners helps you understand all you need to know as an Amiga owner, and hopefully entertain you as you learn.

Christian Spanik

Düsseldorf, February 1987

1

Starting out

1. Starting out

This chapter shows you how to unpack and assemble the components of your Amiga. You'll learn what components should be in the package when you open it, how they are connected, and how to turn your Amiga on and off. This chapter also describes what goes on inside the Amiga.

- Instructions appear in the book like this, indicating that you must perform this step.

Many words appear in the course of this book that you may not recognize. These new words appear in *italics* when first mentioned. The author defines these unknown words in the Appendices which appear towards the back of this book.



1.1 Unpacking and setup

Be very careful when you unpack the Amiga. Three polystyrene cushions in the carton protect the Amiga from damage during transportation. These cushions can break if you unpack the Amiga carelessly.

- Open the Amiga carton and remove the polystyrene cushions.

The Amiga carton contains the following:

A central processing unit with an internal disk drive

A keyboard (either separate or connected to the central processing unit)

A coiled grey cable for connecting the keyboard to the central processing unit (if you have an Amiga 1000)

A mouse (a hand-sized box with two buttons on it)

A couple of diskettes

A power supply (Amiga 500) or a power cord (Amiga 1000)

If you don't find all of these things, search the box again. If you still don't find everything, then contact your dealer about the missing equipment.

Open the *monitor* (video screen) box, if you bought a monitor. Remove the top polystyrene cushions and take the monitor out of the box.

Assembling the Amiga

Place the central processing unit on a table, allowing about 1 square foot of free space around it. If you have an Amiga 1000, which has a small cooling fan, make sure that the fan outlet in the back is clear. There are air vents in different places on the Amiga models. Keep these clear as well, because they keep the Amiga running cool.

For Amiga 1000 owners only (Amiga 500 users can continue at the paragraph called *Preparing the mouse*):

- Take the keyboard cable (the coiled cable with the clear plastic plugs)
- Plug the "straight" end of the cable into the jack at the rear of the Amiga 1000's central processing unit (the jack has a keyboard icon above it).

Preparing the mouse

- Feed the cable under the central processing unit and through the notch underneath the unit.
- Plug the free end of the cable into the keyboard.
- Pick up the mouse (the small box with the two buttons on top) and turn the mouse upside down.

You'll see a ball poking through a hole in the bottom. You must remove the piece of foam holding the ball in place before the mouse can be used.

- Press on the plastic cover holding the ball, in the direction indicated by the arrows molded into the plastic. Push until the cover opens.
- Remove the foam and put the ball back into the mouse.
- Slide the cover on by pushing it in the direction opposite the arrows.

The mouse cable goes into a connector located on the back of the Amiga 500. The Amiga 1000's mouse connectors are on the right hand side of the central processing unit. Note that there are two of these connections. The first connector is marked with either 1 or 1 JOYSTICK, and the second one has either 2 or 2 JOYSTICK above it.

- Plug the mouse into the first joystick connector (marked 1 or 1 JOYSTICK).

Make sure that you have a minimum of 6" by 6" of table space available for operating the mouse.

- Connect the monitor.

The Amiga accepts three types of monitors:

1. Commodore RGB monitor.

This monitor gives the best picture. It is recommended for those who use the Amiga seriously and regularly. The monitor includes a special connecting cable with plugs on each end; one of these plugs is wider than the other. The wider plug connects to the Amiga's RGB connector, marked by a monitor symbol with three circles (more about RGB later). Two small bolts on the plug fasten the cable to the Amiga once the plug is in place. The Commodore RGB monitor packaging also has a Y connector and an audio cable for the audio inputs. The Y connector plugs into the two jacks at the rear of the Amiga marked L-AUDIO and R-AUDIO. You'll find these jacks to the right of the mouse connections (Amiga 500) or the PHONE connection

(Amiga 1000). The audio cable plugs into the AUDIO jack in the monitor.

2. Monochrome (black and white) monitor.

The MONO output of the Amiga delivers a *composite* signal. That is, the various data, such as color information, picture information and synchronisation signal, are combined into one signal. The monochrome signal requires only one cable.

3. A black and white or color television set.

For this you need a modulator and an appropriate cable. See the modulator manual for connection instructions. Otherwise, if you have a television set that can also function as a composite monitor, you can connect the television through the MONO jack on the Amiga. The disadvantage is that color televisions run through the MONO jack only show monochrome signals.

NOTE:

If your television has no composite video input, or if you prefer seeing Amiga output in color, you'll need a box that allows RGB video transmission through a television. This box is the *Amiga modulator 520*. When this book was written, the modulator wasn't available yet for the Amiga 500. Check with your dealer. Also, if you bought a non-Commodore monitor, you'll need a Y cable and an audio cable for connecting your monitor to the Amiga's sound output. You can buy these at any electronics store.

Power

Computers need power to run. Your Amiga operates under normal house current:

For Amiga 500 owners:

- Make sure that the power supply is switched to 0 (OFF).
- Take the power supply (the box with a cable running from either side).
- Plug the small square plug into the matching jack in back of your Amiga 500, and plug the other end into an electrical outlet.

For Amiga 1000 owners:

- Make sure the power switch on the central processing unit is switched to 0 (OFF).
- Take the gray power cord.
- Plug the small square end into the jack marked POWER.
- Plug the other end into your electrical outlet.

Your unpacked and connected Amiga looks something like this:



Figure 1:
Assembled
Amiga 500

NOTE:

You may want to purchase a *power strip* (a multiple-outlet board) which lets you connect all the electrical equipment to one electrical outlet.

1.2 Amiga hardware

Before you turn the Amiga on, you should learn something about all the equipment that make up the Amiga. These individual units are *hardware*. That is, they are physically here, unlike *software*, or programs, which exists but can't be touched.

Central processing unit

This book mentioned the *central processing unit*, or CPU, a number of times in Section 1.1. This is the computer's brain. This housing contains the memory chips and basic technology the Amiga needs for operation. The central processing unit is either a self-contained unit with built-in keyboard (Amiga 500) or a large box (Amiga 1000).

The Amiga has two *LEDs* (light emitting diodes). The Amiga 500 LEDs are above the keyboard, beneath the *AMIGA* brand name. The red LED marked **POWER** lights up when the power is on. The green LED marked **DRIVE** lights up only when the disk drive runs. The Amiga 1000, has these LEDs on the left and right front of the central processing unit. The left LED lights up when the power is on; the right LED lights up when the disk drive is operating.

Disk drives

The disk drive built into the Amiga allows you to store and recall programs and files. This disk drive uses 3-1/2" *floppy diskettes*. These diskettes are square plastic cases containing thin plastic magnetic disks. These diskettes can be bought at any computer store. Look for a slot on the right side (Amiga 500) or front (Amiga 1000) of the central processing unit; that's your disk drive.

Mouse

The mouse is the key to the Amiga's friendliness. You'll use it constantly for operating the computer. Once the Amiga is up and running, the Amiga displays the mouse on the screen as an arrow pointing up and left. This arrow is called the *mouse pointer*. It moves around the screen in the direction you move the mouse on the table. You can then select certain items by using the two buttons on top of the mouse. See Chapter 2 for detailed instructions on mouse operation.

The keyboard looks like the keyboard you find on any typewriter, with a few extra keys (more on these keys later).

Commodore monitor

When you look at the front of the Commodore monitor closely, you'll notice a cover running across the bottom of the monitor's front. There is a small notch directly below the *AMIGA* logo or Commodore nameplate. Reach into the notch with your finger and pull down. The cover flips down, revealing the various control knobs:

***H.Pos/
V.Hold***

The first knob controls the picture's horizontal position. The second knob adjusts the vertical position. These exist on television sets as horizontal hold and vertical hold.

Color/Tint

The next two knobs control color intensity. If you move them, you'll discover that they easily lock into one particular position. That is the central position.

Bright/Cont

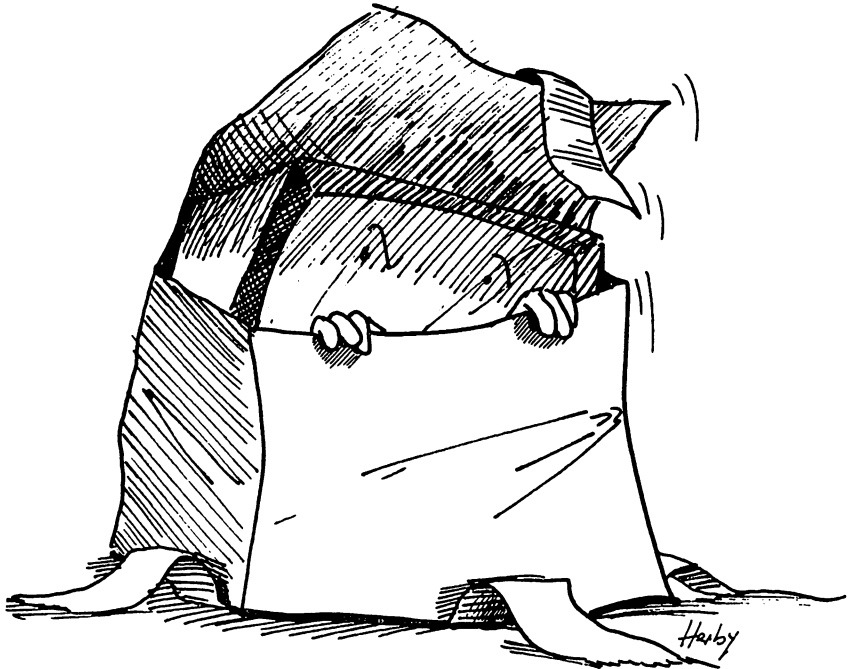
The next two knobs control picture brightness and contrast. These have locking central positions like the Color and Tint knobs.

Volume

The next knob adjusts the volume. It doesn't need a central position, since you'll hear immediately if it's set too high.

Video Mode

This switch has three positions: RGB, SEP and COMPOSITE. The RGB position is the normal setting.



1.3 Interfaces and expansion

This section describes the remaining hardware *interfaces* (connections) of the Amiga.

The Amiga 500 has 512K of *memory*. Both the Amiga 500 and 1000 have connectors for later memory expansion.

Joysticks and *lightpens* can be plugged into your Amiga through the two mouse connectors.

There is a recessed connector on the left side of the Amiga 500, called the *expansion bus*. Any hardware expansion added later, such as memory expansion or hard disks, plugs into this bus.

- Turn the Amiga around if you can, so you can see the rest of the hardware interfaces.

You are already familiar with the **RGB** connector, power connector, **MONO** connector and audio connectors. The *parallel connector*, or *Centronics interface*, is used mainly for printer interfacing. A printer symbol above the connector identifies this port. The Amiga easily connects to other equipment; the Centronics interface connects to almost any printer. All the information you need to connect the Amiga to a printer is stored on the diskettes that came with your Amiga. These *printer drivers* support three color printers as well as a number of black-and-white printers. These printers are: Alphapro 101, Brother HR-15XL, CBM MPS-1000, Diabolo 630, Diabolo Advantage D25, Diabolo C-150, Epson FX/RX series, Epson JX-80, HP LaserJet, HP LaserJet Plus, Okidata 292, Okidata 92, Okimate 20 and Qume Letterpro 20. A generic printer setting also exists.

NOTE:

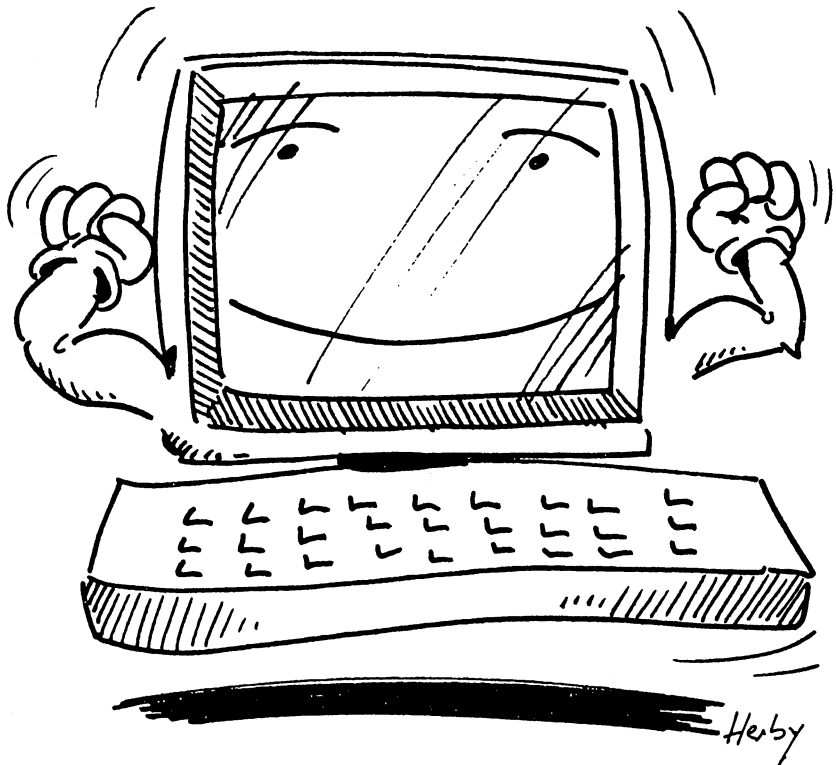
If your printer isn't on the above list, most printers are Epson compatible, since many companies consider Epson the standard printer configuration. Try the Epson printer driver before you try any other printer driver (see Section 2.10 [Preferences] for more information). If you haven't bought a printer yet, ask your dealer if he knows whether the Amiga has a printer driver for the printer you plan to buy. Or ask your dealer whether the printer will work with the generic driver.

CAUTION:

Before you connect any printer, or before you use any printer cable, talk to your dealer first. Some *pins* (the little metal prongs inside the plug) carry up to 5 volts of electrical current. One wrong connection could seriously damage your Amiga. Also, be sure you buy a printer cable specifically for your Amiga (a cable for Amiga 500 or Amiga 1000, etc.). The best thing to do is tell your dealer you want a printer cable for your Amiga model, not just an Amiga.

The *disk connector* stands to the right of the audio connectors. This port accepts an external Amiga disk drive.

The *serial connector* is to the right of the disk connector. The serial port connects a *modem* to the Amiga. Modems (short for modulator/demodulator) allow you to exchange computer data by telephone lines. Some printers also use the serial connector.



1.4 Booting the Amiga

If you connected everything according to the descriptions in Section 1.1, you're ready to turn on, or *boot up*, the Amiga.

- Turn the monitor on (see your monitor manual for instructions)
- Turn the Amiga on. The Amiga 500 power switch is on the power supply; the Amiga 1000 switch is on the left side of the central processing unit.

The screen blinks and goes gray. The Amiga performs a *self-test* (checks itself out to see that everything is in working order). Eventually a picture appears on the screen—a hand holding a diskette named either Workbench or Kickstart. The Amiga 1000 model needs this Kickstart diskette to supply it with some basic operating information.

NOTE:

The Amiga 500 has this Kickstart information built into the computer, so it doesn't need this diskette. Whenever you see a reference like "insert the Kickstart diskette", here or in any other book, ignore it and go to the next set of instructions.

For Amiga 1000 owners only:

- Take your Kickstart diskette, making sure that the label is up and the metal part of the diskette faces the drive.
- Push it gently in the disk drive.

A picture appears on the screen—a hand holding a diskette named Workbench.

- When the drive stops, press the button underneath the disk drive slot. The diskette partially ejects.
- Remove the partially ejected Kickstart diskette.

For all Amiga owners:

- Insert the Workbench diskette. The Amiga automatically loads the Workbench from this diskette.

NOTE:

Never eject a diskette while the disk drive is in operation (the drive light is on). The Amiga may destroy the contents of the diskette.

2
The
Workbench
diskette

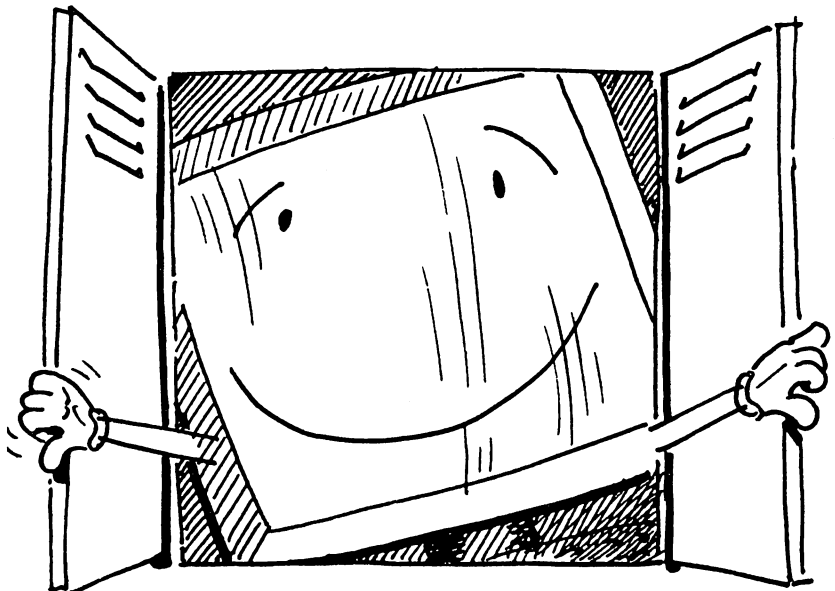
2. The Workbench diskette

This chapter explains the concept of *Intuition*, the Amiga user interface. Along with *Intuition* are instructions for using the mouse, and the basic terms used in connection with *Intuition*, such as icons, drawers, windows, pulldown menus and menu items. The main subject of this chapter, though, is the diskette you'll use most often in the Amiga; the *Workbench* diskette.

This chapter also leads you through the contents of the different drawers in the *Workbench* diskette. You'll learn how to put information into a program, format diskettes, copy diskettes, set a clock, and even change the Amiga's screen colors.

You'll also use the Amiga's utilities in this chapter. The *Notepad* and *Calculator* are practical utilities for the user interested in adding things up or scribbling notes.

Most important, you'll learn how to make a *backup* of your *Workbench* diskette. You should use the original diskettes that came with your Amiga only when absolutely necessary. Backing up diskettes gives you copies of original diskettes that you can use without worrying about possibly destroying the original data.



2.1 Intuition

As the Amiga boots for the first time, a white border around a blue screen appears. The top part of this border displays the words AmigaDOS. The disk drive runs and the following is briefly displayed on the screen, your screen display may differ:

```
Copyright © 1985, 1985 Commodore-Amiga, Inc.  
All rights reserved.  
Release 1.2  
A500/A2000 Workbench disk. Release 1.2 version 33.xx
```

This is the *Startup-Sequence* which loads (or boots) the Workbench program.

Operating system

A computer is dumb. And it stays dumb until a program tells it exactly what to do. This is true of any computer. One of these programs permanently resides in the Amiga 500's memory. When you switch the Amiga 500 on, this program tells it how to do certain basic chores, such as what diskette it needs next (these are the chores handled by the Kickstart diskette in the Amiga 1000). This "housekeeping" program is called the *operating system*.

Software, or programs, tell the Amiga to perform a certain sequence of commands in a certain order. The first software the Amiga 500 reads is from the Workbench diskette when booting up. As the Workbench loads, the Amiga tells time, senses whether an external disk drive is connected, computes the amount of available memory and more (see Chapter 4 for more information).

Intuition

Intuition, loaded during the Workbench booting process, has the most influence on your work and play with the Amiga. Intuition is a *user interface*. A user interface acts as the simplest form of communication between man and computer. This is important, since Intuition is part of the operating system. It displays text, windows and graphics on the screen. Intuition stays in the background as it does its work. You can open many windows at once, and perform different tasks in these windows. You can display graphics in one window, calculations in a second and text in a third, all at the same time. Like the desk in your office, Intuition lets you open drawers, page through your work, or watch the clock.

After the Workbench loads, the following appears on the screen:

```
Amiga Workbench. Version 1.2. 406400 Free Memory
```

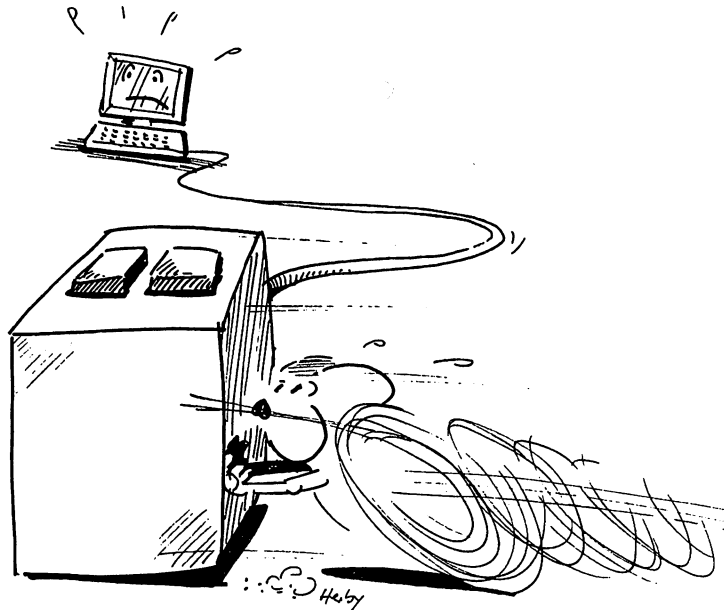
These numbers may be different from the numbers that appear on your screen. The amount of free memory changes because of memory expansion, the number of disk drives in use, and the number of screens in use.

Icons

When the Workbench finishes loading, a blue screen appears with the words Workbench Screen in the top white border. This top border is called the *title bar*. You'll see two drawings of diskettes at the right of the screen. These drawings are called *icons*. Intuition draws icons, which are the basis of the Amiga's operating system.

Each disk drive icon has a name. One drive icon is currently called Workbench 1.2, and the other drive icon is named RAM Disk. If you have an external disk drive connected to the Amiga, and this external drive has a diskette in it, a third diskette icon appears below the first two. The name under each diskette icon describes the title of the diskette currently in that drive.

The mouse pointer described in Section 1.2 appears in the upper right corner of the Workbench screen.



2.2 Mouse control

If you've never worked with a computer mouse before, it takes a little practice at first. This section helps you perform your first mouse input.

- Clear some space on the table or desk on which your Amiga is set up.
- Put your right hand on the mouse so that its two buttons face up and the wire leading from the mouse to the Amiga points away from you. Your forefinger and middle finger should rest on the buttons.
- Move the mouse, keeping the bottom of the mouse in contact with the table.

The pointer on the screen moves in the same direction as the mouse.

NOTE:

Moving the mouse away from you moves the pointer up on the screen; moving the mouse toward you brings the pointer down. When this book tells you to move the mouse in a certain direction, move your mouse so that the pointer moves in this direction.

- Move the mouse so that the pointer moves somewhere onto the blue field of the screen.
- Press each mouse button once.

Nothing happens, not even when you move the mouse at the same time. There is an exception to this rule:

- Move the pointer up until it rests on the title bar (the white bar running across the top of the screen).
- Press and hold down the left mouse button.
- Move the pointer.

Moving the screen

The entire screen moves. If you move the mouse down, the screen moves down as well. If you move the entire screen down, you'll see that there is nothing behind the screen. Everything, including the title bar and the mouse pointer, disappears below the screen.

- Move the whole screen downward, then release the left mouse button.
- Now try to move the pointer up onto the screen.

Nothing happens. As long as you move the mouse without pressing the left mouse button, the pointer cannot move up.

- Press and hold the left mouse button, and move the pointer up.

The screen moves back up. You can move almost the entire working surface in this way. Advantages of moving screens appear in the next few pages.

- Move the pointer up onto the large blue field again and press the right mouse button.

Workbench pull-down menu

Watch the title bar change. As you press the right mouse button, three words appear—**Workbench**, **Disk** and **Special**. Whenever you press the right mouse button while in the Workbench screen, these words appear at the top border. This top border is called the *menu bar*, because it lists *menu titles*.

- Press and hold the right mouse button and move the pointer up onto the word **Workbench**.

NOTE:

If you run out of room for mouse movement, and the pointer still hasn't reached its target, lift the mouse off the table, and put it on the table a little closer to you. Now you can continue moving the pointer up.

When the tip of the pointer reaches the word **Workbench**, a set of words appear below the word. This set is a *pull-down menu*, because it pulls down like a window shade. Each word in a pull-down menu is a *menu item*, or *item* for short.

- Keep holding down the right mouse button (this keeps the pull-down menu open).
- Move the pointer onto the **Workbench** menu title.
- Move the pointer up and down inside the **Workbench** menu.

You select items this way. Even when you leave the pull-down menu, the Amiga keeps the pull-down menu open until you release the right mouse button.

- Move the pointer out of the open **Workbench** menu.
- Move the pointer onto the word **Disk**.

As soon as the pointer reaches **Disk** while the right mouse button is pressed down, the **Disk** pull-down menu appears. Any previously open pull-down menus close automatically.

- Keeping the right mouse button depressed, move the pointer to the word **Special**.

You'll note that two items in the **Special** menu **Redraw** and **Version**, appear in clearer print than the others.

- Move the pointer from the word **Special** to the **Redraw** menu item.

Redraw behaves differently from the gray items in this pulldown menu. When you move the pointer over **Redraw**, its letters and background change colors.

- Release the right mouse button.

Select

Select a menu item from a pulldown menu by moving your pointer to the desired item and releasing the right mouse button. The term *select* is used throughout this book to refer to the procedure above.

If you look at the screen, you'll notice that the disk icons flickered slightly. **Redraw** recreates the current screen if the Amiga screen display malfunctions. Although this shouldn't happen, but could, **Redraw** is a function available virtually anytime.

The **Last Error** item works in a similar way. As soon as the Amiga displays an error message on the Workbench screen, the message appears in the title bar until a mouse key is pressed. If you accidentally press a mouse key without reading the error message, select **Last Error** to redisplay the error.

Ghost items

You can select any easily read menu items. The gray, poorly visible items on the screen cannot be accessed at the moment. These gray menu items are called *ghost items*. A good rule of thumb is: If you can read it clearly, you can select it.

You now know how to recognize an available menu item, and how to select an available menu item.

Keyboard pointer movement

You can move the pointer around from the keyboard as well as with the mouse. Look at the bottom part of your keyboard. Two keys stand to the left and right of the spacebar (the long key at the bottom of the keyboard). The key on the left has either a **C=** or an **A** painted on it; this is the <Commodore logo> key, also called the left <Amiga> key on some Amiga models. The key on the right has an **A** painted on it; this is the right <Amiga> key. This book refers to <Commodore logo> and right <Amiga> keys, so when the book tells you to press the <Commodore logo> key and you only have a left <Amiga> key, press the left <Amiga> key instead.

Four keys with arrows stamped on them stand between the typewriter keyboard and the numeric keypad. These arrow keys are the *cursor keys*.

The <Cursor up> key's arrow points up, <Cursor left> points to the left, <Cursor right> to the right and <Cursor down> points down.

- Move the pointer to the bottom edge of the screen.
- Press and hold either the <Commodore logo> or right <Amiga key>, then press and hold the <Cursor up> key.

The pointer moves straight up without even touching the mouse. The pointer moves slowly at first, then picks up speed.

- Press each of the other cursor keys while holding either the <Commodore logo> key or the right <Amiga> key.

NOTE:

Hold the cursor key down to move the pointer quickly. Pressing the <Caps Lock> key makes the pointer move even faster. The <Caps Lock> key is on the far left of the keyboard, diagonally above the <Commodore logo> key. Remember to press the <Caps Lock> key again when you no longer need it (the <Caps Lock> key is active when the red LED built into the key is on).

You can activate the menu bar by pressing the right <Amiga> key and the right <Alt> key at the same time. Select the Redraw item from the keyboard as follows:

- Press and hold the right <Amiga> key and the <Alt> key.
- Move the pointer with the cursor keys until the pointer is on **Special**.
- Move the pointer to Redraw with the cursor keys.
- Release the right <Amiga> key and the <Alt> key to select Redraw.

Intuition is mouse-oriented, so this book concentrates on using the mouse.

- Press and hold the right mouse button, and move the pointer to the **Special** menu title.
- Move the pointer down to the item named **Version** and release the right mouse button.

A message appears in the title bar telling you which version of the Workbench diskette is currently in use. The title bar displays this or something similar to it:

Kickstart version 33.180. Workbench Version 33.56

Your version of Workbench may be different from this: Any version above 33.56 works well.

Version makes it easy to distinguish between Workbench diskette releases. The higher the version number, the more recent the version. If you have any version less than 33.56 (33.47, for example), take it back to your Amiga dealer to get a copy of the latest Workbench.

Looking at the contents of a diskette isn't the same as ejecting the diskette from the disk drive and looking at it. Intuition lets you view, access and organize a diskette.

The diskette icon on the screen shows you which diskette is currently in your drive. But what can you do with it? You could move the icon around, for example. As mentioned earlier, the Amiga can be thought of as an electronic desk: You can move things around to get a better view, reorganize things and put extra objects away, just as you do with a real desk and office space.

- Move the pointer to the Workbench diskette icon, press and release the left mouse button.

Clicking icons

The act of pressing and releasing the left mouse button when the pointer is on an icon is called *clicking*. Clicking normally selects icons. Clicking the diskette icon changes its color to black, signifying that the icon is active.

Aside from turning black, the diskette icon does nothing. Even when you move the pointer, nothing happens. If you click the left mouse button on the blue field, the diskette icon turns white again.

- Move the pointer onto the Workbench diskette icon.
- Press and hold the left mouse button.
- Move the pointer and release the left mouse button.

You selected an icon, clicked on it and moved it to another place on the screen. Moving an icon or symbol with the mouse is called *dragging*.

The Amiga turns a selected icon black. This principle applies to all Amiga icons. This book uses the word *active* to describe a black icon or word.

- Activate the Workbench diskette icon by clicking on it.
- Select the Info item from the Workbench pulldown menu.

Info

The disk drive operates, and a black box appears on the screen. The title bar on the top of the screen reads Info Release 1.2.

The Info window is used to supply information. It lists diskette data such as whether a file is *read-only* (you can't add data to the file). It also tells the memory available on a diskette, memory in use, and a few other things. Here's a typical Info window:

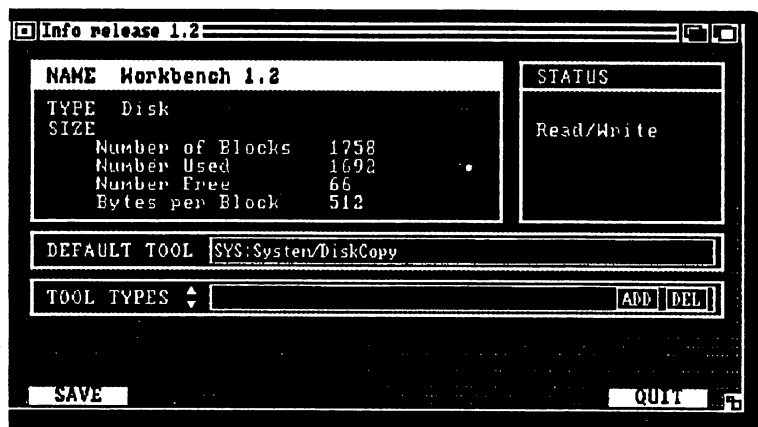


Figure 2:
Info
window

Notice since you activated the **Info** window, the **Workbench** window has changed its title to **Info release 1.2** as well. Before you can see what is in the **Workbench**, you must close the **Info** window.

- Move the mouse pointer to the small white box in the upper left corner of the **Info** window. This box has a black dot in its center.
- Click on that square with the mouse.

The square is a *close gadget*. Close gadgets close the currently active window when you click in them. Most (not all) windows have a close gadget.

Your **Workbench** screen returns. One thing changes, though—the amount of free memory lowered since the last time you looked at it.

- Select the **Info** item from the **Workbench** pulldown menu.

The **Info** window returns without any diskette activity. The Amiga remembers the info from you opening the diskette before. This requires a little memory space, and the memory indicator shows exactly how much memory is left.

- Close the **Info** window again by clicking on its close gadget.

2.3 Windows

Now that you have a little experience with opening icons and **Info** windows, you can open the **Workbench** window.

- Click on the **Workbench** diskette icon so that the icon turns black.
- Select the **Open** item from the **Workbench** pulldown menu.

Opening the Workbench window

The disk drive begins to run. The mouse pointer changes into two clouds with Zs drawn on them. This pointer is the *wait pointer*, and tells you that the Amiga is busy. After the wait pointer changes back into the regular mouse pointer, a window appears on the screen.

You opened the **Workbench** window by selecting the **Open** item. This window contains *drawer* icons, a clock, a trash can and a question mark standing in front of a box. Before you look at the contents of the window, look at the window itself:

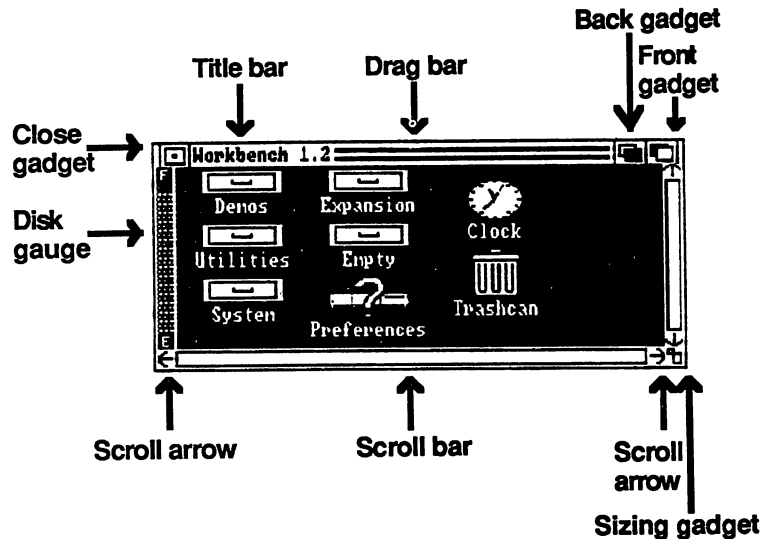


Figure 3:
Workbench
diskette
window and
components

You should recognize the close gadget in the upper left corner of the window.

- Move the pointer onto the close gadget and click on it.

The window closes, and the blue Workbench screen returns. The Workbench diskette icon turns white again. Selecting the close gadget signals the Amiga to close the window.

Double-clicking

There's an easier and faster way to open diskettes and programs than using the Open item. Icons also open if you move your mouse pointer onto an icon and press the left mouse button twice in rapid succession. This process is called *double-clicking*.

- Move the pointer onto the Workbench diskette icon.
- Press the left mouse button twice in rapid succession (double-click).

The Workbench window opens. At the top of this window is a close gadget and the name Workbench 1.2 in ghost print.

Multitasking

Gadgets in a window can appear in ghost print, indicating an inactive gadget. The ghost print in Workbench 1.2 means that the window itself is inactive. The reason for this difference is the mouse pointer. The *multitasking* system of the Amiga causes this difference in active and inactive windows. Intuition recognizes the window in which you are working, because clicking the mouse while in one window can have a completely different effect from clicking it in another. Active and inactive windows help the Amiga avoid conflicts between programs.

- Move the pointer anywhere inside the Workbench window, and click the left mouse button.

This activates the Workbench window.

Look closely at the top border. You can now easily read the Workbench window title. Note the two horizontal lines next to the window title. This top border is the *drag bar*, which allows you to drag (move) the window around on the screen.

- Move the pointer onto the drag bar of the Workbench window.
- Press and hold the left mouse button.
- Move the mouse around.
- Release the left mouse button when the window is in the desired position.

An orange border appears as you move the mouse with the button depressed. This border helps you see whether the window you're moving would cover over any other windows. The entire window reappears when you release the left mouse button.

**Front / back
gadgets**

Look at the upper right corner of the **Workbench** window. These two pairs of boxes control the foreground and background status of the window. The left pair of boxes is the *back gadget*, and the right pair of boxes is the *front gadget*.

- Move the pointer onto the **Empty** drawer icon.
- Double-click on the **Empty** drawer icon to open it.

A new window named **Empty** opens. The ghost print tells you that the **Empty** window is inactive.

- Move the pointer onto the **Empty** window, and click on the window to activate it.
- Move the pointer onto the drag bar (the top border) of the **Empty** window, press and hold the left mouse button.
- Drag (move) the **Empty** window so that it blocks part or all of the **Workbench** window, and release the left mouse button.

**More front
and back**

The orange border shows the location of the window as you drag it around the screen. Look at the back and front gadgets. The back gadget has a black square in the foreground, and the front gadget has a white square in the foreground.

- Click on the front (right) gadget of the **Empty** window.

The gadget changes color for a moment. Nothing else happens.

- Click on the back (left) gadget of the **Empty** window.

The back gadget changes color for a moment, and the **Empty** window seems to disappear.

- Click on the **Workbench** window to activate it.
- Move the pointer to the drag bar, press and hold the left mouse button, and drag the **Workbench** window down.

The back gadget moved the **Empty** window behind the **Workbench** window.

- Click the **Empty** window's front gadget to return it to the front.

These gadgets let you page through overlapping windows as if they were sheets of paper. The front gadget always brings windows to the front.

- Close the **Empty** window. This activates the **Workbench** window.

**Other
gadgets**

The window's right lower border displays arrows, and a tall, thin white box in between the two arrows. Also, one gadget in the lower right corner looks like a pair of squares connected at one corner.

The arrows are *scroll arrows* and the thin box is a *scroll bar*. The scroll arrows and scroll bar let you move around inside a window whose contents take up more space than the current window size. The lower right corner gadget is the *sizing gadget*, which lets you change a window's size.

- Move the pointer onto the **Workbench** window's sizing gadget (the bottom right corner), press and hold the left mouse button.
- Drag the pointer up and to the left.

The orange border appears, just as it did when you dragged the window. This time, though, the border gets smaller as you move the mouse toward the upper left corner of the window.

- Drag the sizing gadget toward the upper left corner until the orange border is about two inches square, and release the left mouse button.

As soon as you release the mouse button, the window border changes. Part of the window now hides from view. Look at the bottom and right borders of the window. The scroll bars now appear in two colors, white and blue. The white sections of the scroll bars are the currently visible parts of the window.

There are three ways to move around a window using the scroll arrows and scroll bars:

- Move the pointer onto the blue section of a scroll bar and click on it.
- Move the pointer onto a scroll arrow closest to the blue section of a scroll bar, and click on it.
- Move the pointer onto the white section of a scroll bar; press and hold the left mouse button, and drag the scroll bar into the blue field; release the left mouse button.

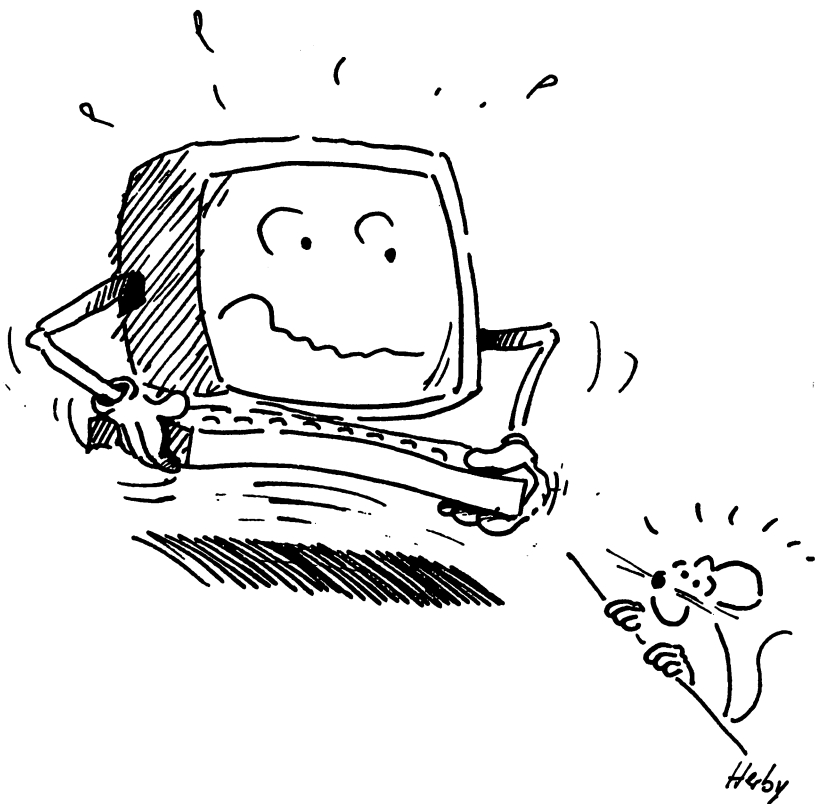
The blue sections of the scroll bars show how much of the window you can't see. The scroll bars and scroll arrows work the same for both vertical and horizontal positions. Now enlarge the size of the window.

- Move the pointer onto the **Workbench** window's sizing gadget, and press and hold the left mouse button.
- Drag the pointer down and to the right (away from the close gadget).

- When you think the window can display everything, release the left mouse button.

Look at the right and bottom scroll bars. If neither bar shows any blue sections, then the window is back to full size. If there is still some blue visible, repeat the last three steps.

The Amiga has two kinds of left window borders. Most left borders are narrow white lines. However, diskette windows display a *disk gauge* along their left borders. These disk gauges indicate the amount of memory used on the diskette. Like a gas gauge on a car, E=empty and F=full. The higher the orange bar, the fuller the diskette.



2.4 The Demos drawer

There are several *drawer* icons inside the **Workbench** window. These drawer icons open like diskette icons.

- Double-click the **Demos** drawer icon to open it.

Wait pointer

As soon as you do this, the disk drive runs and the pointer changes into the wait pointer (the clouds with Zs written on them). The inactive **Demos** window appears on the screen. You can tell that the window is inactive by the title, which is displayed in ghost print.

- Move the pointer into the **Demos** window.

A quick review of window components, going clockwise from the top left:

Close gadget, for closing the window

Drag bar, which lists the title and lets you drag (move) the window around the screen

Back gadget, for sending a window behind another window

Front gadget, for bringing a window in front of another window

Right scroll arrows and scroll bar, for moving around vertically inside a window

Sizing gadget, for reducing and enlarging the size of a window

Bottom scroll arrows and scroll bar, for moving around horizontally inside a window

Disk gauge, which tells the amount of memory used on a diskette (appears on disk windows only)

Window icons

There are at least three balloon-shaped icons inside the **Demos** window. The three files you'll need for this section are **Dots**, **Lines** and **Boxes**.

- Open **Boxes** by moving the pointer onto the **Boxes** icon and double-clicking it.

The disk drive runs for a few seconds. The screen then displays a small window filled with boxes, rapidly changing in color and size.

- Move the mouse pointer to the **Boxes** window drag bar (the top border), press and hold the left mouse button.
- Drag the window up over the **Workbench** window and release the left mouse button.
- Move the mouse pointer to the **Boxes** window sizing gadget (the lower right corner), press and hold the left mouse button.
- Drag the sizing gadget down and right to make the **Boxes** window large enough to cover the **Workbench** window.
- Release the left mouse button when the **Boxes** window is the desired size.

When you change the window size, the window clears and starts again. Notice the name of the window, now that the window is large enough to display the title: **Boxer Window**. The filename and the window name can differ from each other.

Watch what happens when you move the open **Boxer Window** behind the **Workbench** window and the **Demos** window.

- Move the pointer to the **Boxer Window** back gadget (the upper right gadget with the black box in front) and click on it.

Using back gadgets

The **Boxer Window** runs while behind the other windows. Try moving the other windows behind the **Boxer Window** using the back gadgets on the other windows.

- Click the **Demos** window back gadget to put it behind the **Boxer Window**.
- Now click the **Boxer Window** back gadget to move it behind the **Demos** window. Or, click the **Demos** window's front gadget if you can reach it (drag the **Demos** window or reduce the **Boxer Window** to reach the front gadget if necessary).

You have just learned how to run a program (**Boxes** is a program). Try each of the other demos.

- Close **Boxes** by clicking on the close gadget (bring the window forward with the front gadget if necessary).
- Open **Dots** by double-clicking on the **Dots** icon.

Dots displays dots in every imaginable color in its window.

- Enlarge the **Dotty Window** by using the drag bar and the sizing gadget.

When you change the window size, the window clears and starts again. Notice the name of the window: **Dotty Window**.

- Close **Dots** by clicking on the **Dotty Window** close gadget.
- Open **Lines** by double-clicking on its icon.

The **Lines** window displays different patterns and color of lines. You can only see part of the demo right now; you'll need to enlarge the window.

- Enlarge the **Lines** window by using the drag bar and the sizing gadget. Drag the sizing gadget as far to the right as you can.

You may be wondering why computer companies see graphic demonstrations as so important. Graphics take the most time for a computer to execute, because of the enormous amount of numbers that have to be created in the shortest possible time. Since a computer doesn't recognize lines or circles or squares, a computer can only understand graphics conveyed as numbers. Colors, line lengths, etc. have numbers assigned to them.

Graphics are actually hard work for a computer, and proof of its abilities. These demos show the Amiga's skill at processing numbers faster than many other computers, not its artistic abilities.

BASIC

The Amiga's high speed also affects the Amiga's version of the computer language **BASIC**. **BASIC** is an *interpreted* language: The computer translates **BASIC** commands into its own language, executes the commands, and translates the results from its own language into ours. Like graphics, these processes need numbers and time. The faster a computer handles numbers, the faster it performs complex commands.

More about multitasking

Multitasking was mentioned earlier in this chapter. A multitasking computer carries out more than one task at a time. You can see a simple example of multitasking using the three demos you've run in this section.

- Double-click the **Dots** icon. Double-click the **Lines** icon. Double-click the **Boxes** icon.

Leave the windows the same size at which the Amiga opened them.

- Drag the **Dots**, **Lines** and **Boxes** windows so they stand side by side.

Now you can see all three programs running at the same time. The Amiga could just as easily look up an address while its performing a calculation.

- Double-click the **Dots** icon. Double-click the **Lines** icon. Double-click the **Boxes** icon.

You now have two copies of each demo on the screen. Each copy runs independently of the other. You can open these three demos again and again if you wish. Remember that they use the Amiga's internal memory size. In general, the Amiga runs as many programs at once as can fit into memory. The number of programs at a time varies with the lengths of the programs.

- Drag the new **Dots**, **Lines** and **Boxes** windows next to the old ones.

Notice that the Amiga moves somewhat slower than it did. It takes more time before the pointer drags the window, and before the window reappears in the new position.

- Drag one of the **Lines** windows to the top row, and enlarge it with the sizing gadget.

The Amiga definitely moves slower. Remember, all these programs share internal memory.

- Close all the small **Dots**, **Lines** and **Boxes** windows one after the other, except the large **Lines** window.

Watch the large **Lines** window as you close the other windows. The speed increases as you close the other windows.

You can see the amount of memory increase during this demo. Each time you close a demo file, the memory indicator goes up.

- Close the last **Lines** window.
- Close the **Demos** window.

2.5 The System drawer

The System drawer contains a number of useful programs. One of the most important is the `Diskcopy` program, which lets you copy diskettes.

- Double-click the System drawer icon.

A window opens. The `System` window contains a number of programs. For now, two programs are of the most interest:

Two diskette icons numbered 1 and 2, are separated by an arrow. This icon has the name `Diskcopy`.

A diskette icon with fuel gauge pointing to E. This icon has the name `Format`.

Formatting disks

Initialize and *format* mean the same thing when talking about floppy diskettes. Both terms describe a computer's preparation of a diskette for accepting data. Say you have a diskette with data which you no longer need, or you buy a diskette from the store. The computer prepares the diskette so that you can put new information on it.

Every Amiga disk drive has a magnetic head that deletes any information on a diskette and creates the new data *tracks* and *sectors* needed for adding information. However, once the computer formats a diskette, any data previously on a diskette disappears forever. Therefore, when you format diskettes which have already been used, be absolutely sure that you will never need the information on them again. This doesn't matter with new diskettes, since they have no information on them anyway.

Perhaps you want to know why new diskettes need formatting. Each diskette manufacturer wants to serve as many computers as possible, so they sell "blank" diskettes. The computer adapts blank diskettes by formatting (initializing).

WARNING: Formatting a previously formatted diskette destroys all data previously stored on that diskette.

This book assumes that you only have one disk drive. If you have two drives, the procedures stay more or less the same except that the Amiga won't constantly ask you to change diskettes. When formatting with two drives, place the Workbench diskette in the internal disk drive (drive 0) and the new diskette into the external drive (drive 1).

WARNING: NEVER remove a diskette from the drive while the disk drive LED is on. The Amiga may destroy all the data on that disk. If you do, go to Appendix A for instructions on using the diskdoctor program. This program might rescue some of the data.

- Double-click the Format icon.

Requesters

A *requester* appears. A requester, as the name suggests, tells you of a problem, error or unfinished task, and requests information or data. For example, requesters tell you to change diskettes. Follow the requester's instructions, or you may risk a *system crash*. This means that the computer restarts itself, and forgets everything input up until then.

This requester tells you to select the icon of the diskette you want formatted, and select *Initialize* from the *Disk* menu.

- Click on the OK gadget to continue.
- Remove the Workbench diskette from the disk drive and replace it with the blank diskette. A new diskette icon appears DFO:BAD.
- Click on the diskette icon you want initialized, usually DFO:BAD.

The icon turns black, indicating an active icon. Go to the *Disk* menu and select the *Initialize* item. A requester appears asking you to replace the the Workbench diskette. Remove the blank diskette and insert the Workbench diskette. The formatting program will be loaded and then a requester appears asking you to insert the diskette to be initialized:

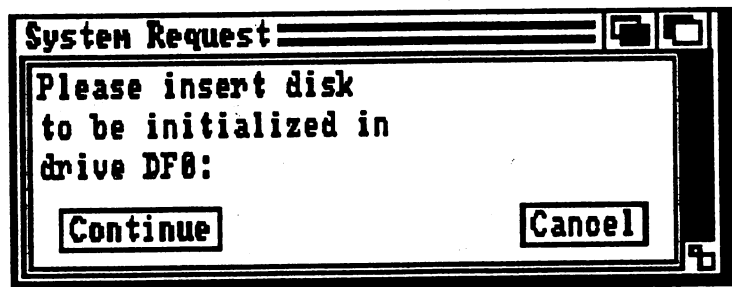


Figure 4:
Insert
disk
requester

Once you have the diskette in the drive select the *Continue* gadget. After a short period of time another requester appears verifying the initialization of the diskette. If your sure you have the correct diskette in the drive click on the *Continue* gadget. The Amiga asks this to ensure that you don't accidentally delete important information. Even if you have the correct diskette, you might want to think about what

you're going to do. Remember, all data on the diskette is lost when formatting. If you're absolutely sure that you want this disk formatted, then:

- Click on the `Continue` gadget in the requester.

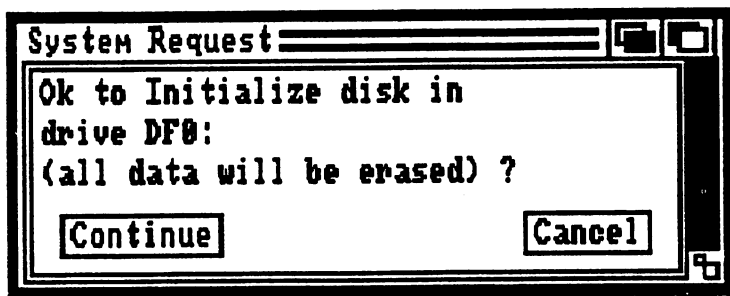


Figure 5:
Ok to
Initialize
requester

As soon as you give the Amiga the OK to initialize, the requester changes to a window displaying the status of the initializing process.

You may be wondering why two diskette icons appear on the screen when you only have one disk drive. The Amiga keeps the icons of the Workbench diskette and the new, `DF0:BAD` diskette in memory. There may be a third diskette icon on the screen, called `RAM Disk` (more on this later).

One hint for two disk drive Amiga owners: If the Amiga requests a certain diskette to be inserted in "any" drive, it actually means the internal disk drive. Therefore, if you did what the Amiga asked and nothing happened, remove the requested diskette and insert it in the internal drive.

The disk drive makes some noise, and the Amiga displays the message `DF0:BUSY` underneath the selected diskette icon. This means that the built-in drive (know internally as `DF0:`) is doing something (=BUSY).

After, a short time, the disk drive stops. And instead of `DF0:BUSY`, the diskette icon has the name `Empty` underneath it. You've just formatted your first Amiga diskette.

- Double-click the `Empty` diskette icon.

A window named `Empty` opens. The `Empty` window contains only one icon; the `Trashcan` (more on this later). Otherwise, the `Empty` window looks and acts exactly like any other window.

- Close the `Empty` window and remove the `Empty` diskette from the drive.

Copying diskettes

The following instructions explain how to copy the Workbench diskette using the `Diskcopy` program. Copying diskettes safeguards you from unpleasant surprises. It doesn't take much to accidentally erase an important file, or pour beer on the Workbench diskette. Always make *backup copies* of diskettes. Backup copies are copies of an original diskette. Use backups for your work, and keep the original diskettes in a safe, non-magnetic place.

Make sure your *write protect* is enabled on your Workbench diskette. The write protect is the small sliding piece of plastic in one corner of a floppy diskette. If you can see through the write protect hole, you can't write to the diskette.



Figure 6:
Write
protects

- Move the write protect slider on the Workbench diskette so you can see through the hole (write protect it).
- Insert your Workbench diskette in the internal disk drive.
- Click on the Workbench diskette icon, press and hold the <Shift> key (<↑>).
- Double-click the `Diskcopy` icon in the `System` window and release the <Shift> key.

This process of holding the <Shift> key down while selecting icons is *extended selection*. Extended selection lets you select two or more icons at a time.

A requester appears:

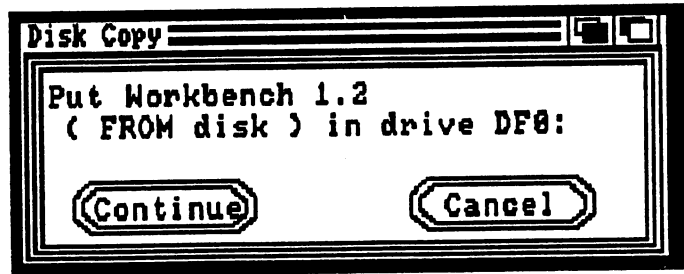


Figure 7:
Disk Copy
requester

- Click on the Continue gadget.

Another requester appears, asking you to insert the destination diskette (the blank diskette to which you're copying):

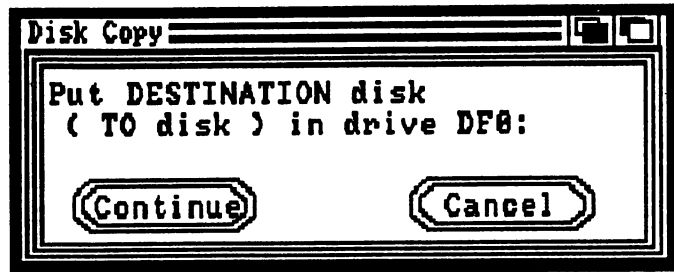


Figure 8:
Disk Copy
requester

- Click on the Continue gadget.

The Amiga tells you which diskette it needs through requesters.

Two-drive copying

A two disk drive Amiga system requires no diskette changes when copying. The procedure is much the same as copying diskettes with one drive, with a few changes. The procedure is as follows:

- Move the write protect slider on the Workbench diskette so you can see through the hole (enable it).
- Insert the original Workbench diskette into the internal disk drive, and the blank diskette into the external disk drive.
- Click on the Workbench diskette icon.
- Press and hold a <Shift> key (<↑>).
- Click on the external disk drive's diskette icon. If this diskette is blank, its name is probably DF1 : BAD.

- Double-click the `Diskcopy` icon in the `System` window and release the `<Shift>` key.
- Follow the Amiga's instructions through the requesters and click on the proper gadgets to continue.
- Make backup copies of the Extras diskette that came with your Amiga using the above instructions.
- Close the `System` drawer when you finish making backup copies.

Now that you have a backup of the Workbench diskette, test it out as follows:

- Insert your backup copy of the Workbench diskette into the Amiga's internal disk drive.
- Press the `<Ctrl>` key (on the far left of the keyboard), the `<Commodore logo>` key (or the left `<Amiga>` key) and the right `<Amiga>` key at the same time.

The Amiga acts as if you switched it on. The screen turns gray, it reads your Workbench diskette and displays the Workbench screen.

Storing original diskettes

If your backup diskettes work, take your original diskettes and put them in a safe place. "A safe place" means a location shielded from extreme heat and cold, far away from magnetic objects, food and drink, animals and children (the top shelf of a linen closet, for example). Use your original diskettes only if you need to make copies. However, you can always make backups of backups, so you may never have to get your originals out again.

CLI

The `System` window displays a few other programs. For example, a box icon containing `>1` and the name `CLI`. This is the Command Line Interface. If you don't see this icon, don't worry about it; you won't need it for a while. If there is such an icon, leave it alone for now (see Chapter 4 for information on the `CLI`).

IconEd

Another `System` drawer program is the box-of-crayons icon named `IconEd`. A few basic parameters have to be established before you can use it. Appendix E discusses `IconEd` in detail.

Say

Look at the rest of the programs in the systems drawer. The program `Say` demonstrates the speech synthesis features of the Amiga.

- Double-click on the `Say` icon.

The following text appears in a window called the **Phoneme** window:

Type your message, then Return.	
Options are:	
-M (Male)	-F (Female)
-R (Robot)	-N (Natural)
-S## (Speed)	-P## (Pitch)

A second window (the **Input** window) appears below this one. The Amiga converts everything you type in this window into speech.

- Click inside the **Input** window.
- Enter the following from the keyboard:
Hello, user. I'm your Amiga.
- Press the <Return> key.

Commodore Amiga programmers wrote the speech synthesizer to imitate the English language as closely as possible, but some words just don't come out right. Say's pronunciation improves when you spell the word phonetically instead of literally.

Say not only says what you type in; it also lets you change the Amiga's voice.

- Enter `-s400` and press the <Return> key.
- Enter `Peter Piper picked a peck of pickled peppers.` and press the <Return> key.

You must enter speed or pitch changes before entering the specific text. Precede all speech changes with a dash (-) and the corresponding letter as listed in the **Phoneme** window. Pitch and speed changes require a number as well. Acceptable speeds range from 40 to 400, while pitches range from 65 to 320. Experiment with the different parameters.

- Press the <Return> key without entering anything else to end the program.

SetMap

The **SetMap** program lets you access special and foreign characters from your keyboard, as well as assign specific character sets to the keyboard.

- Click on the **SetMap** icon.
- Select the **Info** item from the **Workbench** pulldown menu.
- Click the **Add gadget** (in the same line as the **Tool Types** string gadget).

- Click on the Tool Types string gadget (the blue area).

An orange cursor appears.

- Type KEYMAP=D (in capital letters) and press the <Return> key.

Make sure your *write protect* is off on your Workbench backup (do not use the original Workbench diskette).

- Click on the Save gadget in the lower left hand corner.

As soon as you click Save, the Info window disappears.

- Double-click on the SetMap icon.
- Double-click on the Utilities drawer icon.
- Double-click on the Notepad icon.
- Type a few keys, like <Y>, <Z>, <)>, <:> and <:;>.

The above procedure assigns the German character set to your keyboard (the D in KEYMAP=D stands for "Deutsch", or German). To return to the USA character set reboot your system or:

- Close the Notepad window.
- Click on the SetMap icon.
- Select the Info item from the Workbench pulldown menu.
- Change the KEYMAP=D to KEYMAP=USA (in caps) and press the <Return> key.
- Click on the Save gadget in the lower left hand corner.
- Double-click on the SetMap icon.

The keyboard returns to the English character set.

Graphic-Dump

The GraphicDump program produces *hardcopies* (printouts) of the screen contents. You can only use this program if your printer prints graphics. If you have a printer connected and operating:

- Double-click the GraphicDump icon.

The printer reproduces the screen picture on paper. GraphicDump waits 10 seconds after your double-click before it starts printing, so you have some time to move screens or windows where you want them.

2.6 The Utilities drawer

The Utilities drawer contains two items: the Notepad and the Calculator.

Calculator

The Calculator utility opens like any other program. Since it behaves like a window, you can place it in front of or behind other windows. On the whole, it works exactly like a pocket calculator. However, this calculator has three special features:

1. You can access calculator functions from both the mouse and the Amiga keyboard. For special functions such as CE, press the necessary letter keys (press the <c> key, then the <e> key).
 2. This Calculator has a delete function. Click on the <←> key (on the bottom row of the Calculator window, next to the <+>) to delete numeric input from right to left. Pressing the <Backspace> key (or <←> key) or key on the keyboard also deletes numbers from the calculator.
 3. The CE function lets you delete the last entry only. For example, if you make a mistake when typing in a long list of numbers, click CE. This deletes the current input while keeping the previous computation in memory. Click CA (Clear All) when you want to start a new calculation.
- Double-click on the Utilities drawer icon.
 - Double-click the Notepad icon and make sure the Amiga keyboard is in easy reach.

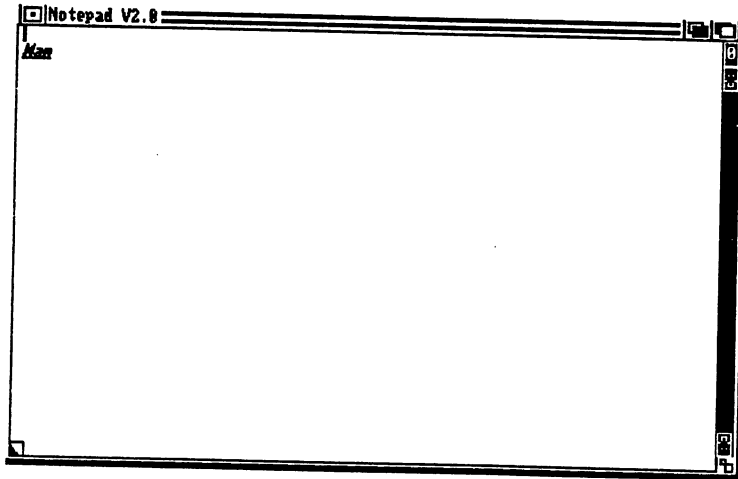
Notepad

While the disk drive runs, a window named **Notepad V 2.0** appears. Then some text appears in the top border of the window, stating that the program is searching for fonts. The Notepad gives you some idea of the capabilities of even the simplest Amiga *word processor*. A word processor like *TextPro* or *BeckerText* lets you write text, similar to working with a typewriter. That's where the similarity ends. Word processing also allows you to move, delete, rewrite and edit text on the screen.

First, enlarge the **Notepad** window as much as possible.

- Move the pointer onto the drag bar of the **Notepad** window, press and hold the left mouse button.

- Drag the **Notepad** window to the upper left hand corner of the screen and release the left mouse button.
- Move the pointer down to the **Notepad** window sizing gadget, press and hold the left mouse button.
- Drag the sizing gadget to the lower right hand corner of the screen and release the left mouse button.



**Figure 9:
Notepad**

Notepad is for making notes. You need some text to demonstrate the Notepad's abilities. What you type is up to you. For this example, you could use:

The Amiga for Beginners
by Christian Spanik

- Input your Notepad text from the keyboard.

Note the narrow bar that follows the text as you type it in. This bar is the *cursor*.

You can correct any mistakes you make using the and <Backspace> (or <←>) keys.

- Use the or <Backspace> (or <←>) keys to erase unwanted text.
- Type in the new text.

Moving text

Now that there is text in the Notepad, you can try out individual functions. First of all, move the text, since the text is stuck in the upper left hand corner.

- Move the pointer to the left of the first letter of the first line.

- Press the left mouse button.

In the example above, the letter would be a capital T. Pressing the left mouse button brings the cursor to the same area as the pointer, if the pointer is in the text area. You can also move the cursor with the four cursor keys located between the normal keyboard and the numeric keypad.

- Press the <Return> key.

Press the <Return> key to signal the end of a line, or the end of an input.

- Press the <Return> key until the two lines reach the middle of the **Notepad** window.

Now center the text. Make sure the cursor is still to the left of the first letter of text.

- Press the spacebar.

Do this until the text is centered in the window. Now you can change the *font*, or typeface.

Fonts

- Press the right mouse button and move the pointer to the **Fonts** menu title.

The **Fonts** pulldown menu appears. The top menu item, **Topaz**, has a checkmark to its left.

- Move the pointer to the **Topaz** menu item.

A list of *options* appear to the right of the **Topaz** menu item. Options contain further selections for menu items. This option contains a number 8 with a checkmark to its left, and a number 9 without a checkmark. The checkmarks indicate the font and font size currently in use. **Topaz 8** is the font you see on the screen. Change the size of this font from 8 to 9.

- Move the pointer to the options for **topaz** (be sure you move in a horizontal line to the right).
- Move the pointer onto 9 and release the right mouse button.

The type changes to a larger size immediately. Look again at **topaz**.

- Press the right mouse button and move the pointer to the **Fonts** menu title.
- Move the pointer to the **Topaz** menu item.

Options

Topaz still has a checkmark in front of it. But now the number 9 has a checkmark next to it, instead of 8.

Now experiment a little with the different fonts. You have seven fonts and different sizes available. Select them as you did above for Topaz.

NOTE:

You must select both a font and a font size, the Amiga refuses your selection if you choose only a font.

Part of your text may go past the right border of the window if your Notepad is too small. Enlarge the size of the Notepad with the sizing gadget if this happens.

- Select different fonts and sizes using the procedures listed above. Try out each font and font size to see how you like them.
- When you're done experimenting, select the Sapphire 19 item from the **Fonts** menu.

Style

The Notepad lets you select different fonts and sizes. In addition, you can add different *typesyles* to text.

- Press and hold the right mouse button and move the pointer to the **Style** menu title.

Style displays its menu items. You can make your text *Italic*, Underlined, **Bold** or Plain. Select a typestyle exactly the same way as you select a font.

- Select the *Italic* item from the **Style** pulldown menu.

The typestyle changes.

- Press and hold the right mouse button and move the pointer to the **Style** menu title.

Keyboard shortcuts

Notice that a light **A** on a dark background stands to the right of each item, and each **A** has a letter to its right. The **A** represents the right <Amiga> key; the letter after it represents a normal letter key on the keyboard. You can access the menu items marked in this way directly from the keyboard. These are *keyboard shortcuts*, or *key combinations*.

- Release the right mouse button.
- Press and hold the right <Amiga> key
- Press the <P> key (uppercase or lowercase).

The type changes to plain text.

Combining tpestyles

The Plain item cancels any special tpestyles. There are some exceptions, though. If you position the cursor in the middle of an already bold line and select the Underline item, the second part of this line becomes bold and underlined. This is one trick: combining styles. Now if you employ the Plain item at the beginning of the line, only the bold function cancels out. The underlining remains intact. However, if the underline is now applied to the rest of the line and this is followed by another Plain, only the latest underline section cancels out. The original underlining stays. This creates a protective border for the underline item. This lets you highlight text in the middle of lines while leaving the rest of the line plain, even if the style starts and ends in the middle of a line.

NOTE:

All Style menu functions are performed from the current cursor position only. That is, if you change your tpestyle with the cursor halfway down your text, only the last half of the text changes to the new tpestyle.

- Press and hold the right <Amiga> key.
- Press the <I> key (uppercase or lowercase).

The changes to italics. You can use the mouse for selecting these styles if you wish. However, once you learn the key combinations, the keyboard is faster for applying styles:

Key combination	Style
Right <Amiga><P>	Plain (normal) style
Right <Amiga><I>	Italic style
Right <Amiga>	Bold style
Right <Amiga><U>	Underlines style

You can experiment some more if you like. You can also combine tpestyles if you wish.

- Press the right <Amiga><I> key combination.
- Press the right <Amiga> key combination.

Now you have bold italic type.

You can draw attention to a text using different tpestyles. Before you start typing, make some room on the window:

- Move the pointer to the lower left hand corner of the Notepad window.

The window has a dogear in that corner.

- Click on the blue dogeared corner.

Page turns

Suddenly you have an empty page. You should see a number (in this case it should be 1) in this corner.

- Click on the number in the upper right hand corner of the **Notepad** window.

When you click the upper right hand corner, your old text reappears and the number changes to a 0.

These dogears let you page forward (bottom left) and back (top right).

- Place the cursor to the right of the last letter of your text.

There are two ways of bringing the text cursor past the last letter.

Move the pointer to the required position and click. The text cursor is already there. Or you use the arrow keys on the keyboard.

Move the cursor by using the cursor keys.

- Press the <Backspace> (<←>) key.

The previous letter disappears when you press the <Backspace> (<←>) key. Since the key repeats, press and hold the <Backspace> key to erase a number of characters

- Hold down the <Backspace> key until the entire text disappears.

There's another way to clear your **Notepad** for new text:

- Select **New** from the **Project** pulldown menu (see below).

**Notepad
news article**

When your notepad is clear, type in the following sample text, freely drawn from a certain magazine. Select the smallest possible font size (**Topaz 8** works well). Remember that unlike a typewriter, the only time you need to press the <Return> key is when you finish a paragraph:

Man bites dog

In a fit of frustration, Ken F., a postman, bit his wife's dog.

Ken F. lived for years with the fact that his wife's dog growled every time it saw him. Every dog on his route liked him; it always bothered him that his wife's dog Nicki didn't. On Sunday evening, Ken F. bit Nicki on the leg. His wife has started divorce proceedings against "this animal," referring to her husband after the event. Mr. F. was unavailable for comment.

You can format this story in the style of a news article using the **Notepad**.

Once the article is on screen, you can manipulate it in any way.

Both fonts and styles can be controlled locally. That is, you can use different fonts in Notepad text. To select local fonts:

- Select **Global Font** from the **Format** pulldown menu.

This item defaults to on, and prevents you from using more than one font throughout a text. You can easily tell when it is off, since no checkmark appears next to the item. When **Global Font** is off, you are allowed more than one font in a document.

NOTE:

The Notepad requires much more memory when it uses multiple fonts. You can save memory by using just one font and style in your Notepad texts.

The most important thing is the title: **Man bites dog**. This title should have special emphasis, as you want to get the reader's attention.

- Separate the text into paragraphs.

Insert at least one blank line between the title and the text, and a blank line after "...bit his wife's dog."

- Place the text cursor to the left of the title.
- Select the **Topaz 8** item from the **Fonts** pulldown menu.
- Select the **Bold** item from the **Style** pulldown menu, or press the right <Amiga> key combination.
- Place the cursor to the left of the first paragraph.
- Select the **Ruby 8** item from the **Fonts** pulldown menu.

Ruby 8 looks the most like "newspaper type" of the Amiga's diskette fonts.

- Move the cursor to the left of the main text body (the second full paragraph).
- Select the **Plain** item from the **Style** pulldown menu, or press the right <Amiga><P> key combination.

The first paragraph, which is a summary of the events involved, would look best in an italic typestyle.

- Select the **Italic** item from the **Style** pulldown menu, or press the right <Amiga><I> key combination.

Italics

You might be wondering why the **Style** pulldown menu items only change the leading paragraph. A **Style** item affects all the text up to the next style command. If no other style command exists, the style affects the remaining text.

Underlining

You can add a style to the title for even more emphasis. Try out underlining.

- Move the cursor to the left of the headline. Select the **Underline** item from the **Style** pulldown menu, or press the right <Amiga><U> key combination.

The **Notepad** underlines the entire text. The headline is bold and underlined.

- Move the cursor to the left of the first paragraph.
- Select the **Plain** item from the **Style** pulldown menu, or press the right <Amiga><P> key combination.

Maybe you'd like more emphasis on the first paragraph, now that the headline is bold and underlined. If you would prefer the first paragraph in bold type, proceed as you did above for style selection.

Once you have the news article in a format you like, you need to know how you can store your work.

- Press and hold the right mouse button, and move the mouse pointer to the **Project** pulldown menu title.

Project

The **Project** pulldown menu items manage Notepad files. The menu items are as follows:

- | | |
|-------------|---|
| New | prepares the Notepad for new text. If there was text on the Notepad, New deletes the old text. Be sure that you <i>save</i> (store) your old text on diskette before selecting New . |
| Open | <i>loads</i> (recalls) a new document from diskette. Open deletes any old text on the Notepad. Be sure that you <i>save</i> (store) your old text on diskette before selecting Open . |
| Save | <i>saves</i> (stores) a document generated with Notepad on diskette. However, Save assumes that you plan to select New immediately after Save (write a new document). If you select Save again, Save retains the name of the document previously saved. This means that Notepad deletes the old text and replaces it with the new text. Save works best the first time you use Notepad, or when you edit and resave old text. |

Save As	is the safest way to store Notepad texts. This item requests the name under which you want the text saved. If you called the text through Open, the text already has a name, then the Amiga suggests that name. If you want another name, click inside the <i>string gadget</i> (the field in which the name appears). Delete the old name with the cursor and <Backspace> keys, and type in the new name.
Print	sends the text to a printer. You can select the printout's size. Auto-Size produces a printout the same size as the text on the screen; Small is one-fourth the size of the printer paper width; Medium is half the size of the paper width; and Large is the full paper width.
Print As	distinguishes between two types of printout. Draft prints the text without fonts or typstyles, giving a faster printout. Graphic prints the message exactly as it appears on screen, including special fonts and typstyles.
Read fonts	recalls fonts from diskette.
Quit	terminates the Notepad.

- Select the Save As item from the Project pulldown menu.

A requester appears, requesting the name of the text:

Enter name and press <Return>

- Move the mouse pointer to the Name string gadget and click on that string gadget.

The Save As description mentioned string gadgets. These are gadgets which let the user enter groups of characters (*strings*). When you click on the Name string gadget, a cursor appears.

- Type in the name of your text.
- Press the <Return> key.

If you don't like the name you typed in, or if you typed it in incorrectly, you can still change it. The Notepad only accepts names when you press the <Return> key and click the OK gadget in the requester. If you typed in the wrong name:

- Click on the Name string gadget.
- Delete the name with the <Backspace> (<←>) key, or add to the old name by moving around with the cursor keys.

- If the name is correct, press the <Return> key, then click on the OK gadget.

The disk drive runs. The Amiga saves the file, although it doesn't appear immediately in the **Utilities** window.

- Close the **Utilities** window, then reopen the **Utilities** window.

The **Utilities** window contains a new icon with your text's filename.

More on saving and loading text

There is a simple way to save your Notepad texts in other drawers. Double-click the icon of text in another drawer. Notepad automatically starts, and all new texts save to the new drawer in which this first document exists. Another thing: if this doesn't work for some reason, click the Notepad icon once, press a <Shift> key and click the particular text icon to boot the Notepad.

There are two ways to recall this text. The first method is similar to saving text.

- Open the **Utilities** drawer.
- Open the Notepad.
- Once the Notepad loads, select **Open** from the **Project** pulldown menu.
- Click on the Name string gadget and type in your filename.
- Click on the OK gadget.

The second method is simpler and much faster.

- Open the **Utilities** drawer.
- Double-click on your Notepad text icon.

Sometimes you have to adjust the type and size of the **Notepad** window to its size when you saved the file.

- Press and hold the right mouse button, and move the mouse pointer to the **Format** menu title.

Format

The **Format** menu brings a little color to your Notepad. Here are its options:

Paper Color	Each item has a option with four colors. One
Pen Color	color in each option has a checkmark to its left; this color is currently in use by the Amiga.

- Move the mouse pointer onto one of these items.

The checkmark in `Paper Color` marks white, and the `Pen Color` checkmark indicates black. You now change these colors as needed.

- Select the "white" option item from the `Pen Color` item.

The `Notepad` changes to white text on a white background.

- Select the "black" option item from the `Paper Color` item.

Your text becomes readable again, but in reverse (white on black). Type sizes and styles are unaffected.

`Word Wrap` activates when the `Notepad` loads. As mentioned before, you don't need to worry about ending lines with carriage returns. If a word doesn't fit into the rest of the line, the Amiga simply moves that word to the beginning of the next line. Deactivating `Word Wrap` makes the Amiga print characters to the last column of the line and carry on text at the beginning of the next line.

`Global Font` controls the global/local font setting (see above).

`Remove Fonts` deactivates all font types used in a `Notepad` text.

`Remove Styles` deactivates all tpestyles used in a `Notepad` text.

- Select the `Remove Fonts` item.
- Select the `Remove Styles` item.

These items remove all your font and typestyle formatting.

One pulldown menu remains—the `Edit` menu. To select text:

Edit

- Place the cursor to the left of the text to be selected.
- Select the `Mark Place` item from the `Edit` pulldown menu.
- Move the mouse pointer past the end of the last paragraph and double-click.

An orange bar appears, marking the selected text. What happens to this selected text depends upon the next function chosen. The menu options are as follows:

`Cancel` cancels any editing.

`Cut` removes selected text, at least temporarily.

Paste places cut or copied text at a marked location.

Copy duplicates the selected text, for later duplication using **Paste**.

The remaining four items of the **Edit** menu require no text marking.

Find searches for specific words throughout a text. Although **Find** accepts two parameters (a find string and a replace string), the second parameter remains inactive unless you select **Replace** as well.

Find Next searches for the next occurrence of the search string.

Find Prev searches for the previous occurrence of the search string.

Replace changes the string specified with **Find** to the replace string. Select **Replace** using the mouse or the keyboard (right <Amiga><R>).

- Close the **Notepad** window by clicking on its close gadget.



2.7 An Intuition glossary

This book uses many words that may be new to you. The summary in this section defines terms used when talking about Intuition.

- Active** Active windows or pulldown menu items appear in clearly legible type. Inactive window titles and pulldown menu items display ghost print (gray, hard-to-read). Active pulldown menu items have dark backgrounds as you pass the mouse pointer over them. Active icons also turn dark when selected. Items, windows and icons all activate when clicked one or more times with the mouse. Active menu items have checkmarks next to them (e.g., Word Wrap in the Notepad's **E**dit pulldown menu).
- Clicking** The user selects and activates programs and icons by clicking (pressing the left mouse button). A single click turns an icon black, while a double-click activates the programs represented by the icon.
- Double-clicking** Double-clicking runs programs and opens windows. The user moves the pointer onto the desired icon and presses the left mouse key twice in rapid succession.
- Dragging** Windows and icons can move. For example, the user moves the pointer onto the icon, or onto the window's drag bar, and presses and holds the left mouse button. When the user moves the mouse, the selected object moves with it. The user releases the left mouse button when the object is in the desired position.
- Drawers** Drawers contain programs and files having some relationship with one another. For example, the Demos drawer contains all the Workbench demonstration programs.
- Enlarging** In principle, this function works exactly like dragging. The user places the pointer on the sizing gadget in the lower right hand corner of the window, presses and holds the left mouse button, and drags the sizing gadget away from the upper left corner of the window. The window size changes in the direction of the pointer movement.
- Gadgets** Gadgets are objects built into windows to help the user move, adjust and manage windows.
- Sizing gadgets enlarge or reduce window sizes. Scroll bars and scroll arrows move the contents of the window around, so you can see programs and drawers not visible in the normal window.
- Windows move to the background when the user clicks the back gadget, and to the foreground when the user clicks the front gadget. The back

gadget is in the upper right of the window drag bar, and looks like a black square in front of a white square. The front gadget is to the right of the back gadget, and looks like a white square standing in front of a black square.

Users can move windows with the drag bar (the top border with two dark horizontal lines across it). Moving the pointer onto the drag bar and pressing and holding the left mouse key allows window movement.

Close gadgets (the small box with a dot in its center, in the upper left hand corner of the window) close windows.

Icon

Icons are pictures on the Amiga screen. They can be tools (programs), projects (files), drawers, or objects that don't fit into any of the above categories, such as the Trashcan or diskette icons.

Info bar

The info bar stands at the top of a full Amiga screen. It displays the amount of free memory, or the current version of the Workbench diskette. The Amiga can operate several screen planes at once. In addition, when pressing the right mouse button, the info bar displays menu titles. Certain programs can affect and therefore change the info bar (the Notepad is an example).

Info window

Every icon has an info window. This window list filenames, file size, comments, etc. Diskette info windows list the amount of free memory on the diskette.

Memory meter

This line contains the screen name and the amount of free memory in the Amiga. It appears across the top of the screen when in the Workbench.

Menu items

Menu items are individual commands found beneath menu titles. For example, the Notepad's *Italic* item from the **Style** menu italicizes text.

Menu titles

Pressing the right mouse button activates menu titles at the top of the screen. Each menu title contains a list of menu items for user selection.

Open

Tools (programs) and projects (files and documents) open, or execute. When you double-click a project, the tool used to create the project also opens.

Options

These are additional menu options stemming from menu items. For example, the different sizes from the Notepad's **Font** menu.

Program

Everything the Amiga does has its basis in a program. However, with Intuition running, programs generally perform a service, and allow user access from Intuition (see also *Tools*).

Project

Projects are data files generated from within a program. For example, Notepad texts are projects written in the Notepad program, accessible from the **Project** pulldown menu of the Notepad.

- Pulldown menu*** The user selects pulldown menus by pressing the right mouse button. If you press and hold this button, a set of menu titles appear at the top of the screen. A pulldown menu listing a number of items appears when you move the pointer onto one of the menu titles. Move the pointer onto the desired menu item. The selected menu item executes when you release the right mouse button.
- Reducing*** In principle, this function works exactly like dragging. The user places the pointer on the sizing gadget in the lower right hand corner of the window, presses and holds the left mouse button, and drags the sizing gadget toward the upper left corner of the window. The window size changes in the direction of the pointer movement.
- Requester*** Requesters are windows of different sizes, containing different texts and gadgets. These requesters all have one thing in common: They ensure that the Amiga obtains the information it needs for performing certain tasks. For example, if you want a diskette copied onto another one, the Amiga must know which is the original diskette and which is the destination diskette. It requests this information using a requester. These requesters include gadgets for user response.
- Tools*** Tools help the user do certain things. Basically, you could call the Workbench and Intuition tools. Programmers and people with intimate knowledge of computers define a tool as a program that helps the user program. For example, Diskcopy copies diskettes—that makes it a tool. There are tools for users at all levels, from the new user to the expert programmer.
- User interface*** The entire Amiga screen area is a user interface. The user interface of a computer varies in size and user-friendliness, depending on the task it performs. You presently know only one user interface on the Amiga (the Workbench). The Amiga can manage several user interfaces at the same time.
- Window*** Windows can contain data or programs which you can start or view. In addition, windows have gadgets which perform different functions (see gadgets).

2.8 The Trashcan

The Amiga's Trashcan acts as a file disposal. When you no longer need a drawer, tool, project or program, drag it to the Trashcan. For demonstration purposes, create a Notepad text you don't need (Section 2.6 has instructions on Notepad operation).

- Double-click the **Utilities** drawer.
- Double-click the Notepad icon.
- Create a simple text in the Notepad (one word is enough for this).
- Select the **Save** item from the **Project** pulldown menu.
- Click on the Name text gadget and type in the name **Garbage**.
- Click on the **OK** gadget or press the **<Return>** key.
- Select the **Quit** item from the **Project** pulldown menu.
- Close the **Utilities** window.
- Double-click on the **Utilities** drawer.

A text file named **Garbage** appears in the **Utilities** window.

- Make sure the Trashcan icon is visible in the **Workbench** window. Move around inside the window with the scroll arrows and scroll bars until you find the Trashcan icon.
- Move the pointer onto the **Garbage** text icon, press and hold the left mouse button.
- Drag the **Garbage** text icon until it covers the Trashcan icon in the **Workbench** window.
- Release the left mouse button.

The Amiga's disk drive runs. The file still exists, though. If you look at the Workbench diskette's info window, the amount of available memory has decreased. The **Garbage** file is in the Trashcan for now.

- Double-click the Trashcan icon.

A window named **Trashcan** opens. The Garbage icon appears in this window. This lets you remove any file in the **Trashcan** before you dispose of it by mistake.

- Move the pointer onto the Garbage icon, press and hold the left mouse button.
- Drag the Garbage icon back to the **Notepad** window and release the left mouse button.

Now that you know how to remove files from the **Trashcan**, dispose of the Garbage text permanently.

- Move the pointer onto the Garbage text icon, press and hold the left mouse button.
- Drag the Garbage icon until it covers the **Trashcan** icon in the **Workbench** window.
- Release the left mouse button.

The disk drive runs again.

- Activate the **Trashcan** icon.
- Select the **Empty Trash** item from the **Disk** pulldown menu.

The disk drive runs again. The memory meter increases, and the Garbage text disappears. Activating the **Trashcan** icon before you can **Empty Trash** gives you one last chance to think before you dispose of the **Trashcan**'s contents. You can put almost anything into the **Trashcan**, but not diskette icons.

NOTE:

Be extremely careful when using the **Trashcan**. Once you select **Empty Trash**, the file you trash is gone forever.

2.9 The Clock

The Amiga has a fine sense of timing. In fact, the Amiga has a working clock. Look for an icon in the **Workbench** window named **Clock**, that looks like a clock.

- Double-click the **Clock** icon in the **Workbench** window.

The disk drive runs and an analog clock appears (a clock with hands). The time and date are incorrect right now. Before setting the **Clock**, experiment with the current **Clock** window:

- Move the pointer onto the **Clock** window's sizing gadget, press and hold the left mouse button.
- Drag the sizing gadget as far to the right as you can and release the left mouse button.

The clock expands in the direction you pull the sizing gadget.

- Move the pointer onto the **Clock** window's sizing gadget, press and hold the left mouse button.
- Drag the sizing gadget back to its original position and release the left mouse button.

The **Clock** program has five pulldown menus:

Type

This offers you three different clock displays: **Analog**, **Digital 1** and **Digital 2**. The **Analog** clock has one disadvantage: It takes up too much screen space. You may prefer using the digital clocks. **Digital 1** is a standard digital display, like the ones you see on wristwatches. However, it's three times the height of the title bar, and takes up almost as much space as the analog clock window. **Digital 2** is the most compact of the three clock types. The Amiga defaults to the **Analog** clock, indicated by the checkmark to the left of that menu item.

Mode

The **Mode** pulldown menu lets you choose between 12 hour and 24 hour (military) time standards. The **Analog** 12 hour system displays **am** or **pm** in the upper right hand corner of the **Clock** window. The two digital clocks display the **am** or **pm** to the right of the time.

Seconds

This menu sets the seconds display on or off. The analog clock uses a second hand; the two digital displays use two-digit second displays. The Amiga clock defaults to **Seconds Off**, indicated by the checkmark to the left of that menu item.

Date

Date sets the current date display on or off. The Amiga defaults to Date On, indicated by the checkmark to the left of that menu item.

Alarm

Alarm sets and activates or deactivates the Amiga alarm clock. Set opens the Alarm Set requester in which you set the alarm time. Alarm On and Alarm Off turn the alarm on and off. The Amiga defaults to Alarm Off, indicated by the checkmark to the left of that menu item.

Here are some experiments to help acquaint you with the clocks. First, select another clock type.

- Press and hold the right mouse button and move the pointer up to the **Type** menu title.
- Select the Digital 2 item from the **Type** pulldown menu.

The Analog clock vanishes, and the smaller Digital 2 clock appears. Digital 2 alternates between date and time display—each appears for about two seconds, then changes to the other display.

- Press and hold the right mouse button and move the pointer up to the **Mode** menu title.
- Select the 24 Hour item from the **Mode** pulldown menu.

The Digital 2 clock changes to 24 hour mode (military time).

- Press and hold the right mouse button and move the pointer up to the **Date** menu title.
- Select the Date Off item from the **Date** pulldown menu.

Digital 2 immediately stops displaying the date.

- Press and hold the right mouse button and move the pointer up to the **Seconds** menu title.
- Select the Seconds On item from the **Seconds** pulldown menu.

Digital 2 now shows a two-digit second display.

- Press and hold the right mouse button and move the pointer up to the **Alarm** menu title.
- Select the Set item from the **Alarm** pulldown menu.

A requester named Alarm Set appears.

- Move the pointer onto the hour digits (the two left numbers).

- Move the pointer to the gadget containing the up and down arrows.
- Click twice on the up arrow of this gadget to move the time to 1400 hours.
- For setting minutes, click on the minute digits, and proceed as you did when you set hours.
- Click the Use gadget to set the alarm, or the Cancel gadget to cancel the setting.

You must turn the alarm on before it will go off at the prescribed time.

- Press and hold the right mouse button and move the pointer up to the **Alarm** menu title.
- Select the **Alarm On** item from the **Alarm** pulldown menu.

The alarm clock deactivates when you select **Alarm Off** from the **Alarm** pulldown menu.

NOTE:

The **Digital 2** clock has no alarm: **Digital 2** ignores any alarm time input in the **Set Alarm** item of the **Alarm** pulldown menu. **Analog** and **Digital 1** have functional alarms.

The clock itself still needs the proper time setting. The next section explains the use of **Preferences** for setting the clock and more.

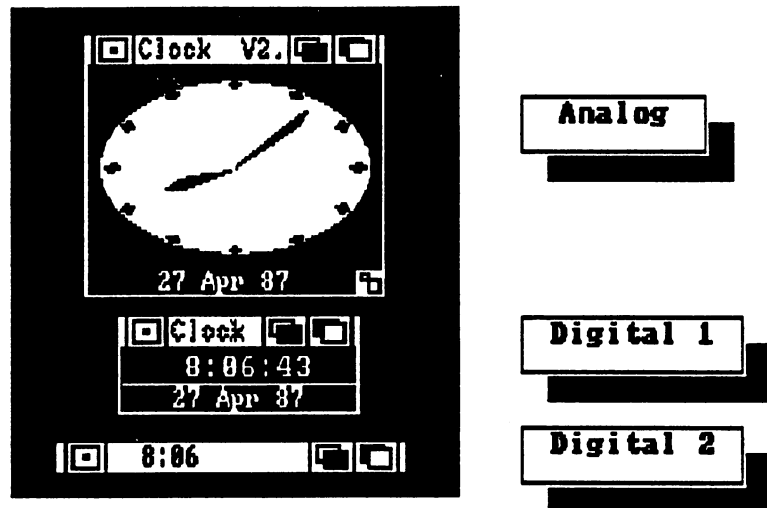


Figure 10:
Amiga clock
types

2.10 Preferences

Preferences is one of the Workbench's most powerful tools. You can install and adjust nearly any Amiga setting.

- Double-click the Preferences icon in the Workbench window.

The disk drive loads the program, and a new window named Preferences appears. Note that this window has no close gadget or sizing gadget.

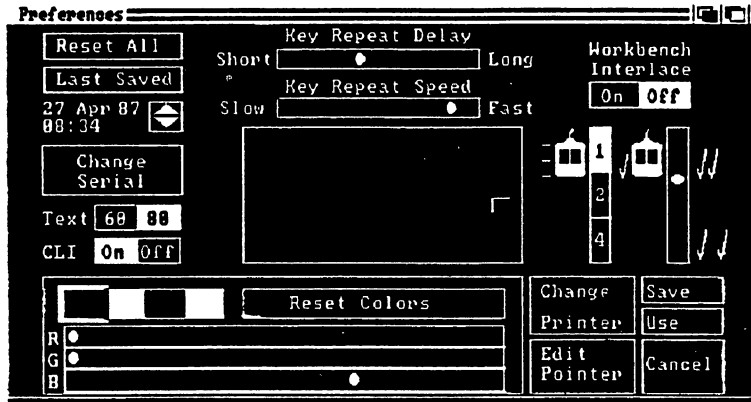


Figure 11:
Preferences

- Move the pointer to the Preferences window drag bar, press and hold the left mouse button.
- Try moving the window down.

The window won't move down; it stays in the same position.

- Release the left mouse button.
- Look at the title bar as you press and release the right mouse button.

The Preferences window has no menu bar. The drag bar disappears when you press the right mouse button.

- Click on the back gadget of the **Preferences** window.

The **Workbench** window appears in front of the **Preferences** window, along with any other windows left open. If you left the **Clock** window open from the last section, it is also in the foreground. The **Preferences** window's back and front gadgets operate the same as other back and front gadgets.

Date Time

There are two gadgets toward the upper left corner of the **Preferences** window, just below the **Last Saved** gadget. These gadgets let you set the current date and time. The date gadget lists the day, month and year, with each part of the date separated by spaces. The time gadget lists the hour and minute, separated by a colon.

- Double-click the **Clock** icon in the **Workbench** window, if the **Clock** isn't open right now.
- Click on the **Workbench** window to activate it, and double-click on the **Preferences** icon.
- Move the pointer to the number you want changed, and click on that number; the Amiga highlights that number for a moment.
- Click the up arrow to increase the number and the back arrow to decrease the number.
- Repeat the above two steps as needed for the other numbers.
- When you have the time correctly set, move the pointer to the lower right corner of the **Preferences** window and click on the **Use** gadget.
- Click on the **Clock** window.

The clock time runs a few seconds later than the **Preferences** setting. **Preferences** uses the saved time setting as the starting time. If you start your Amiga every morning at eight o'clock, then you can set this time to 8:00. The Amiga clock then starts at eight o'clock every time you turn it on.

You can change the active number with the up and down arrows. The up arrow increases the number by one, while the down arrow decreases the number by one.

NOTE:

Time adjustments can affect both time and date. Moving the hour from 23 to 0 increases the day by one. Also, increasing the minutes from 59 to 0 increases the hour by one.

- Open the **Preferences** window.
- Change the time to something different, following the above instructions. Do not click the **Use** gadget after setting the time.

- Click the **Preferences** window's back gadget.
- Click on the **Clock** window and check the time.

The clock stays set at its old time. You must tell **Preferences** to use the changes.

- Click the **Preferences** window's front gadget.

Cancel Save Use

Note the three gadgets in the lower right corner of the **Preferences** window. The **Cancel** gadget cancels any changes made to **Preferences** in this session. The **Save** gadget saves your changes to diskette for later recall. The **Use** gadget tells the Amiga to use the current **Preferences** settings without saving them. These settings remain in effect until you switch off the Amiga.

- Click on the **Use** gadget.

The **Preferences** window disappears and the clock digits move to the time you set. The second counter begins at 00.

- Double-click the **Preferences** icon to reopen **Preferences**.

Here are the individual gadgets and settings available in **Preferences**.

Reset All

This returns all values in **Preferences** to the settings that originally came with your **Workbench** diskette. This is useful when you can't remember the original settings after too many changes.

Last Saved

This gadget recalls the most recently saved settings. This is useful if you make an error and want the **Preferences** most recently stored to diskette.

Date

This gadget sets the date. Set the date by clicking one of the numbers or the month, and clicking on the up or down arrow to change. The up arrow increments the number or month by one, and the down arrow decrements the number or month by one.

- Double-click the **Clock** icon in the **Workbench** window, if the clock isn't open right now.
- Click on the **Workbench** window to activate it, and double-click the **Preferences** icon.
- Click on the day, year or month you want changed; the Amiga highlights that object for a moment.
- Click the up arrow to increase the day, year or month; click the down arrow to decrease the day, year or month.

- When you have the date correctly set, move the pointer to the lower right corner of the **Preferences** window and click on the **Use** gadget.
- Click on the **Clock** window to see the new date.

Moving the day up from 31 to 1 increases the month by one. For example, Jan changes to Feb. Also, increasing the month from Dec to Jan increases the year by one.

Change Serial

This gadget sets parameters for data transfer through the serial port. Selecting **Change Serial** opens a new window, containing gadgets named **Baud Rate**, **Buffer Size**, **Read Bits**, **Write Bits**, **Stop Bits**, **Parity** and **Handshaking**. These settings depend totally on the device performing the transfer (see the device's manual for information). In general, you may never need this window.

Text

This gadget determines the number of characters per line. The **Text** gadgets allow either 80 characters per line or 60 characters per line. **Preferences** highlights the active gadget in a different color. The Commodore RGB monitor works best with 80 characters per line. Other monitors read more clearly when the Amiga is set to 60 characters per line.

- Click on the **Workbench** window and double-click the **Preferences** icon.
- Click on the opposite text gadget number from the one currently set.
- Click on the **Use** gadget.

The character widths change on the screen.

- Click on the **Workbench** window and double-click the **Preferences** icon.
- Click on the opposite text gadget number from the one currently set.
- Click on the **Use** gadget.

CLI

This gadget switches the **CLI** on or off for access from the **Workbench** window. **CLI** is the abbreviation for **Command Line Interpreter**. The **CLI** allows file access, command execution and many other commands not reachable from the **Workbench**. Chapter 4 discusses the **CLI** in detail.

- Click on the **Workbench** window and double-click the **Preferences** icon.
- Click the **Off** gadget next to the word **CLI**.

Workbench Colors

- Click on the Use gadget.

This area has no gadget name. Adjust your colors by using the four boxes and three *sliders* across the bottom of the Preferences window. Each color box matches a color on the screen. The sliders control the amount of red (R), green (G) and blue (B) in each color.

- Click on the **Workbench** window and double-click the Preferences icon.
- Click on the left hand color box, and look at the positions of the sliders.

The sliders change position as you click on each color box. These sliders show the degrees of red, green and blue in each color.

- Click on each of the color boxes, and look at the slider positions for each color box.

The sliders handle *primary colors*. The three primary colors in light are red, green and blue. Dragging the sliders left or right increases or decreases the amount of primary colors in the selected color.

- Click on the black color box.
- Move the pointer onto the white dot in the blue slider (the slider marked B), press and hold the left mouse button.
- Drag the blue slider all the way to the right.

The areas that were black change to blue. Note that the other two sliders are all the way to the left.

- Click on the Reset Colors gadget.

The Reset Colors gadget returns any color changes to the colors loaded in by the Workbench.

- Move the pointer onto the white dot in the green slider (the slider marked G), press and hold the left mouse button.
- Drag the green slider all the way to the right.

The black areas turn bright green.

- Move the pointer onto the white dot in the red slider (the slider marked R), press and hold the left mouse button.
- Drag the red slider all the way to the right.

The green areas change to bright yellow.

- Drag the blue slider all the way to the right.

The yellow areas change to white, and hides any white text.

- Click on Reset Colors.
- Try the above color change procedures with all four color boxes.

There are three ways to change colors back to their original settings:

1. Clicking on the Reset Colors gadget.
2. Clicking on the Reset All gadget. This sets every change back to the Workbench settings as they were from the factory.
3. Dragging the sliders to their original positions.

This gadget adjusts the time delay between a keypress and the key repeat. The Amiga waits for the amount of time you set here between your pressing a key and the first key repetition.

Key Repeat Delay

- Move the pointer onto the Key Repeat Delay slider.
- Press and hold the left mouse button.
- Drag the slider all the way to the left to Short.
- Click on the **Preferences** window's back gadget.
- Open the **Utilities** drawer and double-click on the Notepad icon.
- When the Notepad finishes loading, press and hold a key for a second.

The key begins repeating almost immediately.

- Click on the **Preferences** window.
- Move the pointer onto the Key Repeat Delay slider.
- Press and hold the left mouse button.
- Drag the slider all the way to the right to Long.
- Click on the **Notepad** window.
- Press and hold a key until the key starts repeating.

The Amiga waits a second or two before it repeats the key.

Key Repeat Speed

This gadget adjusts the speed at which keys repeat when held down. For example, if you press and hold a key in the Notepad, the Amiga waits a moment then prints the letter until you release the key.

- Click on the **P**references window.
- Move the pointer onto the Key Repeat Speed slider.
- Press and hold the left mouse button.
- Drag the slider all the way to the right to **F**ast.
- Click on the **N**otepad window.
- Press and hold a key for a few seconds.

The Amiga prints the same letter on the Notepad a number of times, even after you release the key. The computer stores the number of key repeats in a *keyboard buffer*. This is an area in memory where keystrokes are stored before the Amiga uses them. After you release the key, the Amiga continues printing the repeated letter until this buffer empties.

- Drag any windows out of the way of the **P**references window's Key Repeat Speed slider.
- Move the pointer onto the Key Repeat Speed slider.
- Press and hold the left mouse button.
- Drag the slider all the way to the left to **S**low.
- Click on the **N**otepad window.
- Press and hold a key for five or more seconds.

The letters repeat very slowly.

- Click on the **R**eset **A**ll gadget to restore the original settings.

Display Centering

This area has no gadget name. Dragging the corner shaped character moves the upper left corner of the screen.

- Move the pointer onto the corner shaped character in the box in the center of the **P**references window.
- Press and hold the left mouse button and drag the corner shaped character.

The corner shaped character moves, and so does the entire screen.

**Workbench
Interlace**

These gadgets set *interlace mode* on or off. Interlace mode is the Amiga's special setting for high-resolution graphics. This mode works with very high quality monitors only; most monitors only show a jittery picture. You may never need this mode.

- Click on the On gadget for Workbench Interlace.
- Click on the Save gadget.
- When the disk drive stops, hold down the <Ctrl> key and press the <Commodore logo> (or left <Amiga>) and right <Amiga> keys at the same time.

Watch the screen display.

- When the Workbench finishes loading, double-click the Workbench disk icon.
- Double-click the Preferences icon.
- Click on the Off gadget for Workbench Interlace.
- Click on the Save gadget.
- When the disk drive stops, hold down the <Ctrl> key and press the <Commodore logo> (or left <Amiga>) and right <Amiga> keys at the same time.
- Open the **Workbench** window by double clicking on the Workbench icon.
- Double-click on the Preference icon.

**Mouse
Speed**

This area has no gadget name. It sets the mouse pointer speed. Each number (1, 2 or 4) represents the number of inches of mouse movement to move the pointer one third of a screen.

- Move the pointer onto the Mouse Speed gadget (the vertical bar with the numbers 1, 2 and 4 displayed in it).
- Click on the 4 gadget and move the pointer around.

The 4 setting makes the pointer move very slowly.

- Move the pointer onto the Mouse Speed gadget.
- Click on the 1 gadget and move the pointer around.
- Click on the Reset All gadget.

**Double
Click
Delay**

This has no gadget name. It sets the time delay allowed between the first and second clicks of a double-click. It lets you adjust the time between the first click and the second click of a double-click.

- Move the pointer onto the Double-Click Delay gadget (the vertical slider with checkmarks next to it) and press and hold the left mouse button.
- Drag the slider to the bottom.
- Click on the **Utilities** window.
- Click once on the **Calculator** icon, wait a few seconds, and click again.

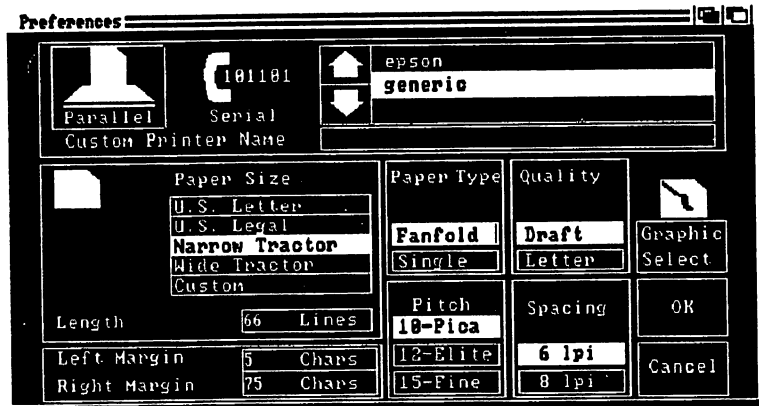
The bottom setting allows up to four seconds' delay between the first and second click.

- Close the **Calculator** by clicking on its close gadget.
- Move the pointer onto the Double-Click Delay gadget.
- Drag the slider to the top.

**Change
Printer**

This item lets you set the parameters that match the Amiga to your printer.

- Click on the **Change Printer** gadget.



**Figure 12:
Change
Printer**

The **Change Printer** screen opens. This window contains a number of options for setting printer parameters (more on these parameters below).

**Amiga
printer
support**

The Amiga includes drivers for the following printers: Alphapro 101, Brother HR-15XL, CBM MPS-1000, Diabolo 630, Diabolo Advantage D25, Diabolo C-150, Epson FX/RX series, Epson JX-80, HP LaserJet, HP LaserJet Plus, Okidata 292, Okidata 92, Okimate 20 and Qume Letterpro 20. There is also a generic printer setting.

- Click on the up arrow and down arrow in the top center of the Change Printer screen until you find the name of your printer.
- Click the OK gadget when your printer appears in the upper right window in highlighted text, or click the Cancel gadget to exit without changing printer parameters.
- If you own a printer not on the list, try the generic printer or Epson setting and click on the OK gadget.

If the printer still doesn't work see your dealer, new printer drivers are available for many different printers.

The Change Printer screen contains the following printer parameter options:

**Parallel/
Serial**

Click the printer icon for parallel printer output, or the telephone icon for serial printer output. Unless you have a laser printer, or your printer interface requires a serial port, the printer output port can stay set to Parallel. Very few printers use the serial port.

**Printer
Type**

Click the up arrow and the down arrow to look through the list of printers. The printer marked for selection appears in highlighted type in the center of this window. Custom is the name chosen for a custom printer.

**Paper
Size/
Length**

There are five paper sizes supported by the Amiga: U.S. Letter (8 1/2" x 11"), U.S. Legal (8 1/2" x 14"), Narrow Tractor (9 1/2" x 11"), Wide Tractor (14 7/8" x 11") and Custom. If you select Custom, you must also specify the Length of the page (default of 66 lines).

**Paper
Type**

The Amiga accepts two types of paper: Single and Fanfold.

Quality

The Amiga prints in two degrees of quality: Draft (low-quality) and Letter (high-quality).

**Left
Margin/
Right
Margin**

This area lets you adjust the margins. The numbers control the starting and ending columns or printed matter. Usually this setting will only need adjustment if you work with a typestyle smaller than the standard 10 characters per inch.

Pitch This controls the character size. You can choose **Elite** (12 characters per inch), **Fine** (15 characters per inch) or **Pica** (10 characters per inch). Click the desired field to select the pitch, if your printer supports that pitch. See your printer's owner's manual for that information.

Spacing This controls the spacing of lines on the page. Select either the 6 lpi (lines pre inch) or 8 lpi gadget.

Graphic Select This gadget opens the Graphic Select screen, which allows fine-tuning when printing graphics.

- Click on the Graphic Select gadget.

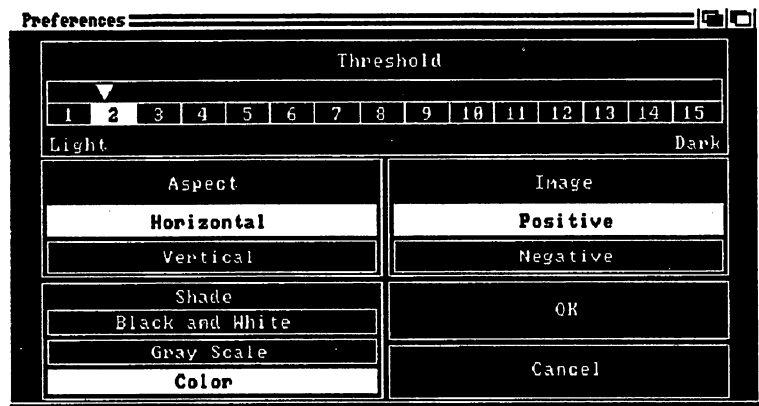


Figure 13:
Graphic Select

The **Graphic Select** screen opens. It contains the following gadgets:

Threshold This determines which colors are printed as black or white. The farther right the controller is positioned, more colors are printed as black. Usually the default setting of two works quite well. Dragging the triangle positioned above the number bar changes the **Threshold** setting.

Aspect This gadget sets either horizontal or vertical printing.

Shade Sets the printer shading for **Black and White**, **Gray Scale** (shades of gray simulating color) or **Color** printing (if your printer prints in color). **Black and White** often gives a better printout than **Gray Scale**.

Image Prints a hardcopy as **Positive** (black is black and white is white) or **Negative** (white becomes black and black becomes white).

- Click on the **OK** gadget to accept new values, or the **Cancel** gadget to exit without changes. Either gadget returns you to the **Change Printer** screen.

- Click on the OK gadget of the Change Printer screen to accept new values, or the Cancel gadget to exit. Either gadget returns you to the **Preferences** window.

Edit Pointer

This option lets you change the appearance of your mouse pointer. This is useful if you have your own ideas of how the mouse pointer should look.

- Click on the Edit Pointer gadget.



Figure 14:
Edit
Pointer

The **Pointer Editing** window appears. This window displays five copies of the mouse. Four of these copies are normal size, one is magnified.

- Click on the magnified pointer window's blue background. Look at the magnified pointer window, and the four duplicate windows to the right of the magnified view.

Note that a dot appears on each window at the location you clicked in the magnified view. This large window is where you edit your pointer.

- Click somewhere else in the blue background.

Each time you make a dot within the magnified window, the same dot shows itself within the smaller windows.

- Press and hold the left mouse button, and move the pointer around in the magnified view. Make the window as messy as you can.
- Release the left mouse button.
- Move the pointer onto the small black box just above the RGB sliders and click on it.

The sliders all move as far left as they can go. Also, a border appears around the black box, indicating that black is the currently active color.

- Move the pointer into the magnified view.

- Press and hold the left mouse button, and move the pointer in a circular motion.
- Release the left mouse button.

The pointer now draws black dots instead of red ones. In addition, the circle you made looks round in the smaller windows, although the drawing looks squared off in the magnified view. The many dots form lines and, of course, more or less smooth shapes when viewed in actual size. Your current cursor stays unchanged until you click on the OK gadget.

- Click on the `Restore` gadget.

This gadget changes the magnified pointer to its original form.

- Click on the `Clear` gadget.

This clears the magnified view, except for one dot.

This single dot is called the *point*. It marks that part of the mouse cursor which must be on the object for clicking or dragging.

You can move the point using the `Set Point` gadget.

- Click on the `Set Point` gadget.
- Move the pointer into the magnified view and click.

The point reappears at the spot you clicked.

Change colors using the sliders, the same way that you changed colors in `Preferences`. A border surrounds the currently active color.

Clicking the `OK` gadget returns you to `Preferences` window. If you make a mistake with the mouse, you can still fix it from `Preferences` by selecting the `Reset All` gadget.

- Draw in the magnified view—make the pointer as messy as you can.
- Click on the `OK` gadget to return to `Preferences`.
- Click on the `Reset All` gadget.

The pointer returns to its original appearance.

This gadget stores your changes to diskette. You should only do this on a copy of the `Workbench` diskette (not the original).

Save

Use

This gadget tells the Amiga to use these changes for now. You can always save these to diskette later on in this session if you want to keep them.

Cancel

This exits Preferences without any changes. The Amiga ignores your changes, and the Workbench screen reappears with original settings.

2.11 Other Workbench tools

The start of this chapter described the pulldown menus of the actual Workbench screen. This screen has three menu titles: **Workbench**, **Disk** and **Special**. These functions were partially explained in the preceding sections. However, some of their items still need more explanation, and a few things not on the menu need defining.

Reset

The last section demonstrated a *reset*. A reset is almost like switching the power to the computer off and on. All values are reset and the memory clears.

Make sure that you have a copy of the Workbench diskette in the internal drive, that all data is saved, and that the disk drive LED is OFF before trying this procedure.

WARNING: Never reset the Amiga while the disk drive is running. This could destroy data on the diskette.

- Press and hold the <Ctrl> key.
- Press and hold the <Commodore logo> (or left <Amiga>) key.
- Press the right <Amiga> key.

The screen goes blank, the drive runs and the Workbench screen reappears. This lets you restart the Amiga whenever you want.

At first sight your Workbench screen looks exactly as it always did. However, the name of the diskette icon says **Copy Of Workbench**, not **Workbench**. If it only says **Workbench**, you're still using the original diskette. Make a backup before you do anything else (see Section 2.5 for information on copying diskettes).

- Double-click the **Copy Of Workbench** diskette icon.

More Workbench

A window appears containing all the visible icons. Unlike the original Workbench diskette, you can save changes and programs to this diskette.

- Press and hold the right mouse button.
- Move the pointer onto the **Workbench** menu title.

- Select the **Close** item from the **Workbench** pulldown menu.

The **Workbench** window disappears.

Open/ Close

As mentioned previously, **Open** is an alternate method of opening files and icons. The **Close** item is an alternate method of closing files and icons.

- Click once on the **Workbench** diskette icon.
- Press and hold the right mouse button.
- Move the pointer onto the **Workbench** menu title.
- Select the **Open** item.

Duplicate

The **Duplicate** item from the **Workbench** menu copies files and entire diskettes, provided the destination diskette has enough free memory.

- Double-click the **Demos** drawer icon.
- Click once on the **Dots** icon.
- Press and hold the right mouse button.
- Move the pointer onto the **Workbench** menu title.
- Select the **Duplicate** item from the **Workbench** pulldown menu.

The drive runs, and an icon named **Copy of Dots** appears.

- Duplicate **Copy of Dots** following the above steps.

The copy of the copy receives the name **Copy 2 of Dots**.

If you want to make more than two backup copies, you must make each from the last copy made.

Rename

You may prefer to change the name **Copy 2 of Dots** to something else. Use the **Rename** item for this.

- Click on the **Copy 2 of Dots** icon.
- Select the **Rename** item from the **Workbench** pulldown menu.

When you have finished this, a requester appears on the screen. This requester contains a string gadget listing the name **Copy 2 of Dots**.

- Click on the string gadget.

- Press the key or <Backspace> key until the old name disappears.
- Type in your new name.

Only letters to the right of the cursor can be deleted with the key. The <Backspace> key deletes letters to the left of the cursor. If you make a mistake, you can delete with these two keys. Also, if you want to erase the name in the window completely, use the right <Amiga><X> key combination.

The <Cursor left> and <Cursor right> keys move the cursor inside the string gadget without deleting anything.

- Press the <Return> key.

The Amiga drive runs. The new name appears under the Copy 2 of Dots icon. You can change any icon's name with the Rename item, whether the object is a tool, project or diskette icon.

Info

The Info item allows you to read and insert all sorts of information on icons and programs.

- Click on the Copy 2 of Dots icon whose name you changed.
- Press and hold the right mouse button.
- Select the Info item from the Workbench pulldown menu.

The Info window appears for this icon. The window displays the name you assigned this program. Below Name is the file or program Type (in this case, a Tool). Type also lists the SIZE of the program in question. This file is 16896 bytes, or 7 blocks long (see the Appendices for a definition of block).

The last item is the STACK information. This item is of no interest to most users, but don't touch it. A wrong setup here could cause all sorts of problems, most of which can only be solved with a reset.

There is also a STATUS gadget. This states whether a file can be thrown away or not. A DELETABLE file can be thrown away. STATUS can also be either Read/Write or Read only, depending on the position of the write protection tab on the diskette. This status cannot be changed through the mouse. The Amiga will not delete an undeleteable file.

Another gadget has the name COMMENT. Here you can enter anything you like. This way you can give yourself small reminders.

- Click on COMMENT.

- Type in Copy of a demo program and press the <Return> key.

There is a Save gadget and a Quit gadget. Selecting Save stores all changes to the Info window. Selecting Quit exits the window without making changes. The third method of exiting the Info window is the Close gadget.

- Click on the Close gadget of the Info window.

The normal Workbench screen reappears. If you call Info for one of the drawers, the Type is Drawer.

If you call Info for texts made with Notepad, DEFAULT TOOL contains Workbench 1.2: Utilities/Notepad.

- Open the Utilities drawer and double-click on the Notepad icon.
- Do not change the size of the Notepad.
- Select the opal 12 font from the Fonts pulldown menu.
- Type a short note in the Notepad and save it under the name Test.
- Select Quit from the Project pulldown menu.
- Click on the Test icon.
- Press and hold the right mouse button.
- Select the Info item from the Workbench pulldown menu.
- Scroll through TOOL TYPES using the up and down arrows until you find the line Font=opal.12
- Delete opal.12 using the <Backspace> (<←>) key.
- Type ruby.15 in its place.
- Click on the Save gadget.
- Double-click on the Test text icon.

Now all the text that previously appeared in opal.12 should now display in ruby.15.

The Discard item performs the same task as the Trashcan icon.

Discard

- Activate one of the two copies of Dots.

- Select the **Discard** item from the **Workbench** pulldown menu.

A requester appears:

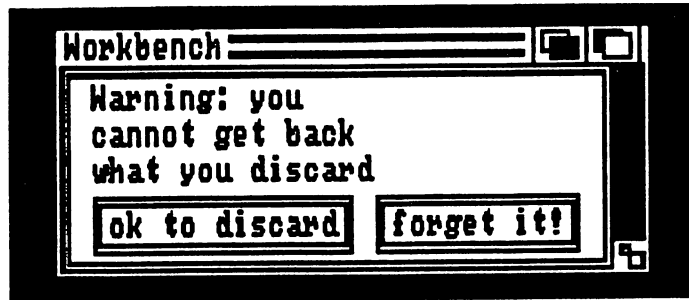


Figure 15:
Warning:

Discard is a delete function which cannot be undone. If you accidentally select **Discard**, click on the **forget it!** gadget

- Click on the **ok to discard** gadget to proceed.

The icon disappears and the disk gauge drops a little.

There is still a copy of **Dots** in the **Demos** window. Here is a different way to move icons.

- Drag the copy of **Dots** icon outside the **Demos** window.
- Place it somewhere on the **Workbench** screen.

The copy of **Dots** disappears from the **Demos** window and reappears somewhere on the **Workbench** screen.

- Close the **Demos** window.

The copy of **Dots** stays on the **Workbench** screen.

- Double-click copy of **Dots**.

You can remove files, programs or other things from the windows in which they belonged, and open them outside the windows. This is a practical feature. For example, say you use the **Notepad** very frequently. Each time you must open the **Utilities** drawer to open **Notepad**. Instead, open the **Utilities** drawer once, drag the **Notepad** and texts onto the **Workbench** screen, and you're all set.

Another advantage to movable icons is easy file copying.

WARNING:

Single drive Amiga owners must exchange diskettes often when copying. Remember to remove diskettes from the drive when the disk drive LED goes out. Even if the requester prompting you to take a diskette out of the drive appears, make sure that all the drive operations have finished. Never take a diskette out of a drive while the drive is in operation.

- Insert a formatted diskette into your drive.

An icon appears on the Workbench screen named **Empty**.

- Drag copy of **Dots** onto the **Empty** icon.

The Amiga requests that you insert your Workbench diskette.

- Insert the requested diskette.

Amiga now gets the necessary information from copy of **Dots** on your Workbench. A hint for those with two drives: Simply insert the **Empty** diskette into the second drive and drag the copy of **Dots** icon onto the **Empty** icon.

Single drive users:

Remember the warning above when copying diskettes, otherwise the data on your **Empty** diskette can be destroyed. Once the copy procedure finishes have a look at the **Empty** diskette window.

- Open the **Empty** diskette icon.

Somewhere in the window is the copy of **Dots** icon just copied. The original copy of **Dots** still appears on the Workbench screen because it was only copied, not moved. You can also move icons from one window to another.

- Click on the **Workbench** window to activate it.
- Open the **Empty** drawer in the **Workbench** window.

If the Workbench diskette is not in the drive, the Amiga requests it.

- Drag the **Clock** icon into the **Empty** window.

The drive runs, and after a short while the **Clock** icon disappears from the **Workbench** window and reappears in the **Empty** window. If you close the **Empty** window, the **Clock** icon disappears as well.

- Drag the **Clock** icon back into the **Workbench** window.

When you drag an icon from one diskette window into another diskette window, the Amiga copies the program and icon. You now have a number of copies of **Dots**. It's time to dispose of some of them.

- Take a copy of **Dots**.

- Drag it onto the Trashcan icon.

Make sure that the Trashcan icon is in the same window as the Dots file. This means that if you want to delete an icon from the Workbench window, then you must place this icon onto the Trashcan in the Workbench window.

Empty Trash

The disk drive runs, and the copy of Dots disappears. The Trashcan stores the file in another area of the diskette, before you discard the file using the Empty Trash item from the Disk menu (see Section 2.8).

Special

- Activate the Workbench diskette icon.
- Select the Special pulldown menu.

The Special menu has five items. Most of these items are ghost items right now.

Clean Up

This item puts icons in a selected drawer or diskette into neat order.

- Double-click the Workbench diskette icon.
- Double-click the System drawer to open it.
- Drag a few icons to different places in the System window.
- Click once on the System drawer icon to activate it.
- Select the Special pulldown menu.
- Select the Clean Up item, and watch the System window.

The Amiga automatically tidies up the System window. You can also clean up entire diskettes:

- Double-click the Workbench diskette icon.
- Drag a few icons to different places in the Workbench window.
- Click once on the Workbench diskette icon to activate it.
- Select the Special pulldown menu.
- Select the Clean Up item, and watch the Workbench window.

Remember that Clean Up works only on active diskettes or drawer icons.

- Open the Utilities drawer.
- Drag the icons to different places in the Utilities window.
- Select Clean Up from the Special pulldown menu.

Nothing happens, because the Utilities drawer needs activation. An active window is not enough.

- Click on the Utilities drawer to activate it.
- Select Clean Up from the Special pulldown menu.

This item redisplay the last error made. If this item appears in ghost print, then there is no error. Here's a self-made error to demonstrate this item:

Last Error

- Drag the Workbench diskette icon up to the top of the Workbench screen.

The screen flashes, the Workbench diskette icon reappears at its old location, and the title bar displays the message Icons cannot be moved into this window.

- Click somewhere on the Workbench screen.

The message disappears. Suppose you didn't see that error message, and wanted to know what it said:

- Select Last Error from the Special pulldown menu.

The error message reappears on the title bar, and reappears every time you select Last Error. The message changes when another error occurs.

Redraw

This book mentioned Redraw in Section 2.2. If for any reason the screen needs restoration, select Redraw from the Special pulldown menu. The original screen reappears. This is one of the few Amiga items that can be accessed at any time.

Snapshot

The Snapshot item takes a "screen photo." This is easier to demonstrate than describe:

- If the Utilities drawer is still open from above, close it.
- Double-click the Utilities drawer icon.

Extended selection lets you activate several icons at the same time. Simply press down one of the <Shift> keys and click once on every icon you want selected.

- Press and hold a <Shift> key.

- Select all the icons inside the **Utilities** window.
- Select the **Snapshot** item from the **Special** pulldown menu.

The disk drive runs, and nothing appears to happen.

- Close the **Utilities** window, and reopen the **Utilities** drawer.

Everything looks in order. **Snapshot**, however, lets you determine the positions of the individual icons within a window, as well as the window size and the point on the screen at which it appears.

- Reduce the size of the **Utilities** window as much as possible using the sizing gadget.
- Drag the **Utilities** window to the lower right corner of the Workbench screen.
- Click once on the **Utilities** drawer icon in the **Workbench** window.
- Select **Snapshot** from the **Special** pulldown menu.
- Close and reopen the **Utilities** window.

Snapshot ensures that the window reopens at the size and location at which you set the window when you selected **Snapshot**. It's unnecessary to select all the icons. Most of them are usually correct, and only one may need moving to a better position. The fewer the icons you select and move into position, the quicker **Snapshot** executes.

Version

This item is of interest only if you want to know the version number of your Workbench diskette.

- Select the **Version** item from the **Special** pulldown menu.

Version numbers of Workbench change as the developers of the Amiga improves the Workbench programming. As long as your version number is higher than 33.56, there should be no problem.

RAM disk

The Amiga 500 Workbench produces a diskette icon named **RAM disk**. This icon behaves like a normal floppy diskette, with three differences:

- 1) It is incredibly fast, much faster than floppy or hard diskettes.
- 2) It is temporary; anything saved or copied to the **RAM disk** disappears once you turn the Amiga off, unless you save the **RAM disk's** contents to a floppy diskette or hard disk.
- 3) You cannot format a **RAM disk** with **Initialize**.

- 4) RAM disk capacity is small compared to floppy diskettes.
- Drag the **Clock** icon from the **Workbench** window to the RAM disk icon.
 - Double-click on the RAM disk icon.
 - Double-click the **Clock** icon in the RAM disk icon.

See how quickly the RAM disk opens the window and starts the **Clock**; much faster than normal diskettes. Notice, also, that the disk gauge on the left of the **RAM disk** window is full.

- Drag the entire **Demos** drawer from the **Workbench** window to the **RAM disk** window.
- Watch the memory bar on the top of the **Workbench** screen.

The disk gauge still says the RAM disk is full, but the **Demos** drawer is copied to the RAM disk. The Amiga's RAM disk is always full, but it's dependent on the computer's memory; the RAM disk is *virtual*. That is, *RAM* (Random Access Memory), the memory used for your programs and working space, supplies the space needed for the RAM disk—as much as is available.

There is a disadvantage to the RAM disk, however. The more memory occupied by the RAM disk, the slower programs run.

Summary

These are the advantages and disadvantages of the RAM disk: It is extremely fast, but it takes up large amounts of RAM. Unless you have memory expansion built into the Amiga, use the RAM disk sparingly. It makes sense to use the RAM disk when copying diskettes on a single-disk system, since it saves diskette changing.

2.12 Amiga additions

This section talks about hardware changes that you can eventually make to your Amiga configuration. There are quite a few pieces of hardware available for improving your Amiga.

Modulator

The modulator mentioned in Section 1.1 allows you to connect your Amiga to a color television through the RGB output jack on the back of the Amiga. The one end of the modulator's cable plugs into the modulator, while the other end connects to the television's antenna input.

The modulator has three connections:

1. **RF-Out** sends the combined audio and video signals to the television.
2. **Video Out** connects the modulator to a color video recorder. This lets you record special effects and animation onto videotape from your Amiga.
3. **Audio In** transmits the Amiga's sound system to the television, monitor or video recorder. You remember working with the Y cable in Chapter 1. Instead of plugging the single end of the Y cable into a monitor, you plug it into the Audio In jack.

Memory expansion

One alert you may see the message `Not Enough Memory`. This occurs at different times on a 512K Amiga. The Amiga 1000 came with 256K, so this happened much more often on the 1000 models. More and more Amiga programs come on the market requiring 512K, so if you own an Amiga 1000, memory expansion is a necessity.

For Amiga 500 users, there's another advantage to purchasing more memory. The memory expansion currently available for the Amiga 500 allows more use of the RAM disk, and a permanent clock. Since this expansion is battery-powered, the clock stays on constantly.

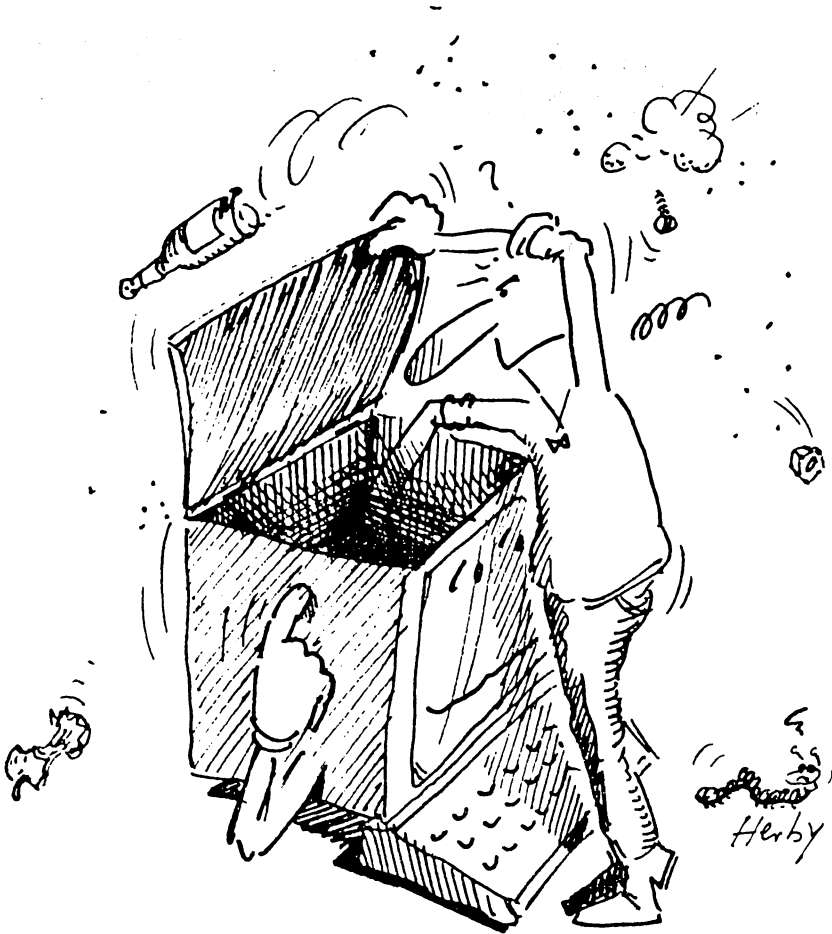
Memory expansion can be added by your local dealer. The expansion board plugs into the housing underneath the Amiga 500, and the Amiga 1000 accepts an expansion board on the front of the central processing unit.

NOTE:

Some software may not run with the added memory on the Amiga 500. If this happens, use the program `NoFastMem` from the System drawer before running the problem program. This program disables the memory expansion in the Amiga 500.

Disk drives

A external disk drive makes copying, initializing and program and file storage much easier. See Section 1.3 for information on connecting an external disk drive.



3

AmigaBASIC

3. AmigaBASIC

AmigaBASIC is a computer language—an implementation of the *BASIC* language. BASIC (Beginner's All-purpose Symbolic Instruction Code) is only one of the many computer programming languages available, and is slower than *C* or *assembly language*. AmigaBASIC, however, can easily be learned by a new user, and runs programs fast enough for most people.

This chapter prepares you for your first contact with the AmigaBASIC language. However, don't expect a complete tutorial of BASIC. There isn't enough room in this book to include a complete guide to BASIC for the beginner. Just consider the fact that Abacus' *AmigaBASIC Inside and Out* is over 500 pages long. If you're interested in a BASIC book that will teach you the language to advanced levels, *AmigaBASIC Inside and Out* is the book for you.

This chapter covers three major subjects. Section 3.1 introduces the demo programs on the AmigaBASIC diskette. These will give you an idea of what AmigaBASIC can do. Many of these demo programs were written by Commodore development personnel, and they demonstrate the Amiga's extensive capabilities.

Sections 3.2-3.4 describe writing programs in AmigaBASIC. Even the simplest listing becomes impossible if you don't know where and how to enter it. This applies especially to the Amiga, which is very different from other computers' BASIC versions. This second part gives you enough background to enter AmigaBASIC listings from computer magazines or books.

The remaining sections of this chapter contain short and easily entered programs involving graphics, sound and animation. These programs give you a chance to understand the program structure in your AmigaBASIC manual. The author recommends that you study that manual and its sample programs **before** you try the programs in Sections 3.5-3.10. Figure out the major program logic on your own using this chapter, the AmigaBASIC manual and the short explanations in the listings.

If you discover that you won't get much further in BASIC without help, many books on the subject of AmigaBASIC can help.

The main thing to keep in mind during this chapter is: Programming is the only way to learn programming.

3.1 The Extras diskette

The diskette named Amiga Extras contains AmigaBASIC and more.

- Insert the Extras diskette into the drive.

As usual, a diskette icon appears on the **Workbench** window. It has the name **Extras**.

- Double-click the **Extras** diskette icon.

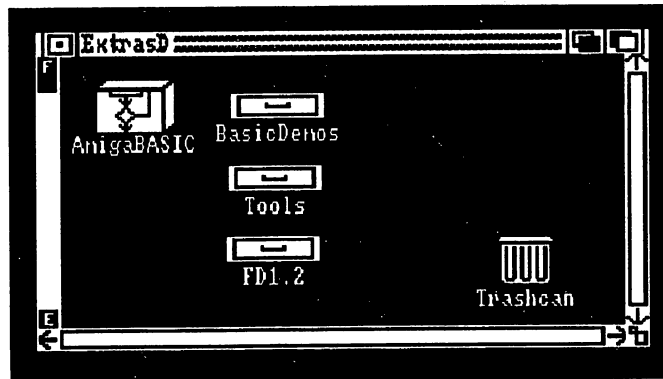


Figure 16:
Extras
window

All the things you see in this illustration should be on your Extras diskette. The contents of this diskette change occasionally at the factory, so it's hard to say exactly what your particular copy of the Extras diskette may have. However, only two icons on this disk are of real importance to us right now: **AmigaBASIC** and **BasicDemos**. The drawer labeled **FD1.2** is also extremely important. None of these files are of direct use to you, but the programs contained in the **BasicDemos** drawer won't function without them. Never experiment with the **FD1.2** drawer.

Usually the rest of these icons become interesting once you have experience in programming **AmigaBASIC**.

- If you haven't already done so, please make a backup copy of the Extras diskette.

See Section 2.5 for information on **Diskcopy**. This chapter assumes that you have a copy of the Extras diskette.

This window contains several icons. There is a Trashcan icon, which appears on all Amiga diskettes. There are also two drawer icons. One has the name `BasicDemos`, and the other has the name `Tools`.

- Double-click the `BasicDemos` icon.

Your disk drive runs, and a window named `BasicDemos` appears.

- Enlarge the `BasicDemos` window so that you can see everything on it.

BASIC icons

A number of icons with dog-eared pages appear on the screen. Some of these icons look like typed pages, while others have drawings on them. The typed pages are data files generated by and read from a program. Some of these are function libraries that allow AmigaBASIC to do even more than it already can. As a beginner you really don't need to know much more about them. See your Amiga's BASIC manual for more information.

- Double-click the `Music` icon in the `BasicDemos` window.

If your Amiga is near your stereo system, you can connect the Amiga sound outputs to the auxiliary inputs of the stereo. To write something like this you almost have to know more about music than programming. But the most important thing about this program is that it is written in BASIC.

- Close the `Music` window by clicking on its close gadget.
- Double-click the `LoadILBM-SaveACBM` icon in the `BasicDemos` window.

Interchange File Format

Most of the directions are on the screen already. You may wonder what ILBM files are. All you really need to know for now is that a few inventive programmers created a standard format for saving and loading data. This format, known also as the *Interchange File Format (IFF)*, is often a critical factor in drawing and painting programs, since it allows you to interchange drawings between programs. IFF pictures can even be used in animation programs! This makes you, the consumer, independent of individual manufacturers. If you like manufacturer X's drawing program, but prefer manufacturer Y's animation program, they will still be just as compatible as if you has bought both programs from the same company. Just be sure the programs use IFF format.

Also, you can use the IFF pictures created by these programs in your own BASIC programs. Back to the original topic. If you want to write a game that uses pictures made with another graphic program, you can use one of the programs on the Extras diskette designed for transferring graphics from one program to another.

- Enter `Heart.ILBM` and press the `<Return>` key at the `ILBM filespec?` prompt.

- Press the <Return> key at the prompt `ACBM-filespec?`

The disk drive runs, and loads pictures of the Jarvik-7 artificial heart and a natural heart. A simple drawing program created this picture. This gives you an idea of what you can achieve after you've worked with your Amiga for a while.

NOTE:

The movement you see here is *cycle animation*, not true animation. Almost every Amiga drawing program in existence has this feature.

The program shows the picture for only 20 seconds. To change this, you'd have to change the program itself. You're not advanced enough yet to do that, and this is one of the more complicated programs on the diskette.

The functions of the other demos you'll find here become more interesting once you get more involved in AmigaBASIC. If you'd like to know what each program does, load the file named `List-ME`. It gives you details about the programs not described here. All of the demos start with a double-click, just like any other Amiga program.

Screen

This is a good demonstration of the Amiga's object graphics and color. If you change the window's size, the sizes of the squares change proportionately. The Amiga selects colors at random.

NOTE:

It is possible that while you run these demos, a program stops at a certain point. Then the Amiga beeps, and a requester saying `Illegal function call` or a similar error message appears. A window labeled `LIST` appears, and another window may appear as well.

- Click the OK gadget in the requester.
- As soon as the close gadgets of the two windows become visible, click on them.

The normal Workbench screen reappears, and you can restart the same program or start another program.

ObjEdit

ObjEdit is the abbreviation for *Object Editor*. This program can be used to create *bobs* and *sprites* on the Amiga. Bobs and sprites are graphic shapes that you can move across the screen quite easily using BASIC commands without disturbing the background.

NOTE:

When you work with ObjEdit, be sure to save your work at regular intervals.

Library

This program shows that different fonts, font sizes and timesteps can be called in an AmigaBASIC program. However, this requires a certain amount of programming knowledge, as with most of these demo programs. Clicking on the close gadget ends the program.

Speech

The Amiga can also speak. The **BASICDemos** window has a demo program for this as well.

- Double-click the Speech icon in the **BASICDemos** window.

The Amiga says, Please--type what you want me to say. A string gadget appears, into which you type a sentence.

- Type in any sentence and press the <Return> key at the end of your input.

The voice quality changes when you adjust the sliders underneath the string gadget. These parameters are for voice quality:

Pitch	The voice's pitch (frequency).
Inflection	Type of vocal inflection.
Rate	Rate of speed for speech.
Voice	Voice gender.
Tune	Sets changes in voice quality.
Volume	Loudness.

The best way to find out the uses for these controls is to use them.

- Type in the sentence **I'M WORKING WITH WINDOWS** and press the <Return> key at the end of your input.

Now let's go through the controls one by one.

- Click on the right of the **Pitch** slider, or drag it all the way to the right.
- Press the <Return> key.

The Amiga voice now sounds high.

- Set **Pitch** to the level you like best.
- Click on the right of the **Inflection** slider, or drag it all the way to the right.
- Press the <Return> key.

This moves all the way to the right or all the way to the left only. The right hand setting makes the Amiga speak with no inflection.

- Click on the right of the **Rate** slider, or drag it all the way to the right.

- Press the <Return> key.
- Once you've heard how fast the Amiga can say things, set the slider to a speed you can understand.
- Click on the right of the `Voice` slider, or drag it all the way to the right.
- Press the <Return> key.

This slider can be all the way left or all the way right only. It controls the gender of the voice (male or female).

- Click on the left of the `Tune` slider, or drag it all the way to the left.
- Press the <Return> key.

The `Tune` slider alters the pronunciation speed of individual letters.

The last slider, the `Volume` slider, turns the volume up or down. Remember that its maximum is only as loud as the monitor's volume setting.

Each parameter which you set with the sliders can be operated with BASIC commands (more about this later).

- Click on the close gadget to close `Speech`.
- Double-click on the `Picture` icon.

An oval forms in the upper left corner of the screen, and nothing else seems to happen.

- Move the pointer onto the screen and press the left mouse button.

The upper left corner of the picture appears at the pointer's current location. Keeping the left mouse button pressed lets you drag the picture around.

The programs behind these demos are often not so difficult to write as they might seem. This chapter is here to help you in the first steps of BASIC programming.

- Click on the `Picture` window's close gadget.
- Close the `BASICDemos` window.

Demo

This program demonstrates some neat color graphics. The Amiga opens four windows each drawing seperate graphics

Don't worry if your Extras diskette does not contain all of the programs mentioned. The Extras diskette is extra and does change. See the README and list me files on the diskette for more information.



3.2 Starting AmigaBASIC

Now that you have seen more or less of everything in the **Extras** window, it's time to start AmigaBASIC.

- Double-click the AmigaBASIC icon.

The disk drive runs, and two windows appear on the screen: The **LIST** window and the **BASIC** window.

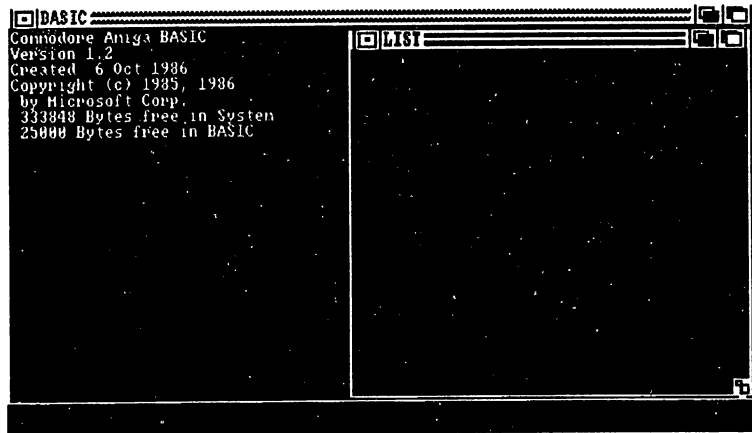


Figure 18:
BASIC and
LIST
windows

- Click once on the **BASIC** window.

In principle these windows work just like the **Workbench** window. Move the pointer anywhere in the **BASIC** window and click once. If you did this right, the Amiga confirms it by displaying **OK**.

The **Workbench** is in the background. If you want to see it, you only have to close the **LIST** window and the **BASIC** window. For now, though, keep the **BASIC** and **LIST** windows open.

3.3 First steps in BASIC

This section covers the principles of BASIC programming, starting with a few basic rules, and takes you up to the first programs. Each command appears in the left margin of the text, followed by the command's description.

COMMAND

For example, this is the format for a command and its description. Any program lines you should type in appear indented, in a typewriter-style font.

```
PRINT "This is a sample program line."
```

The **BASIC** window has several functions. First, it displays everything which a program produces as output.

- Close the **LIST** window.

The **BASIC** window automatically becomes active. After starting AmigaBASIC, a certain text appears in the **BASIC** window. It gives the BASIC name (Commodore AmigaBASIC), its version number, when it was made, the developer (Microsoft Corp.), and the number of *bytes* free in the system and in BASIC (see the Appendix for a definition of bytes).

- Enter **CLS** from the keyboard and press the <Return> key.

You can type these letters in either uppercase or lowercase lettering. Pressing the <Return> key after a command *executes*, or performs, that command.

CLS

CLS (CLear Screen) clears all text and graphics from the **BASIC** window. Perhaps you're wondering why you need to press the <Return> key. AmigaBASIC is an *interpreted* language. The interpreter in AmigaBASIC takes your BASIC commands and translates them into a form the Amiga understands. Pressing <Return> sends the command to the interpreter.

The language the Amiga understands is one of numbers. Two numbers, to be exact—0 and 1. Computers understand two conditions; power on and power off. Each time you input **CLS**, the interpreter translates it into a set of *binary numbers* (numbers in base 2), which looks something like 00000111010011001010011010101.

- Type in My name is Napoleon.

Nothing happens. The Amiga accepts this. Now tell the BASIC interpreter to translate this sentence:

- Press the <Return> key.

The Amiga beeps once, changes the screen color and displays an *error requester* which says Undefined Subprogram, or something similar.

- Click on the OK gadget in the error requester.

When you press <Return>, the BASIC interpreter looks to see whether or not `My name is Napoleon.` is a BASIC command. Since there is no such command, then the Amiga gives an error message and tells you why it can't execute this line. This error requester disappears when you click on the OK gadget.

When you entered the sentence above, you noticed the small orange box which moved along as you typed. This is the *BASIC cursor*, which shows your position on the screen.

PRINT

PRINT performs output in the **BASIC** window. The word comes from the early days of computing, when output went directly to a printer instead of a screen.

- Enter the line:

```
PRINT Christian Spanik
```

- Press the <Return> key.

The Amiga displays two zeros. The Amiga assumed here that Christian Spanik was a pair of *variables*. Variables are letters or even combinations of letters given values. Since neither Christian nor Spanik contains a number, the Amiga returned two zeros.

If you want the Amiga to display exactly what you input, then you must enclose the words in quotation marks. Any text you put between quotation marks appears on the screen.

- Enter the line:

```
PRINT "Christian Spanik"
```

- Press the <Return> key.

The words Christian Spanik appear in the **BASIC** window.

Enter your own name if you prefer.

You can also calculate with PRINT:

- Enter the line:

```
PRINT 10/2¶
```

Note the paragraph marker (¶) at the end of this line. Any time you see this marker, press the <Return> key. This format is used for the rest of the book.

The Workbench Calculator showed you that the standard character for computer division is the slash (/), instead of the normal division sign (+). The Amiga displays the result of 10/2 on the screen.

NOTE:

There is a difference between 0 (zero) and O (the letter O) inside the computer. Make sure that you always type <0> for zero and <O> for the letter O.

The result of our calculation is 5. If you wanted 10/2 and not 5 displayed, the line would read `PRINT "10/2"¶`. The output reproduces the figures entered between the quotation marks. Now combine both types of output:

- Enter the line:

```
PRINT "10/2="10/2¶
```

? is the abbreviation for PRINT.

- Enter the line:

```
? "10 divided by 2 is"10/2¶
```

You see it works just the same. And something more, the text between the quotation marks can be quite free, whatever you put there. You can even display the + in quotation marks as a sign for division, press the <Alt> <Shift> and <x> keys to display this character. Remember, though, to use the slash (/) for the calculation itself.

Direct mode

Entering commands which the computer carries out at once is called *direct mode*. You can do much more than that in direct mode, though.

X and Y are universal variables in math. They crop up again and again wherever two variables are needed.

- Enter the line:

```
?X/Y¶
```

The Amiga beeps once, changes the screen color and displays an *error requester* which says *Division by Zero*.

Division by zero cannot be done, by you or by a computer. The computer read the above line as: Divide X by Y.

- Click on the OK gadget in the error requester.

The Amiga responds with OK.

Scrolling

By the way, if you are slowly running out of space at the bottom of the window, don't worry. AmigaBASIC allows you to *scroll*. When there is no more room at the bottom, the Amiga lets one of the lines at the top disappear, and goes on using the space made available at the bottom. This is called scrolling. In direct mode, the line rolls up out of the top of the screen, but that doesn't matter.

Like the example above (PRINT Christian Spanik), the Amiga views X and Y as variables. Try division with combinations of letters:

```
?Christian/Spanik
```

The Amiga again displays an error requester, telling you that you tried to divide by 0.

AmigaBASIC assigns each variable which doesn't have a value of 0. This means that BASIC reads ?X/Y as "Print 0/0." Christian and Spanik were read as variables above, and AmigaBASIC assigned them zeros. If you want to check the value of each variable:

```
?X:?Y:?Christian Spanik
```

LET

All four variables come up 0. You can change this by assigning values to variables. There are two ways to assign values to variables, but the most common method is with LET.

```
LET y=5
```

Make sure that there is a space between the LET and the y. The Amiga responds with OK. When an OK appears, this means that AmigaBASIC accepted this input.

- Enter the line:

```
?x/y
```

This time the result is 0.

- Enter the following:

```
LET y=2
LET x=10
?x/y
```

You can calculate using these placeholders.

- Enter the following:

```
let christian=100¶
let chris=50¶
?(x/y)+(christian-chris)*y*x¶
```

The parentheses force the Amiga to process the individual math functions in the right order. The result is 1005.

By now it should be clear that the direct mode also has its disadvantages. It's very good for short statements, but it just doesn't work when more complex things are involved. Plus, you can't make corrections in direct mode; incorrect lines have to be retyped. Finally, once a line scrolls up past the top of the **BASIC** window, it's gone.

Program mode

The **LIST** window lets us operate in *program mode*. That is, you can enter programs in the **LIST** window, correct them, look through the entire program, and scroll through program code.

- Press and hold the right mouse button.

A pulldown menu bar appears at the top. This menu bar has four titles:

```
Project      Edit      Run      Windows
```

- Select the **Show List** item from the **Windows** pulldown menu.

The **LIST** window reappears and becomes active. The **BASIC** cursor appears in the **LIST** window.

- Enter:

```
? "Hello"¶
```

- Press the <Return> key.

The text doesn't appear in the **BASIC** window, but the "?" turns into the word **PRINT**. The **BASIC** cursor moves down one line. Still no output.

- Enter:

```
print "Hello"
```

- Do not press the <Return> key yet.

The word **print** remains in lower case.

- Press the <Cursor up> key.

print becomes **PRINT**, and the remainder of the text stays as it was. The program still hasn't run.

Program mode is the mode in which you write a program. The lines above are a simple program.

You may have already looked at some books on BASIC programming. Most BASICs use line numbers to help the computer process commands in order. AmigaBASIC doesn't use line numbers.

The Amiga doesn't need or use line numbers because it has a separate window for entering programs: the **LIST** window. A normal BASIC listing could look like this:

```
10 PRINT "Hello"
20 PRINT "Hello"
```

Anyone who knows a little about BASIC knows that this program prints `Hello` on the screen twice.

The **BASIC** window is also called the *output window*, which is a window used for output (display).

You now, therefore, have two windows; one for output, and one for entering the program lines.

- Activate the **BASIC** window.

The **BASIC** cursor reappears, and you can again make direct mode input.

- Enter the following in the **BASIC** window:

```
RUN
```

The **LIST** window disappears and the word `Hello` appears twice on the **BASIC** window.

- Enter the following in the **BASIC** window:

```
RUN
```

The screen clears and the word `Hello` appears twice on the **BASIC** window.

RUN

BASIC programs have a command that runs, or executes, them. The word is **RUN**. You can now enter **RUN** as often as you like. The Amiga processes your program whenever you enter this command.

In summary, write programs in the **LIST** window. The computer automatically notes the commands and their sequence there. Carry out commands directly by writing them in the **BASIC** window.

After the start of the program your listing vanishes. But you now know how to retrieve it.

- Press and hold the right mouse button.
- Select `Show List` from the `Window` pulldown menu.

The `LIST` window appears on the screen.

- Press and hold the right mouse button.
- Move the pointer to the `Window` menu title.

Keyboard shortcuts

Note that a `A` and an `L` appear to the right of the `Show List` menu item. You remember keyboard shortcuts from your work with the `Notepad` in Chapter 2. `A` stands for the right `<Amiga>` key; the `L` is quite simply the `<L>` key.

- Type `RUN` or `run` in the `BASIC` window and press the `<Return>` key.

You can use uppercase or lowercase letters, or both in combination. As soon as the program runs, the `LIST` window disappears. Now you can try the keyboard shortcut.

- Press and hold the right `<Amiga>` key and press the `<L>` key.

Immediately the listing appears again. Sometimes it's more practical to work with keyboard shortcuts than with the mouse. The mouse can be used at any time.

The `LIST` window and the `BASIC` window now stand next to each other on the screen. Let's look more closely at this first `BASIC` program.

There is nothing in the `LIST` window but `PRINT "Hello"` twice. Just `Hello` appears twice in the `BASIC` window. The listing appears in the `LIST` window, while the `BASIC` window shows the results of the program.

- Press and hold the right mouse button.
- Select `Show List` from the `Window` pulldown menu.
- Activate the `LIST` window by moving the mouse pointer into the `LIST` window and pressing the mouse button.

Your `BASIC` cursor should now be somewhere within the `List` window. It is not easy to see at first.

*Cursor keys
and editing*

Working on a BASIC program consists of two parts: writing and correcting. This paragraph is about the correction phase, or *editing*. The <Return> key is important when programming in most versions of BASIC, since it ends a line of input and sends the line to the interpreter. In the AmigaBASIC LIST window, all you need to press is a cursor key when editing to accept an edited line. There are a few exceptions to this rule, which are discussed below.

You have already learned one of the basic functions of the editor: moving the BASIC cursor by using the cursor keys.

- Activate the LIST window.
- Press and hold the <Cursor down> key.

Soon the Amiga beeps, and the screen changes color. The reason for this is that you cannot move the BASIC cursor past the end of a program with the cursor keys. Only the <Return> key allows that, since it extends to the end of the program.

The computer has to know a program's length and ending point. Each time you need more space, you must tell the computer by forming a new line (pressing the <Return> key). This saves space when later saving the program to diskette.

- Position the BASIC cursor directly below the last line.
- Type in:

```
? "Hello"¶
```

The Amiga now displays ? "Hello" three times on the LIST window. Run this program again to check this out. This time, don't type RUN in the BASIC window. Instead, use the Start item from the Run pulldown menu:

- Press and hold the right mouse button.
- Select the Start item from the Run pulldown menu.

If your LIST window is active when you select Start, then the following happens: The Amiga displays Hello in the BASIC window three times, the program ends and the LIST window activates again. Up to now the listing disappeared as soon as the program ran. If the BASIC window is active, the LIST window disappears and remains hidden. If the LIST window is active, it reappears after the program executes. You'll see the advantages of this in the course of the next few pages.

The Start item of the Run pulldown menu also has a keyboard shortcut: right <Amiga><R>.

Copying text

Assume you want the program to display `Hello` 10 times in the **BASIC** window. You have two choices: You can type the same sentence in seven more times, or you can use the editor. The editor *copies* program text. Go to the **Edit** pulldown menu and select the **Copy** item. This item allows you to copy anything that is selected within the shaded area.

Activating so far has meant clicking an icon. With Amiga's BASIC editor, this technique can mark and use certain parts of the screen, even for programming and editing programs.

- Move the mouse pointer to the left of the `P` in the first line.
- Press and hold the left mouse button.
- Drag the pointer past the last line.

Marking blocks

Note that parts of the **LIST** window are now a different color. This color change is called *highlighting*, and this process is used in *marking blocks* for editing. You could have marked only one line or word as easily as you marked the entire program. If you make a mistake, click again somewhere to get rid of the highlighting. If you only want to mark a single word, double-click on that word. Try this with `PRINT` or `Hello` in your listing.

There is a second method of marking whole blocks, which is somewhat more accurate:

- Move the pointer to the required position and click once.

Make certain that the BASIC cursor which then appears is in the right place (before the first letter to appear inside the marking).

- Move the cursor to the position after the last letter to appear inside the marking.
- Press a `<Shift>` key and click the left mouse button.
- Mark the three `PRINT "Hello"` lines as a block.
- Select the **Cut** item from the **Edit** pulldown menu.

The three program lines seem to vanish.

Cut

- Select the **Paste** item from the **Edit** pulldown menu.

Paste

Your program reappears. Now produce 10 program lines from these three.

- Mark the three `PRINT "Hello"` lines as a block.
- Select the **Copy** item from the **Edit** pulldown menu.

Copy

The **Copy** item only makes a copy of the marked program area. The Amiga doesn't know where you want the copy placed.

- Position the cursor to the beginning of the line after the last program line.
- Select the **Paste** item from the **Edit** pulldown menu.

You now have six lines of `PRINT "Hello"`.

- Select **Paste** again.

Now you have nine lines of `PRINT "Hello"` in your program.

- Select **Paste** again.

Now you have two lines too many; this was an intentional move.

- Mark the two extra `PRINT` lines as a block.
- Press the `<Backspace>` (`<←>`) key once.

Deleting text

Now you have ten `PRINT` commands after *deleting* the two extra program lines. Unlike **Cut**, which "removes" the marked block for later pasting, deleting removes text permanently. You cannot recover text removed by the `<Backspace>` key.

Remember one thing when working with the **Edit** menu items: As soon as you put anything new in the memory used by **Copy** and **Cut**, any previous data is deleted. This means that the **Edit** items store a block only once.

FOR...NEXT

You may feel as if you've spent too much time on this program. There's an easier way to put the same message on the screen ten times. The solution is the **FOR...NEXT** *loop*. The word *loop* means that **FOR...NEXT** is placed round part of the program. Here's the easy way of writing a program that has the same result:

- Mark all the `PRINT "Hello"` lines except one as a block.
- Press the `<Backspace>` (`<←>`) key once.
- Position the **BASIC** cursor (with the cursor keys or the mouse) to the left of the `PRINT` of the remaining command and press the `<Return>` key.
- Position the **BASIC** cursor to the top line (now blank) and type in:


```
for x=1 to 10
```
- Position the **BASIC** cursor (with the cursor keys or the mouse) past the bottom line.

Note that the words `for` and `to`, written as lowercase letters, automatically change into uppercase letters. This is another one of the editor's tricks. It prints all BASIC command words in uppercase. Letters or words which aren't BASIC commands remain as the programmer has entered them. This way you can quickly tell variables and placeholders from BASIC commands.

- Enter the line:

```
NEXT
```

The finished program should look like this:

```
For x=1 To 10
PRINT "Hello"
NEXT
```

- Run the program.

The same result, with a third of the programming effort and space as before.

END closes a program which works properly. If you do not use END to finish the program, the program does in fact stop, but for this demonstration an END is better.

END

- Be sure your **LIST** window is active.
- Position the BASIC cursor (with the cursor keys or the mouse) past the bottom line.
- Enter the line:

```
end
```

Your program should now look like this:

```
FOR x=1 TO 10
PRINT "Hello"
NEXT
END
```

- Select the **Step** item from the **Run** pulldown menu.

The **BASIC** window clears, and the **LIST** window remains at first sight as it was, except an orange frame surrounds the first program line.

- Select the **Step** item again, or press right <Amiga><T>.

Now `Hello` appears in the **BASIC** window, just once. Nothing else happens. But the program hasn't ended, otherwise there would be an **OK** under the `Hello` and the cursor would be visible. But the **LIST**

window changed as well. Now the second program line has a frame. And that line is the one with the `PRINT "Hello"`. That is the command which the program executed, as you could see in the **BASIC** window.

`Step` lets you follow the program sequence line by line, as quickly or as slowly as you like. Selecting `Step` carries out the next command. If you want to run the whole program a little faster press the right `<Amiga><T>` key combination as mentioned above.

The frame moves to the third line (`NEXT`). The more often you press it, the better you can observe the program sequence.

- Press right `<Amiga><T>` until the program ends.

You know the program ends when `END` is framed, and when you see 10 `Hello`s in the **BASIC** window. Now use the command `Step` to see how the `FOR...NEXT` loop works.

- Select `Step` again.

The frame surrounds the first program line.

This line is the first command, as well as the first program step.

- Activate the **BASIC** window and enter:

```
?x␣
```

The Amiga returns a value of 1. The variable `x` clearly contains 1 now. So that you do not have to restart the program after this interruption, do the following:

- Click on the **LIST** window.
- Select `Step` again.

The Amiga goes on working from the point where it stopped before. Select `Step` until the frame is around `NEXT`.

- Click in the **BASIC** window.
- Enter:

```
?x␣
```

The value returned for `x` is now 2. The program hasn't returned to the first program line yet. So the addition to `x` must be in the middle two lines.

The second line writes `Hello` on the screen. Otherwise there is nothing there that makes the value for `x` increase. This leaves only the

third line. And this can't be right, since it only says NEXT. To confirm this, do the following:

- Click on the **LIST** window.
- Select **Step** again until the frame returns to **NEXT**.
- Enter in the **BASIC** window:

```
?x
```

You get the expected 3, before the third **Hello** appears on the screen. The variable previously determined in the **FOR** instruction always increases by one when the **NEXT** instruction occurs.

- In the active **BASIC** window enter:

```
x=10
```

- Reactivate the **LIST** window.
- Select **Step** three times.

The computer accepts your input, which assigns the variable **x** a value of 10 and stops further execution of the program. This is because the maximum value determined in the first line has been exceeded. To sum up, everything in a **FOR...NEXT** loop repeats and executes until the loop surpasses the loop limit set. In this case, **PRINT "Hello"** repeats ten times, as the loop only ends at the value 10. The variable could also have been **y**. Or **a** or **b**. Or even **X**. The Amiga considers **X** and **x** two different variable names.

- Click within the **LIST** window.

Program structuring

The **BASIC** cursor appears. The parts of the program belonging together should be set apart for better readability. This can be done by indenting lines.

- Move the **BASIC** cursor before the **F** in the first line. Press the spacebar once.

The **NEXT** belongs with the **FOR**, so indent this line one space to the right as well.

- Position the cursor in front of the **N** in **NEXT**. Press the spacebar once.

Now move the statement **PRINT "Hello"** to the right past the **FOR** and the **NEXT**.

- Position the cursor in front of the **P** in **PRINT**. Press the spacebar once.

The END can stay where it is. Now when you look at the program, it is certainly more readable. As long as you look at a short program like our Hello program, you can of course review it quite easily. But the longer and more complicated the program, the better program structures can help you to quickly understand the connection between individual program sections.

- Position the cursor in front of the P in PRINT.
- Press the <Return> key.

The Amiga automatically inserts the correct number of blanks between the left edge and the PRINT.

- Move the cursor back to this blank line and enter:

```
? "I am the program"␣
```

If you indented this instruction two spaces, like the other PRINT instruction, then you understand the principle of structured programming.

- Start the program.

If you want, you can indent the Hello a little more in the third program line, so that it fits in better with the I am the program. Simply insert a few spaces between the opening quotation mark and the Hello.

3.4 Saving programs

It only takes a moment to lose an entire day's work. All it requires is someone tripping over the power cord. There are thousands of other dangers which can kill or ruin a program. Tired programmers, angry mothers, little sisters, dogs, cats and electrical storms can all cut the power on computers. For this reason you should get into a habit when programming; save as often as possible.

Save and exit

The Amiga offers you simple and convenient options for saving programs. It also tries to ensure that you do not accidentally forget to save your program. For example:

- Select the **Quit** item from the **Project** pulldown menu.

A requester appears, asking whether or not you want the program in memory saved before quitting.

- Click on the **Yes** gadget.

This tells the Amiga that you want to save the program. A new requester appears. Since the program isn't saved yet, the string gadget under the heading **Save Program As:** remains empty. If you had saved the program before, this string gadget would list the same name that you last assigned the program.

- Click in the string gadget.
- Type the name **BasicDemos/Hello**.
- Press the **<Return>** key or click on the **OK** gadget.

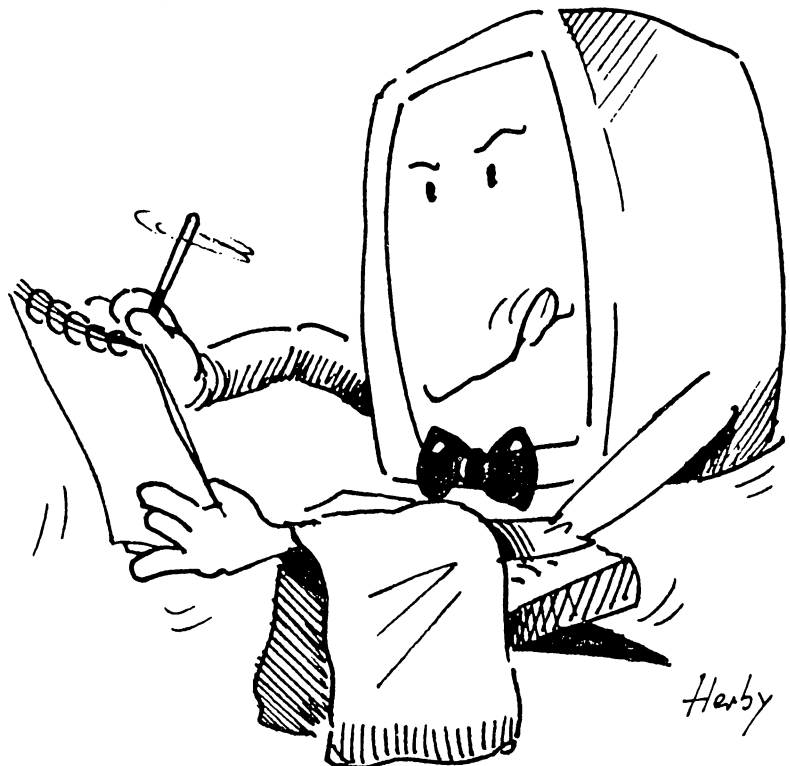
The program is saved in the drawer named **BASICDemos** and can be called from there, provided the **Extras** diskette is in the disk drive. When saving ends, the **Workbench** screen reappears.

- Open the **BASICDemos** drawer.
- Double-click the **Hello** icon.

The program runs at once. As soon as it is finished, you have the normal **BASIC** window in front of you.

The menu items from the **Project** pulldown menu are as follows:

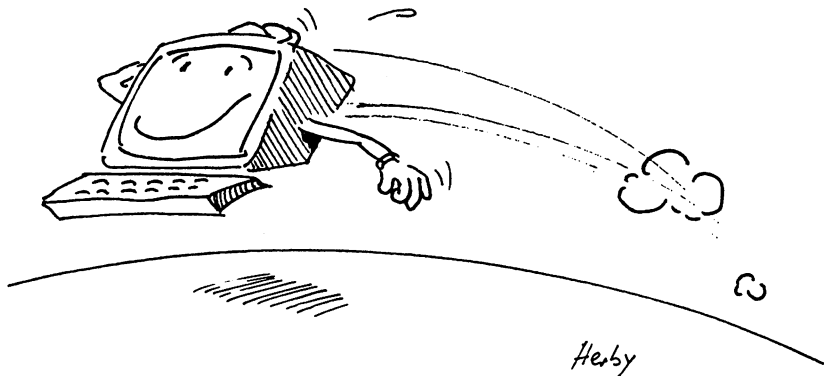
- New** This item deletes the program in memory so you can begin work on a new program. The Amiga displays a requester asking whether or not you want the program currently in memory saved.
- Open** This item lets you call programs into memory without running them.
- Save** Save can always be accessed if a program being saved has been saved before. The Amiga stores the program automatically under the same name. However, the Amiga overwrites the old program.
- Save As** Save As lets you resave an edited program under a new name. The original program remains undisturbed under the old name and can be called back into memory if needed.
- Quit** A requester appears which tells you the program still in memory has not been saved to diskette. If you left BASIC in spite of this, then you would lose this data. So AmigaBASIC gives you the option of either saving the program before you continue, leaving BASIC without quitting, or cancelling the Quit item.



3.5 Four BASIC programs

All statements that you'll come across in the following listings can be found in your Amiga's BASIC manual. Each program starts with a description of the problem that the program is supposed to solve. This way you understand exactly what the program is trying to achieve, and you may also want to try to write your own program to solve the problem and test your skill. This task is eased by the fact that all statements required in the program to solve the problem are listed in this description. Don't judge the success of your own program by how closely it coincides with the book version, but rather by whether it delivers the correct solution. If you don't want to solve the problem on your own, simply go on to the program listing. Explanations follow the listings to show the logic behind the program structure. Should you encounter any statements that you aren't familiar with, look them up in your BASIC manual. Sometimes the manual has sample programs to clarify a statement's use.

The ¶ symbol in the following programs signifies when the <Return> key should be pressed. Program lines that must be typed in on one line in AmigaBASIC may appear on two lines in this book. The ¶ symbol will clarify when the <Return> key should be pressed.



3.6 Graphic program

The first problem involves the correct use of AREA and AREAFILL statements. The three-dimensional image comes from the proper use of the available colors.

Problem:

Draw an image of a three-dimensional cube, using the Amiga's standard colors only. The program requires the COLOR, AREA and AREAFILL statements.

```
Cube : ¶
COLOR 3,0¶
AREA (199,149) : AREA (399,149)¶
AREA (399,49) : AREA (199,49)¶
AREAFILL¶
COLOR 2,0¶
AREA (199,49) : AREA (399,49)¶
AREA (449,39) : AREA (249,39)¶
AREAFILL¶
AREA (199,149) : AREA (149,149)¶
AREA (199,139)¶
AREAFILL¶
COLOR 1,0¶
AREA (399,49) : AREA (449,39)¶
AREA (449,139) : AREA (399,149)¶
AREAFILL¶
```

Solution:

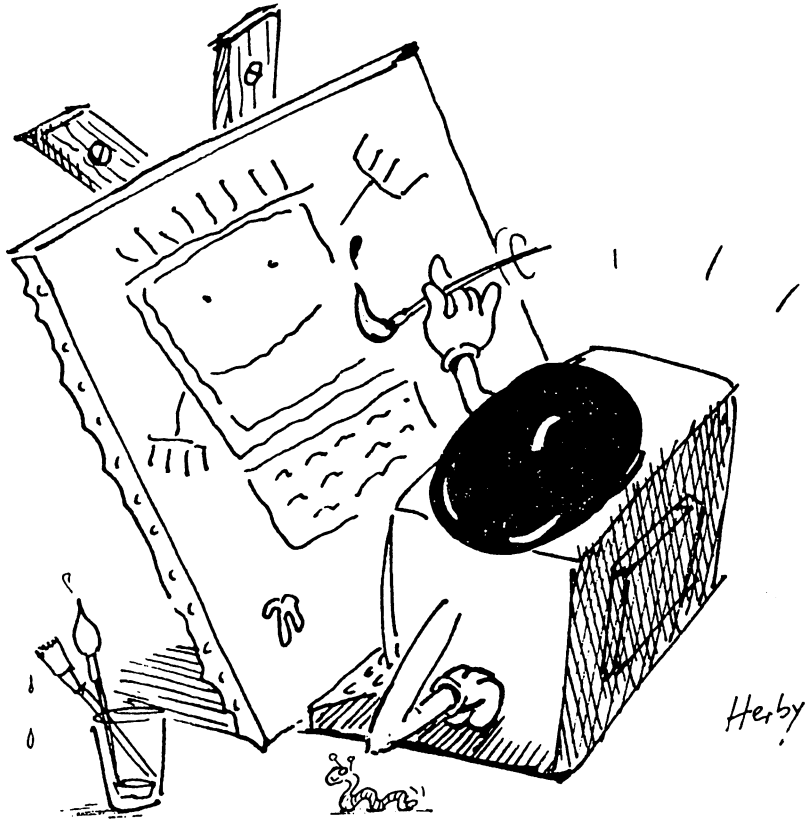
This version of the program draws the cube in the approximate center of the screen using the AREA statement. COLOR 3, 0 sets the drawing color to orange (3) and the background color to blue (0), providing that the Workbench default color settings are used.

Four AREA statements set the four corners of the front side of the cube. The following AREAFILL statement then draws this front side onto the screen.

The COLOR 2, 0 statement sets the drawing color to black (2) while the background color remains blue. The Amiga draws the top of the cube next. Again, the four corner points are placed to make the cube look three-dimensional. The second area drawn here is the shadow on the left side of the cube. This requires a three-sided area only, since part of the shadow is hidden behind the cube.

In the last section the COLOR 1, 0 statement returns the colors to their standard setting (white on a blue background). This portion stands at the end of the program so that the text output after the program appears in

the standard color settings after the program runs. With four vertices the program defines the white side panel of the cube. Thus, the imaginary light source stands to the very right of the cube. Again, the four corners are offset, creating the illusion of perspective. Feel free to experiment further with these statements before you go on to the next problem.



3.7 Animation program

The advantage of this program is that you just wrote half of it (the cube). Now you just have to add the new section to the end of the existing program. The most difficult thing to understand in this program is the calling and reading of the bobs (movable objects). The statements used to actually move the bob are quite simple, since they are variations of the OBJECT . statement. You just have to take the time to learn the individual versions of the OBJECT . statement family. You'll have already taken the first step toward writing the solution to out next problem.

Problem:

Expand the above cube program to work with a bob called ball. Read this ball in three times, so that three balls jump out of the inside of the cube. In addition to the statements required to form the cube, use the following statements in this program: OPEN . . . FOR INPUT AS; OBJECT . SHAPE; CLOSE; OBJECT . X; OBJECT . Y; OBJECT . HIT; OBJECT . AY; OBJECT . AX; OBJECT . ON; OBJECT . START.

```

Cube:¶
COLOR 3,0¶
AREA (199,149) : AREA (399,149)¶
AREA (399,49) : AREA (199,49)¶
AREAFILL¶
COLOR 2,0¶
AREA (199,49) : AREA (399,49)¶
AREA (449,39) : AREA (249,39)¶
AREAFILL¶
AREA (199,149) : AREA (149,149)¶
AREA (199,139)¶
AREAFILL¶
COLOR 1,0¶
AREA (399,49) : AREA (449,39)¶
AREA (449,139) : AREA (399,149)¶
AREAFILL¶

Balls:¶
OPEN "Extras:BASICdemos/ball" FOR INPUT AS
.1¶
Ball$=INPUT$(LOF(1),1)¶
FOR x=1 TO 3¶
OBJECT.SHAPE x,Ball$¶
NEXT x¶
CLOSE 1¶
FOR x=1 TO 3¶
OBJECT.X x,299¶

```

```

OBJECT.Y x, 41
OBJECT.HIT x, 0, 0
OBJECT.AY x, -2
NEXT x

OBJECT.AX 1, -2
OBJECT.AX 3, 2
FOR x=1 TO 3
OBJECT.ON x
OBJECT.START x
NEXT x

FOR x=1 TO 1400 : NEXT x
FOR x=1 TO 3 : OBJECT.AY x, 2 : NEXT x
FOR x=1 TO 7000 : NEXT x

```

Solution:

The program section `Balls` contains all the new program code. First the program reads the ball from the `BASICDemos` drawer located on the `Extras` diskette. If you change the `Extras` diskette icon's name, you must also change the name in this program from `Extras` to the new name as well.

The program opens the bob file `ball` FOR INPUT so that it can be read into memory as data file number 1. This file's contents go into the variable `Ball$`. `INPUT$(LOF(1), 1)` handles the `INPUT$` of the file number one. The following FOR...NEXT loop assigns the contents of `Ball$` to `OBJECTS` one through three, using `OBJECT.SHAPE`. The file closes.

The next section's FOR...NEXT loop counts from one to three. Here the following values are assigned to the three objects:

- 1) their X-position (`OBJECT.X x, 299`) 299 for all three objects
- 2) their Y-position (`OBJECT.Y x, 41`) 41 for all three objects
- 3) `OBJECT.HIT x, 0, 0` ensures that no collision interrupts occur when the balls collide with each other.
- 4) their acceleration. Each of the three bobs receives a vertical acceleration of -2 with the `OBJECT.AY` statement. This means that each ball starts to move toward the top of the screen, moving an additional two pixels faster each second.

The third program block assigns the first and third bobs horizontal movement. Bob number one moves up and to the left, 2 pixels faster per second (-2). Bob number three moves to the right at the same rate (+2). Bob number two moves from bottom to top, without horizontal movement.

Another FOR...NEXT loop from 1 to 3 occurs. The three bobs turn on simultaneously and become visible (OBJECT.ON), while OBJECT.START starts the bob movement.

Next is a wait loop: FOR x=1 TO 1400:NEXT x. This loop gives the bobs enough time to get out from behind the screen border.

Once the first delay loop ends, the vertical (Y-) movements of the bobs "reverse." They are all set to positive (+2). The result: The original movement goes the opposite direction. The balls run slower, until the direction of flight changes again.

Another delay loop appears: FOR x=1 TO 7000: NEXT x.



3.8 Speech program

The speech programming of the Amiga is built on one statement which must be given with several numerical parameters. Because of this, the most important thing is discovering exactly which numerical values deliver a nearly human voice. Once you've mastered that, you'll mostly be dealing with having your Amiga speak.

Problem:

Write a program to simulate a conversation between an Amiga and another 68000-based computer. Make the other machine speak slower and in a monotone. The necessary statements for this program: DATA; READ; SAY; TRANSLATE\$.

```

Preparations:¶
FOR x=0 TO 8¶
  READ Amiga%(x)¶
NEXT x¶
FOR x=0 TO 8¶
  READ Other%(x)¶
NEXT x¶
¶
Dialog:¶
FOR x=1 TO 5¶
  READ Amigatext$(x)¶
  READ Othertext$(x)¶
  SAY TRANSLATE$(Amigatext$),Amiga%¶
  SAY TRANSLATE$(Othertext$),Other%¶
NEXT x¶
¶
Vocaldata:¶
¶
REM Amiga voice¶
DATA 120, 0, 173, 0, 22338, 64, 8, 0, 0¶
REM "other" voice¶
DATA 232, 1, 84, 0, 17301, 64, 9, 0, 0¶
¶
REM Text:¶
DATA "Hello, I'm your Amiga."¶
DATA "Hello, I am one of the other sixty
eight thousand based computers. I can speak
too."¶
DATA "That's interesting. How do you
feel?"¶
DATA "Speaking is very difficult."¶
DATA "Well, I don't think so. Besides, it's
very helpful to the user."¶

```

```

DATA "Wait a moment, I seem to be having
memory trouble."¶
DATA "You are? Multitasking speech
synthesis is no problem for me."¶
DATA "I don't know the word multitasking.
Please explain."¶
DATA "But what can your user do with you if
you don't do multitasking?"¶
DATA "Excuse me, I feel some cherry bombs
coming on."

```

Solution:

The most important commands are the different voice values for the two computers.

Preparations: reads the voice values for the Amiga and other voices. The values of these voices may take some experimentation (see *AmigaBASIC Inside and Out*, Chapter 6).

The array called `Amiga%` contains the Amiga voice parameters. The `%` extension means that this array contains only integer values. The `SAY` command requires integer parameters.

`READ` and `DATA` read in the values; the Amiga values appear in the listing under `REM Voice of Amiga`.

The array called `Other%` contains the other computer's voice parameters. The other computer values appear in the listing under `REM Voice of "other" computer`.

The main section of the program carries the name `Dialog:`.

The `FOR...NEXT` loop gives the number of exchanges between the Amiga and the other computer. `FOR x=1 to 5` means 5 statements from the Amiga, and 5 from the other computer.

`READ` reads in the `AmigaText$`, then `Othertext$`.

`TRANSLATE$` translates the text into phonemes. The array names after the comma give the voice array. `SAY` says the text. The program accesses the Workbench file `translator.library` before saying anything; be sure your Workbench diskette is accessible.

3.9 Sound program

This program is a bit more difficult than the others so far. This is because of the mathematical problems surrounding waveforms, as well as the use of a new programming technique—*event trapping*. Reading pulldown menus and the mouse are among the Amiga's best features, but not the easiest to program.

Problem:

Write a program which produces sine waves, square waves and white noise. The notes must be accessible through a mouse in a sort of scale. Mouse buttons must be pressed, and the mouse must be movable from top to bottom. The three waveforms should be accessible from pulldown menus.

```

Preparations:¶
  DIM Square%(255), Noise%(255)¶
  ¶
  MENU 1,0,1,"Program"¶
  MENU 1,1,1,"->End<-"¶
  MENU 2,0,1,"Waveform"¶
  MENU 2,1,2," Sine"¶
  MENU 2,2,1," Square"¶
  MENU 2,3,1," Noise"¶
  MENU 3,0,0,""¶
  MENU 4,0,0,""¶
  ¶
  FOR x=0 TO 255¶
  IF x<128 THEN Square%(x)=127 ELSE
  Square%(x)=-128¶
  Noise%(x)=RND*255-128¶
  IF INT(x/4)=x/4 AND x<190 THEN LINE
  (200,x)-(400,x)¶
  NEXT x¶
  WAVE 0,SIN : Wform=1¶
  ON MENU GOSUB Menucontrol¶
  ON MOUSE GOSUB Mousecontrol¶
  MOUSE ON¶
  MENU ON¶
  ¶
  Mainprogram:¶
  GOTO Mainprogram¶
  ¶
  Menucontrol:¶
  Men=MENU(0)¶
  Item(MENU(1))¶
  IF Men=1 AND Item=1 THEN CLS: END¶

```

```

If Men=2 THEN¶
MENU 2,Wform,1¶
Wform=Item¶
MENU 2,Wform,2¶
  IF Item=1 THEN¶
    WAVE 0,SIN¶
  ELSEIF Item=2 THEN¶
    WAVE 0,Square%¶
  ELSEIF Item=3 THEN¶
    WAVE 0,Noise%¶
  END IF¶
END IF¶
RETURN¶
¶
Mousecontrol:¶
Mousevalue=MOUSE(0)¶
WHILE Mousevalue(0)¶
  Mousevalue=MOUSE(0)¶
  Sound 1200-(4.85*MOUSE(2)),1¶
  FOR d=1 TO 90 : NEXT d¶
WEND¶
RETURN¶

```

Solution:

The Preparations: section sets up two arrays, Square% and Noise%. These wave data arrays must have at least 255 elements.

The MENU statements define the menu bar and the two titles: **Program** (menu 1) and **Waveform** (menu 2). The second parameter in the MENU statement (0=menu name, 1-3=menu entry) and the third position can be either a 0, 1 or 2.

0 produces a ghost item; 1 produces a normal menu item; and 2 marks the menu item with a checkmark.

The next FOR...NEXT loop fulfills a number of parameters at once: It computes the contents of the waveform data arrays. The first 127 array elements of Square% receive the value 127, and the remaining elements receive -128. The wave amplitudes can be between 127 and -128 for a pulse wave.

Noise% fills with random numbers for the white noise waveform.

The program draws horizontal lines on the screen, four pixels apart, to help with selecting notes and mouse movement.

The condition IF INT (x/4) =x/4 THEN... applies to any multiple of 4.

The third possible waveform (sine) appears automatically from AmigaBASIC from the WAVE 0, SIN statement. Sine waves aren't automatically created. The variable Wform states which of the three

waveforms is active. This checkmark display in the pulldown menu shows the active waveform.

The program works with event trapping. Menu events operate through the program section `MenuControl:`, while `MouseControl:` handles mouse events.

`MainProgram:` consists of an endless loop.

The user calls `MenuControl:` when he selects a menu item. The variable `Men` contains the menu number, according to the BASIC function `MENU(0)`. This can be 1 when the selected item is in the `Program` menu, or 2 when found in the `Waveform` menu.

The variable `Item` gives the number of selectable options within the specified menu.

If `Men=1` and `Item=1`, the user selected the first item in the first menu, ending the program. The screen clears with `CLS` and the program stops at `END`.

The next block is a typical set of nested `IF...THEN` constructs. If the second menu is selected (`IF Men=2 THEN...`), the checkmark must be reset in the second menu. The first three program lines in the large `IF...THEN-ENDIF` structure means that the variable `Wform` contains the last active waveform option (this is set to 1 when the program starts). The third value in the `MENU` statement sets this menu item from 2 to 1. Then `Wform` becomes the selected menu item. This option is marked by a checkmark through `MENU 2, Wform, 2` (the 2 in the third place is additional).

Then the program checks the selected item and sets it with `WAVE 0` and the waveform for voice 0. The `ELSEIF` command means: When the last condition is unfulfilled, look for another condition.

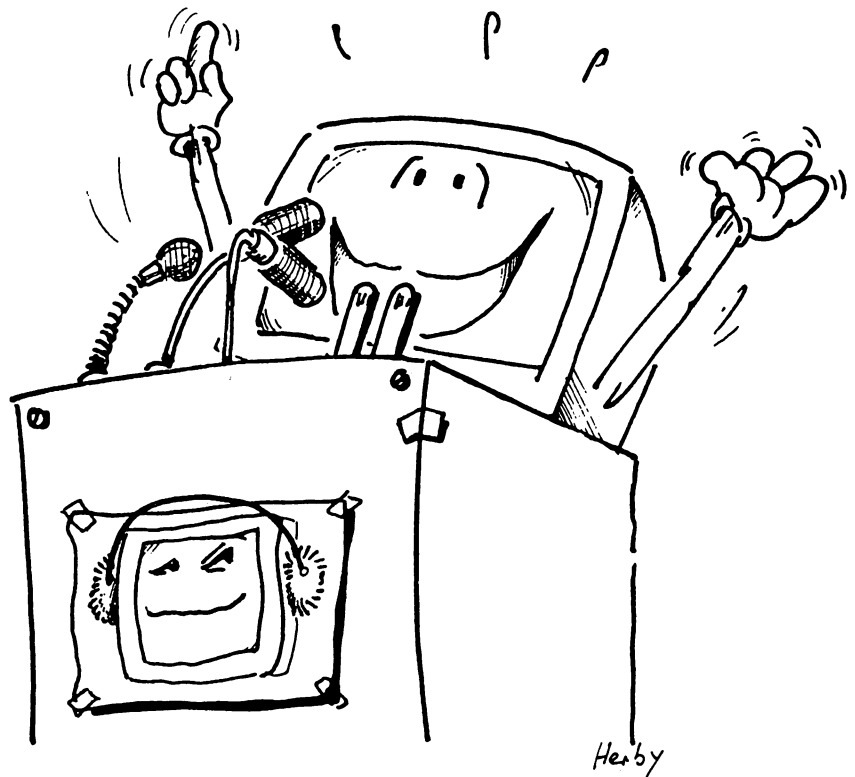
Two `ENDIF`'s close the `IF...THEN...ENDIF` loop.

`RETURN` closes the subroutine.

The `Mousecontrol:` variable `Mousevalue` reads `MOUSE(0)`. This BASIC function checks the current status of the mouse buttons. The following executes through `WHILE...WEND`: As long as `Mousevalue` is less than 0, a negative number occurs (this means that the mouse button is pressed at the time), and a tone sounds with `SOUND`. The variable `Mousevalue` must also be read within the `WHILE...WEND` loop, since this recognizes whether the mouse buttons change or not.

The frequency used by the SOUND command comes from the vertical mouse position (MOUSE (2)). The formula gives values between 130 and 1200, which roughly matches the first four octaves of the Amiga's musical range. Sound duration is 1 (approximately 1/18 second), and the AmigaBASIC volume and channel parameters are used (volume=127, channel=0 [both left channels]).

The delay loop FOR d=1 TO 90:NEXT supplies the sound duration in increments of 1/18 second. If the user holds the left mouse button down for 1/60 of a second, the note plays for 1/18 second. If the user holds the left mouse button down for 1.001 seconds, the note plays for 1 and 1/18 seconds.



3.10 Lotto program

Lotto programs are very popular in computer books for beginners. There's a good reason for this: A lottery program generates *random numbers*, numbers which appear at random. The last few sections have covered AmigaBASIC graphics and sound. This Lotto program does something simpler—six random numbers appear on the screen.

```

Preparations:
RANDOMIZE TIMER
DIM digits(49)
FOR x=1 TO 49
  digits(x)=0
NEXT x

Arraydesign:
FOR x=1 TO 7
  FOR y=1 TO 7
    LOCATE (3*y),16+6*x
    PRINT x+7*(y-1)
    LINE (159+48*(x-1),8+24*(y-1))-
(159+48*x,8+24*y),1,b
  NEXT y
NEXT x

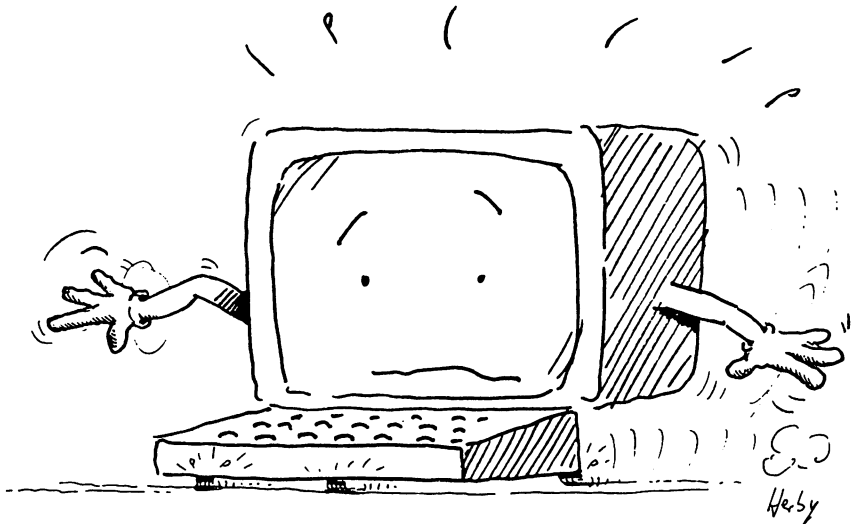
Drawing:
w=w+1
x=INT(7*RND)+1
y=INT(7*RND)+1
Occ=0 : colour=3 : IF Right=6 THEN
colour=2
IF digits(x+7*(y-1))=0 THEN
  PAINT (160+48*(x-1),9+24*(y-
1)),colour,1
  SOUND (x+7*(y-1))*8+440,1
  FOR delay=1 TO 50 : NEXT delay
  PAINT (160+48*(x-1),9+24*(y-1)),0,1
  Occ=1
END IF
IF Occ=1 AND w>10 THEN
  PAINT (160+48*(x-1),9+24*(y-
1)),colour,1
  digits(x+7*(y-1))=1
  IF Right=6 THEN digits(x+7*(y-1))=2
  Right=Right+1 : w=0 : Status=x+7*(y-1)
  SOUND (x+7*(y-1))*8+440,8

```

```

FOR delay=1 TO 4000 : NEXT delay¶
END IF¶
¶
IF Right <7 then Drawing¶
¶
Ending:¶
LOCATE 1,1 : COLOR 3,0¶
PRINT "The winning"¶
PRINT "number of the week:"¶
COLOR 1,0 : PRINT¶
FOR x=1 TO 49¶
IF digits(x)=1 THEN PRINT x¶
NEXT x¶
PRINT¶
PRINT "Extra number:";¶
PRINT Status¶
PRINT : COLOR 3,0¶
PRINT "GOOD LUCK!": COLOR 1,0¶

```



4 AmigaDOS

4. AmigaDOS

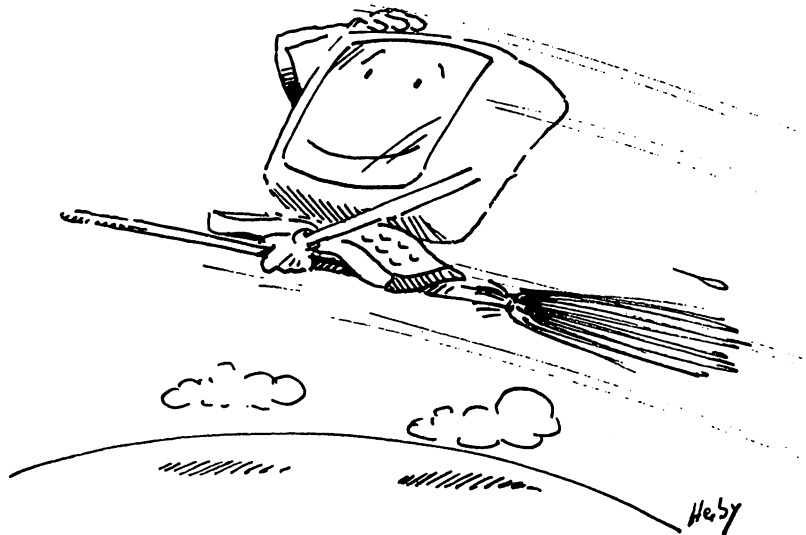
Throughout this book you have been accessing disks again and again. You learned how to load and save Notepad texts and BASIC programs. This chapter discusses diskettes and the general commands and programs used in communicating with diskettes.

It is not essential that you understand this chapter completely. If you want to program in AmigaBASIC, or plan to access commercial software only, then you don't need this chapter. However, you may want to learn a few of the basic principles of diskette access. This helps you become more familiar with the computer and its processes.

DOS

The controlling program used in diskette access is the *disk operating system*, or *DOS* for short. Like the operating system in a computer, the DOS controls general housekeeping tasks for diskettes. AmigaDOS is the Amiga's disk operating system. You can operate AmigaDOS through the Command Line Interface (CLI) first mentioned in Chapter 2.

This chapter describes how to access the CLI, and how to send commands to AmigaDOS. Also, there are descriptions of the AmigaDOS commands you'll use most often for disk access.



4.1 CLI

The CLI is another user interface, similar to the Workbench. The major difference between the Workbench and the CLI is that the CLI offers more complex dialogue between the user and the Amiga. That is, you have no mouse in the CLI, only the keyboard. When you want the Amiga to do something, type in the command and press the <Return> key.

This section discusses the most important AmigaDOS commands only. If you wish to become better acquainted with AmigaDOS, see the AmigaDOS manual from Commodore Amiga. Once you see some of the possibilities offered by AmigaDOS as shown in the following pages, you may want to learn more about DOS.

- Start your Amiga, if it isn't already on.
- Double-click the Workbench diskette icon.
- Open (double-click) the System drawer in the Workbench window.

A number of diskette icons appear. If an icon named CLI appears in the System window, skip to the section on the next page *Opening the CLI*.

If the CLI icon isn't in the System window then the CLI is inaccessible from Intuition. You make it visible through Preferences. This was done by the developers for the Amiga's protection as well as the user's protection. If the CLI icon isn't in the System window, do the following:

- Click the close gadget in the System window.
- Double-click the Preferences icon in the Workbench window.
- Click the On gadget next to the word CLI.
- Click on the Save gadget.
- Open the System drawer in the Workbench window.

The CLI icon should now be in the System window.

There are two ways to access the CLI: From the Workbench window, and as the Workbench loads.

- Start up your Amiga according to the instructions in Section 1.4.
- When the blue screen first appears during the booting process, press and hold the <Ctrl> key and press <d>.

****BREAK** - CLI appears along with the CLI prompt 1>.

Opening the CLI

Open the CLI from the **Workbench** window by double-clicking on its icon, just as you opened the Notepad or AmigaBASIC.

- Double-click on the CLI icon.

The disk drive runs, and a new window named **New CLI** appears. This **New CLI** window has most of the gadgets that other windows have: Sizing gadget, drag bar, front gadget and back gadget (note that the **New CLI** window has no close gadget).

- Drag the **New CLI** window's sizing gadget down and right. Make the window as large as you can.

One of the most important differences between the AmigaBASIC windows and the CLI window is a 1> character and the cursor. The > character appears whenever the CLI is awaiting input. The 1 preceding the > indicates that this is the first CLI window. The BASIC cursor is just a narrow line, but the CLI cursor is a small block. It's possible to open several CLI windows at the same time.

- Enter the following into the **New CLI** window:

```
newcli¶
```

NEWCLI

Another window opens, also named **New CLI**. In addition, **New CLI TASK 2** appears in this new window. This text scrolls off the top of the screen once the window fills with commands or data. The CLI offers multiple windows because the Amiga is multitasking (can perform several tasks simultaneously). Therefore, if you have two disk drives, you can display the *directory* (diskette contents) of the internal drive in one CLI window, and the external drive's directory in another CLI window.

The 1 or 2 preceding the > character indicates the CLI window currently in use. For this section, however, one CLI window is all you'll need.

- Enter the following into the **New CLI 2>** window:

```
endcli¶
```

ENDCLI

This command closes the **New CLI** window currently in use. You can type AmigaDOS commands in uppercase or lowercase letters, or even a mixture of the two. Filenames can also be entered in uppercase and lowercase.

- Enter the following into the **New CLI** window:

```
dir
```

DIR

DIR is the abbreviation for DIRectory. In computing, a directory is the list of a diskette's contents. Since the disk drive contains a copy of the Workbench diskette, the display should appear as follows:

```
Trashcan (dir)
c (dir)
Demos (dir)
System (dir)
l (dir)
devs (dir)
s (dir)
t (dir)
fonts (dir)
libs (dir)
empty (dir)
utilities (dir)
```

The word `.info` appears immediately after some of these names, then other filenames appear, from `Clock` to `Trashcan`. You should recognize some of the lists of names. For example, `Demos` was the name of a drawer in the `Workbench` window. You can easily open this drawer and read the files inside it from the CLI .

- Enter:

```
dir demos
```

By requesting the directory of the `Demos` drawer, you call a *subdirectory*, a directory of a directory. The Amiga displays the names of the demo programs in two columns: Once under the names under which they were saved, and once followed by a suffix `.info`.

If you can see the demo program names, perhaps they can be started from here.

- Enter:

```
lines
```

Running programs from the CLI

The CLI displays the message `Unknown command lines`. You can run programs from the CLI, but you must specify the program and the subdirectory or subdirectories. You read in Chapter 3 that a slash (/) specifies the subdirectory in addition to the filename when saving a BASIC program (`SAVE drawer/program_name`). This is the same with the CLI. You must specify the program name and the drawer containing that program.

- Enter:

```
demos/lines↵
```

The program executes. Up to now, the only difference from opening programs from the Workbench is that you must type in the filename from the keyboard. The CLI has no icons. The advantage of CLI commands lies in letting you view any file, directory or subdirectory.

The CLI quits as Lines executes. You can enter commands, but the CLI ignores them. This is because any program started from the CLI occupies the CLI during program execution. To avoid this, you can open another window beforehand, or enter a special command to make your Amiga do the extra work:

- Click on the Lines window's close gadget.

- Enter:

```
run demos/lines↵
```

The Amiga starts another task (CLI 2) and runs Lines in that window. Your original CLI remains active as Lines runs.

The biggest advantage of using CLI is having access to information that you can't view from the Workbench.

The directory fonts, which appeared after the dir command above, wasn't in the Workbench window. However, you used fonts when you worked with the Notepad, so it's on the Workbench diskette.

- Enter:

```
dir fonts↵
```

The font names you know from the Notepad appear. These fonts are in different sizes on the Notepad, though, like Sapphire 14 and Sapphire 19.

- Enter:

```
dir fonts/sapphire↵
```

The CLI displays the numbers 14, 19 on the screen underneath this command. These are the same sizes you found in the Sapphire item of the Notepad's Fonts pulldown menu.

4.2 Amiga diskettes

Each Amiga diskette can be viewed as a filing cabinet. The cabinet contains drawers, the drawers contain files and the files contain data. Diskette operations often take place with several diskettes, not just one. The Amiga tries managing these as quickly and as carefully as possible. To permit this with a large amount of data, a *hierarchy* exists in AmigaDOS, i.e., a certain order for stacking programs or information on diskette.

For example, say a program wants to find out what the font Sapphire 19 looks like. The process is as follows:

The Amiga receives the message that the Sapphire 19 font is required. AmigaDOS then searches for a drawer labeled `fonts`. If there is no such drawer, then the Amiga has the wrong diskette and tells the user with a requester.

AmigaDOS finds and opens the `fonts` drawer. Inside are several files. The Amiga then searches until it finds the drawer named `Sapphire`. The Amiga opens the `Sapphire` drawer and searches for the file named `19`. Once found, the Amiga gives the program the desired information and closes the file. The Amiga turns to other tasks again until it receives a new inquiry.

This is just what you did. You read the names of available drawers. Then you opened the `fonts` drawer to see what was inside. You selected the `Sapphire` font file, and read the names of the two `Sapphire` font sizes.

Perhaps `Sapphire` has no more sizes, and opening the file reveals all that it contains. But how do you find out whether more data exists in the `Sapphire` file?

Suffixes

Look at the words `.info` and `(dir)` next to some of the names in a directory. These are *suffixes*. These suffixes help the Amiga determine the function of a specific file. All files with the suffix `.info` contain data corresponding to the filename preceding the suffix. Thus the file `dots.info` provide the Amiga with all the data required to display the Dots icon and write the name Dots in the `Demos` window. It is rarely necessary to specify a suffix when calling a given file from the `CLI`. However, files with suffixes can also be read. For example, consider the suffix `(dir)`. All names with this suffix are subdirectories, not programs.

- Enter:


```
dir
```

The Amiga displays a list of all the directories. Take another look at the Demos directory.

- Enter:

```
dir demos
```

info

The Amiga displays `.info` followed by the four program names. Those names followed by the `.info` suffix are viewable from the Workbench. Any names not followed by `.info` will not be seen on the Workbench. Take a look at the Fonts directory.

- Enter:

```
dir fonts
```

The font names appear. Each name has a `(dir)` following it. This means that each font has additional files enclosed. Remember how to access this from accessing the Lines demo?

- Enter:

```
dir fonts/diamond
```

This gives you the subdirectory of the diamond font directory. There are no other subdirectories, nor are there font sizes other than 12 and 20. You'll note that these fonts have no `.info` files. Without an `.info` file, a file remains invisible to the Workbench.

It obviously takes time to input all these commands for directories, subdirectories and sub-subdirectories. Also, when a second disk drive or the RAM disk is marked for access you must supply the *drive specifier*. For example, to read the second disk drive's directory from the CLI, you enter:

```
dir dfl:
```

For a RAM disk, the directory access is as follows:

```
dir ram:
```

CD

The `CD` command saves a lot of this typing. `CD` allows you to change the second drive to the default drive, or a specific directory to the default directory. Normally when you enter `dir`, the Amiga displays a main directory. `CD` changes the specified directory into the default directory.

- Enter:

```
cd demos
```

The disk drive runs briefly.

- Enter:

```
dir¶
```

The Amiga displays the subdirectory `demos` instead of the main directory. Now you can start a program directly.

- Enter:

```
lines¶
```

The program promptly starts without your specifying `demos` first. However, if you now want to start a program located in the main directory, the Amiga won't be able to find it. This is because the CLI is still in the `demos` directory.

- Click on the `Lines` window's close gadget.
- Enter:

```
run preferences¶
```

The Amiga opens another CLI in which to run `Preferences`, but then breaks off and displays the `Unknown command preferences` error message. The Amiga can't find the program because it's not located in the current directory. When the Amiga can't find a file, it looks in the list of DOS commands stored on the diskette (more on this later). If the command doesn't exist, the Amiga responds with an error message. So remember: When a program won't start, even though you're certain that it's on the diskette, it's always possible that something could have been switched around with the `CD` command.

What if you're not certain that it's on the diskette? Well, here's a way to see everything on a diskette. You must be in the main directory to view the entire diskette. Before you continue, you need two more `CD` options.

- Enter:

```
cd¶
```

As soon as you press the <Return> key, the message `Workbench 1.2:Demos` appears. Depending upon how far into the directory you are, more and more of these messages appear. For instance, if you're in the `Sapphire` directory of the `Fonts` directory on the `Workbench 1.2` diskette, the message following the `CD` command reads:

```
Workbench 1.2:Fonts/Sapphire
```

CD /

This **CD** command variation returns you to the next directory up (you must put a space between the **CD** and the slash):

```
cd /
```

CD :

The **CD :** command takes you directly to the main directory (again, include a space between the **CD** and the colon).

If you're in the main directory, the command below displays the entire contents of the disk directory.

- Enter:

```
cd:␣
```

- Enter:

```
dir opt a␣
```

Each directory name appears, followed by its files and subdirectories. You can stop the names from scrolling off the top of the screen by pressing the spacebar, and continue the scrolling by pressing the <Return> key. Continue in this way until you have reached the font you want.

You may be wondering why you don't see all these filenames as icons in the **Workbench** window. Consider what would happen if everything was displayed. You'll never use all of these options. Most of them supply information to programs, so they don't require icons. The only data made visible is that required by the user. Anything else only leads to confusion, which is why most of these names stay unseen by Intuition.

LIST

LIST is a very comprehensive command with many options. We'll show you the three most important parameters.

- Enter:

```
list␣
```

LIST alone results in a sorted list of names and characters. If the top line is about to scroll off the top of the screen, press the spacebar to pause the listing. Pressing the <Return> key continues the listing. The title appears in the format:

```
Directory of ':' on Tuesday 26-Nov-87
```

The date, of course, depends on the system clock, set in **Preferences**. Everything else should be exactly the same. A number of names and characters follow. Here are two sample **LIST** entries:

```

Preferences  58152  rwed  14-Apr-87  10:37:46
Fonts        Dir   rwed  14-Apr-87  10:37:46

```

The first item is the name of the program or file. The number following the filename indicates the file's length in bytes. For example, Preferences, with 58512 bytes, is one of the longest programs on the Workbench diskette.

Note that Fonts has no numbers, just the word Dir. Directories have no lengths. They exist to keep files in order. You can always tell at a glance whether an entry is a program or a directory. The entry "empty" may also replace the byte size or the Dir entry. This means that a program contains no data.

The next item specifies the program's file status (rwed=Read/ Write/ Execute/ Deleteable). This item shows whether the file can be read (r), whether the user can write to it (w), whether the file can be run or executed (e), and whether the file can be deleted (d).

All these options can be specified in the Info window, accessible from the Workbench screen.

LIST DATE The date and time display refer to when the file was created or changed. A listed day refers to the most recent day. That is, Thursday refers to last Thursday. AmigaDOS always calculates and displays the dates up to one week before. The number of files or programs processed in the last week determine the number of files labeled with a specific day, e.g. Thursday. If you prefer the exact date, LIST provides other parameters.

- Enter:

```
list dates␣
```

This displays all the files with their dates, and the actual day if the file was created in the last week. Thus, the date of saving a particular version or file is easily found.

To simplify finding out "What I did when" you can specify dates to the Amiga from and/or up until you wish to see all the files.

- Enter:

```
list since 01-jan-87␣
```

LIST SINCE This displays just the files created or edited from January 1, 1987 on. The number of program names appearing depends on how much or how little has been stored on the Workbench since the 1st of January 1987. The actual dates on which these program names were written don't appear.

- Enter:

```
list since thursday¶
```

The Amiga automatically displays everything stored since the previous Thursday. If nothing has been stored since Thursday, then the 1> prompt reappears.

LIST UP TO

There is also a special option for finding out everything stored before a given date.

- Enter:

```
list up to 24-apr-87¶
```

Now the Amiga displays everything entered on the diskette until this date. Thus, LIST offers a wide range of facilities for scanning through files according to given criteria. This option is available only in the CLI window. There is no facility in the Workbench for ascertaining the date or time of the data stored.

One more point about using UPTO and SINCE. You must enter single-digit dates (e.g., 1 January) as two digits (e.g., 1 becomes 01). Otherwise, the Amiga ignores the UPTO or SINCE command.

NOTE:

If you have memory expansion for your Amiga 500, you also own a battery operated clock. This clock is not set in the factory, so if no one else has already set it for you, it's probably wrong. This wouldn't be so bad if the Preferences clock didn't set itself after the battery powered clock.

Do the following:

- Run Preferences from the CLI as explained above.
- Set the Preferences clock to the correct time.
- Click on the Save gadget.
- Enter the CLI command:

```
setclock opt save¶
```

- If you receive the error message UNKNOWN COMMAND, enter the CLI command `settime-i` instead.

RENAME

The RENAME command is another important CLI command. This has a twofold purpose. First, it renames files. You can change one font to another name.

- Enter:

```
cd fonts¶
rename ruby.font to luby.font¶
```

The disk drive runs and renames the font.

- Enter:

```
dir¶
```

The font name Ruby is now Luby.

- Enter:

```
rename luby to ruby¶
cd :¶
```

The closing `cd`: changes the original directory to the default directory.

`RENAME` has a second function.

- Enter:

```
dir demos¶
rename demos/boxes to trashcan/boxes¶
rename demos/boxes.info to
trashcan/boxes.info¶
dir demos¶
```

The Boxes demo moves from the Demos directory.

- Enter:

```
dir trashcan¶
```

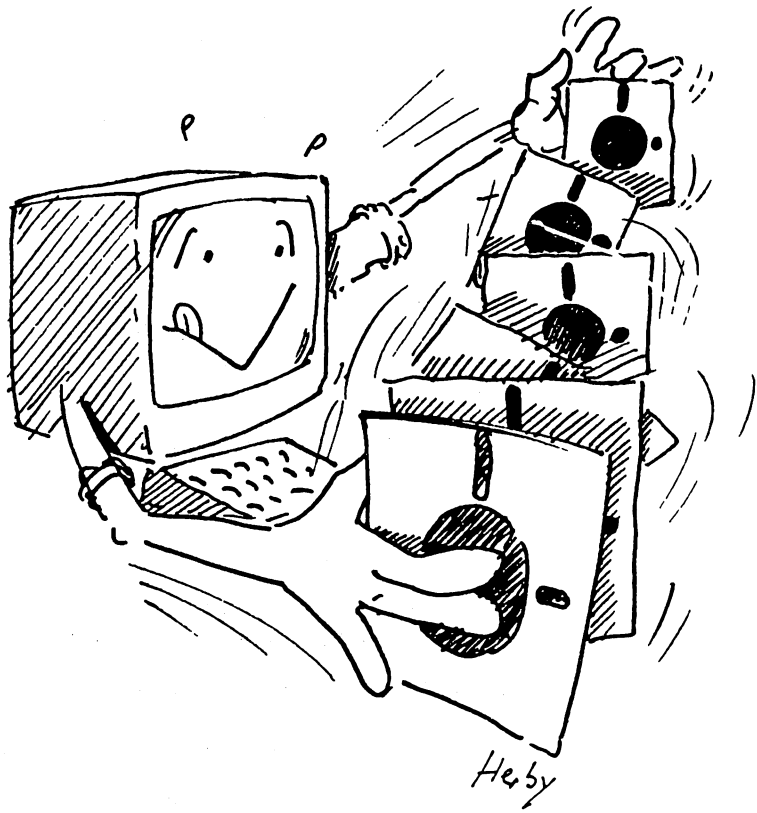
`RENAME` can be used for renaming programs and files, as well as transferring them from one directory to another.

- Reduce the CLI window as far as possible with its sizing gadget.
- Double-click the Demos drawer from the **Workbench** window.
- Double-click the Trashcan icon.

As you can see, the Boxes demo program went from the Demos drawer to the Trashcan icon. You can put everything back again without re-entering the CLI.

- Using the mouse pointer, drag the Boxes icon from the **Trashcan** window back to the **Demos** window.

Now you are familiar with a few of the AmigaDOS commands, and you have some insight into the number of programs operating in the background handling windows, pointers and menus.



4.3 CLI tricks and tips

The CLI allows you to do some things that are impossible through the Workbench alone. For one, larger and more complex programs can be copied only through the CLI.

One of these programs is the printer driver. The Extras diskette contains several additional printer drivers. If you need one of these programs, there are instructions below for copying it to your Workbench.

Second, the CLI can help single drive owners get around some tight situations when dealing with the CLI. These problems arise because the Amiga must access all CLI commands from diskette as needed. You can solve the diskette switching problem using a short DOS program called a *batch file* (more on this in a moment).

Third, when you work with BASIC, single drive system owners would find it much more convenient to have a *bootable* BASIC diskette. A bootable BASIC diskette contains a copy of the Workbench, along with the program material you need.

If you find the material below useful, or you find that you enjoy working with the CLI more than anything else so far, you can find more extensive information in the Abacus book *Amiga Tricks and Tips*.

Printer drivers

If you tried selecting a printer driver from the Change Printer screen of Preferences and didn't find your printer, look on the Extras diskette. There are more printer drivers on that diskette.

If you find your printer listed there, here's how to copy your particular printer driver to the Workbench.

NOTE:

There are some rules you should follow when performing the procedure listed below:

Please perform the following operation with backup copies ONLY of the Workbench and Extras diskettes, since you'll be erasing files you might need at a later time. Delete from and copy onto your backups only!

This operation requires a great deal of memory. If you own a 256K Amiga 1000 in particular, be sure that no extra windows are open and that absolutely no programs are running in the background.

Make sure you know the exact name of your Extras diskette. Better yet, RENAME and label the Extras diskette Extrasd, if it doesn't already have that name.

NOTE:

Most printers work under the Epson driver. If your printer doesn't appear in the Extras diskette printer driver list, try the Epson driver.

- Insert the Workbench diskette in the disk drive.
- Close all windows and make sure no extra programs are running.
- Double-click on the Workbench diskette icon.
- Double-click on the System drawer icon.
- Double-click on the CLI icon.
- Enter the following:

```
cd devs/printers
dir
```

A group of printer names appears. They are the same ones found in Preferences. Using the CLI delete command, deletes all the printer drivers you won't be needing.

- For example, Enter:

```
delete OKIDATA_292
```

This deletes the Okidata 292 printer driver from this file.

- Delete as many printer drivers as you can, except the one you need.

The following command must use the name of your Extras diskette. If you have a different name from Extrasd, use that name. The best bet is to rename your Extras diskette to Extrasd to avoid confusion.

- Enter the following:

```
cd extrasd:devs/printers
```

Remember the colon following extrasd. The Amiga requests the Extras diskette.

- Insert the Extras diskette and enter:

```
copy #? to ram:
```

- When the Amiga asks, insert the Workbench diskette.

Again, remember the colon following ram. The keys #? make up a *wildcard*. This particular wildcard tells the operating system to copy every directory entry from the Extras diskette to the RAM disk.

- Insert the Extras diskette when the appropriate requester appears.

As the Amiga copies the printer driver to the RAM disk the filename is displayed in the window.

- When the Amiga is ready, remove the Extras diskette and insert the Workbench diskette.

Now copy the printer driver from the RAM disk to your Workbench diskette.

- Enter:

```
copy ram: (printername) to df0:devs/printers¶
```

- Insert your printer name for the above parameter (printername).
- When the process finishes, enter:

```
dir df0:devs/printers¶
```

You'll see your printer driver in the disk directory of the Amiga's internal drive.

- Delete the RAM disk by entering:

```
delete ram:#?¶
```

WARNING:

Make absolutely sure that the above command reads exactly as it appears above BEFORE you press the <Return> key. Otherwise, the wildcard instructs the Amiga to delete all the entries in the directory most recently accessed (the diskette in drive df0:).

- Install your printer driver according to the instructions for setting Preferences in Section 2.10.

Batch files

There are some problems that single disk drive users have when using the CLI. Every time you input a DOS command, the Amiga requests the Workbench diskette. This is because AmigaDOS gets all its commands from that diskette. The result can be having to switch around two or more diskettes at a time. You can avoid some inconvenience by copying the DOS commands to the RAM disk.

Instead of copying these commands over by hand, you can tell the Amiga to copy them over using just one command. A series of commands executed using just one command is called a *batch file*.

AmigaDOS has an editor named Ed, accessible from the CLI. Ed is harder to use than the AmigaBASIC editor, but it works.

There's an easier way to write batch files: using the Notepad from the CLI.

- Open the CLI, if you haven't already done so.
- Enter:

```
cd utilities¶
notepad¶
```

- Once the Notepad finishes loading, enter the following:

```
if exists ram:c¶
  echo "Deleting the DOS commands from the RAM
disk."¶
  assign c: sys:c¶
  delete ram:c all¶
else¶
  echo "Copying DOS commands to the RAM disk."¶
  mkdir ram:c¶
  copy sys:c to ram:c all¶
  assign c: ram:c¶
  echo "The DOS commands are now in the RAM disk."¶
endif¶
```

- When you've typed in all these commands, select the Save item from the **Project** pulldown menu.
- Click on the Save requester's string gadget, enter the name `df0:s/ctoram` and press the <Return> key.
- Select the Quit item from the **Project** pulldown menu.

This batch file relocates all the AmigaDOS commands to drive `c:`, or the RAM disk. This frees up your internal disk drive for other tasks, instead of accessing the CLI through the Workbench diskette. Also, this RAM disk DOS set is only temporary; you can install and remove it as needed.

- Enter the following next to the CLI prompt:

```
execute ctoram¶
```

The Amiga requires about 200K of memory for storing the DOS commands. You should only use this batch file when copying diskettes, or for other CLI tasks. This batch file is written in such a way that when you execute it a second time, it deletes the DOS set from the RAM disk.

The first line of the batch file checks for the existence of directory `c` in the RAM disk:

```
if exists ram:c
```

If directory `c` exists, the lines directly beneath this line execute.

The next line uses the `echo` command, which works something like BASIC's `PRINT` command. This displays the contents in quotation marks on the screen:

```
echo "Deleting the DOS commands from the RAM disk."¶
```

The `assign` command is somewhat more complex than `echo`. It acts here as an equivalent of BASIC's `IF/THEN`. For example, this line looks for directory `c` and for DOS commands already in the RAM disk:

```
assign c: sys:c
```

If the DOS commands already exist, the next line executes. However, if the DOS commands aren't in directory `c`, the batch file goes on to the section following the `else` command.

The key line of this section is the line which deletes the files:

```
delete ram:c all
```

The program code following the `else` (alternate case) starts by displaying a message on the screen:

```
echo "Copying DOS commands to the RAM disk."¶
```

The file creates a directory for the DOS commands:

```
makedir ram:c¶
```

The DOS files all copy over to this directory.

```
copy sys:c to ram:c all¶
```

This `assign` command assigns all these files to the RAM disk directory `c`:

```
assign c: ram:c¶
```

The CLI displays a message through an `echo` command:

```
echo "The DOS commands are now in the RAM disk."¶
```

And the program ends here:

```
endif¶
```

BASIC Workbench

You can also make bootable Workbench diskettes using the CLI and two disk drives. Using CToRAM, the CLI copies the Workbench to a formatted diskette.

- Execute CToRAM if it isn't already active.
- Insert a blank formatted (initialized) diskette into your external disk drive.
- Make sure the Workbench diskette is in drive df0:
- Enter the following set of CLI commands:

```
copy sys:c to df1:¶
copy sys:l to df1:¶
copy sys:system to df1:¶
copy sys:devs to df1: all¶
mkdir df1:s¶
copy sys:s to df1:s¶
copy sys:t to df1:¶
copy sys:fonts to df1:¶all
copy sys:libs to df1:all¶
```

The blank diskette now contains all the necessary Workbench files. The diskette copying process takes quite a while with the one disk drive. You need one more command to create a bootable diskette—install. This makes a normal diskette which contains all the necessary Workbench programs into a booting Workbench diskette.

- Enter:

```
install df0:
```

The procedure ends; you now have a bootable diskette.

Insert the Extras diskette in drive df0: and enter:

```
copy df0:amigabasic to df1:
```

You now have a bootable BASIC diskette.

Appendices

Appendices

These Appendices contain information you may not find elsewhere in this book.

Appendix A is a short course in troubleshooting your Amiga. Most of these solutions apply to your first time assembling and turning on your Amiga. The problems consist of the little things that can go wrong when your starting out.

Appendix B is a list of terms. Most of these terms already appeared in the book, and may need more explanation. There are also words here that didn't appear in the book at all, and are listed here with definitions for later reference.

Appendix C depicts each icon type used by *Intuition*, together with descriptions of these icons.

Appendix D offers instructions for using *IconEd* (the icon editor) for creating your own icons, or editing the icons that already exist on your diskettes.

Appendix E contains a few general technical notes about the Amiga and its internal features (circuitry, video and sound, etc.).

A First aid

PROBLEM: No screen display.

SOLUTION: There could be several reasons for this. You have forgotten to plug the monitor into the wall socket, or you didn't connect the monitor to the computer. If your using the Amiga monitor (i.e., the Commodore RGB monitor), make sure that the VIDEO MODE switch under the door is switched to **RGB**. The switch should be in the far right position. This could also happen on other RGB monitors.

PROBLEM: No sound.

SOLUTION: First, check the volume control on your monitor; it may be all the way off. Second, make sure that the Amiga sound output is connected to a monitor or stereo system (see Section 1.1 of this book for connecting instructions).

PROBLEM: The **BASIC** window, **CLI** and **Notepad** reject any input.

SOLUTION: This most often occurs when you run a **BASIC** program and click the pointer on the **LIST** window. Now you can't enter any data in the **BASIC** window until you click on the **BASIC** window again.

This fault can also occur on the Amiga 1000 or 2000 if the keyboard cable becomes disconnected.

PROBLEM: Computer ignores mouse input.

SOLUTION: Be sure your mouse is plugged into **JOYSTICK 1**. If the mouse still doesn't work, open the mouse and make sure that the mouse's ball moves freely. You may need to open the mouse to free up the ball (see Section 1.2 for instructions on opening the mouse).

PROBLEM: Newly formatted diskette window's disk gauge says that the diskette is full.

SOLUTION: If the disk gauge says that the diskette is full, and you just copied or formatted it, or it only contains a few files, then you're in trouble. You probably removed the diskette from the drive while the disk drive LCD was still on. That act destroys diskette data. The only way to make the diskette usable again is to reformat it (see Section 2.5 for instructions on formatting). You might be able to recover some of the files using the **diskdoctor** from the **CLI** (see the next Solution).

PROBLEM: READ/WRITE ERROR displayed on screen.

SOLUTION: Occasionally disks may not be running at top efficiency. This is when READ/WRITE ERRORS occur. That is, the Amiga can no longer access the diskette. One day a diskette may load fine, the next it may not ever work again. There are some ways around this problem.

- Format a blank diskette.
- If you only have one disk drive, copy directory c over to the RAM disk.
- Start the CLI and enter:

```
diskdoctor df0:¶
```

The Amiga tells you which track has the problem, then attempts to recover the files on that track.

- When the `diskdoctor` finishes, it requests that you COPY NECESSARY FILES TO NEW DISK. Enter:

```
copy df0:#? to empty: all
```

Replace the name `empty` with your own diskette name. This target diskette must be empty.

PROBLEM: Accidentally deleted programs.

SOLUTION: This happens frequently: You accidentally delete something you didn't want to delete. It doesn't matter whether you do this from the Workbench or from the CLI. Don't save anything else to that diskette right now, or else you might overwrite the deleted program.

- Go to the CLI and activate the `diskdoctor`.
- After the `diskdoctor` finishes, enter:

```
dir¶
```

Your missing files may or may not be in the directory.

- Enter the following to exit the CLI:

```
endcli¶
```

PROBLEM: Keys repeat too fast.

SOLUTION: Adjust the key repeat rate in Preferences (see Section 2.10 for instructions).

PROBLEM: Text display is unreadable.

SOLUTION: You can also solve this by using Preferences. Certain color combinations make text unreadable (white on white, for example). If this occurs in Preferences, click on the Reset All gadget. This changes the Amiga back to its original Workbench colors. If this problem occurs in BASIC, restart the program. The screen values reset at the beginning of every BASIC program. As soon as the program restarts, stop the program by selecting the Stop item from the Run pulldown menu. Remember to correct the program before you run it again.

PROBLEM: Icons appear out of nowhere.

SOLUTION: Sometimes, especially just after programming in BASIC, a program icon which should be in the BASICDemos drawer appears in the Workbench window instead. You must specify exactly where this program should be saved. To return the icon where it belongs, drag the icon to the correct drawer or diskette icon.

PROBLEM: Files disappear.

SOLUTION: The program may be stored in the wrong drawer. Look through all the drawers and windows. If you still haven't found the program, you've managed to bypass all the built-in safety features of the Amiga, and erased the program without saving it.

PROBLEM: Program constantly produces software errors.

SOLUTION: Software errors can be caused by almost anything within a program. There's one problem, however, that often can be solved by the user. Some programs cannot run on an Amiga with more than 512K of memory. If you have memory expansion going above 512K, double-click the NoFastMem icon in the System drawer before running the problem program. This cuts the additional memory off, allowing the program to run properly. If this still doesn't work, contact the software manufacturer or dealer and ask about updates or error reports for the program. After all, it's possible that other people have encountered the same problem, and that it has been resolved in the meantime.

PROBLEM: Problems not mentioned above.

SOLUTION: See your dealer. First try to determine whether it is a hardware or software failure. For example, if the Amiga consistently rejects the Workbench diskette, the fault probably lies in the software. Take the diskette to the dealer. Only visit the dealer when all else fails.

B Icons

This is a summary of the most important icons in the Amiga operating system. Look for the icon you want information on; the description appears below the icon.



Drawers in Intuition correspond to directories in AmigaDOS. The easiest way of creating drawers on your own diskettes is dragging the Empty drawer icon from the Workbench window to your own diskette window, and rename the drawer in your window.



Double-click the Preferences icon to change almost any aspect of the screen display, such as color, pointer speed and time setting. You can also set your printer driver and output parameters from Preferences.



This is the Clock icon. You can display the clock in analog or digital format (with or without hands), and in 12-hour or 24-hour format. The Amiga clock also has an alarm. Set the clock time from Preferences (see Section 2.9 for more information).



The **Trashcan** icon is your area for file disposal. You can remove icons from the **Trashcan** if you haven't selected the **Empty Trash** item from the **Disk** menu in the **Workbench** (see Section 2.8 for more information).



Disk icons represent diskettes in the Amiga disk drives. Double-clicking a diskette icon opens diskette windows.



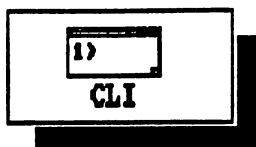
This is the icon for starting **AmigaBASIC**. Double-clicking produces a **BASIC** window and a **LIST** window ready for programming.



This icon represents an **AmigaBASIC** program. Double-clicking this icon executes the program if **AmigaBASIC** is also available.



All files bearing this icon are data files used by programs (for example, files generated by IconEd or ObjEdit).



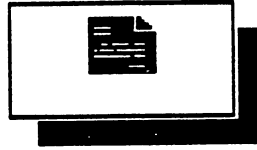
Double-clicking this icon opens a CLI window in which DOS commands can be entered (see Chapter 4 for more information on the CLI).



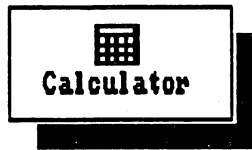
This icon opens IconEd, used for editing and changing icons in the Amiga operating system (see Appendix E for information on using IconEd).



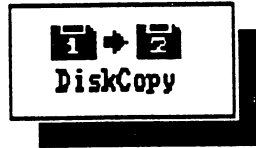
Notepad is a program for writing short messages. It also permits the use of various fonts and typesyles (see Section 2.6).



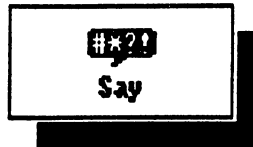
This is an icon for a Notepad text. It represents any files created using the Notepad utility (see Section 2.6).



This icon represents the Amiga Calculator, which lets you perform simple arithmetic (see Section 2.6 for further information).



This icon represents a diskette copying program. Use it to make backup copies of all important diskettes (see Section 2.5 for instructions).



This icon represents the Say program, which enables the Amiga's speech capabilities.



Double-clicking this icon sends a hardcopy of the current screen contents to a printer.



This icon calls a program for setting the Amiga's keyboard layout. When you need a different keyboard setup, you can set the keyboard from the **SetMap** info window then double-click the **SetMap** icon (see Section 2.5 for more information on **SetMap**).



This icon signals an expanded Amiga 500 to block out the additional 512K of memory without turning off the memory expansion. The reason for this is that some programs cannot run with more than 512K of memory.

C Brief computer glossary

- Alert** This is a type of requester that appears at the top of the screen when the Amiga has a major error. Alerts display in red, with a blinking border, red lettering and a black background. Follow the Amiga's instructions to get out of it (see also *Guru meditation*).
- Assembler** An assembler lets you enter and run programs in *machine language*. Machine language is quicker than BASIC because there is no need to translate the command through an *interpreter* (see *BASIC interpreter*). However, machine language is very difficult to learn.
- BASIC interpreter** This program continuously runs in the computer once you load AmigaBASIC. It enables the computer to interpret and execute commands entered by a user in the BASIC language.
- Bit** Bit is an abbreviation for BINARY digiT. This is the smallest data unit a computer can process. A bit can have a value of either 1 or 0, which reduces the likelihood of data transmission errors. As the numbers get larger, the numbers of 0s and 1s increase. 8 bits equal 1 *byte*.
- Block** Memory on diskette is measured in blocks. For example, a file of about 543 bytes in length takes up about 2 blocks on diskette. Blocks appear in **Info** windows.
- Byte** Every memory cell in the Amiga consists of one byte (eight bits). The highest figure a byte can represent is 255, since 255 in the binary number system = 11111111. A byte can also represent a letter or character. The internal memory capacity of the Amiga 500 comprises a maximum of 524,288 such characters.
- C** C is another programming language. It is very fast, and once mastered, offers the user no end of opportunities on the Amiga. C is very difficult to learn.
- CAD** CAD stands for Computer Aided Design. This process speeds up the design aspects of many fields, from architecture to auto manufacturing.
- Central processing unit** The most common use of this term refers to the main *chip* of a computer (for example, the 68000 microprocessor in the Amiga). This book uses *central processing unit* to describe the Amiga itself.
- Chips** Everything in the computer depends on the chips. Each chip contains hundreds of electronic circuits. These circuits control the sound, graphic and logic systems of the Amiga.

- Cinch cable** The Amiga has 2 cinch outputs for connecting its audio output to stereo equipment. Another term for cinch cable is *RCA cable*.
- Cold start** You perform a cold start when you turn on the Amiga (see also *Warm start*).
- Compatible** Something is compatible if it operates or agrees with something else. If your printer works with the Amiga, then it's compatible. If your hard disk doesn't work with your Amiga, it's incompatible.
- Computer animation** Computers simulate animation by continually erasing and redisplaying dots on the screen. This is best explained in the animation demo in Section 3.7. The quality of the animation depends on the speed of the computer and the quality of the picture.
- Cursor** The cursor is an entry marker. Different cursors appear on the Amiga screen, according to whether you are programming in BASIC or entering DOS commands. The Amiga system also has the mouse pointer (the arrow moved by the mouse).
- Diskette** Diskettes are small plastic boxes containing magnetic media. This magnetic media holds data placed on it by a disk drive, and can be recalled by the Amiga at any time.
- DOS** Short for *disk operating system*. This is the program which controls all operations between the computer and the disk drives. It has its own interpreter, allowing you to enter commands direct. The Amiga's DOS is accessible through the CLI.
- Editing** Editing is the process of changing text or program code within the computer. For example, a program can be edited, or the mouse pointer can be edited from Preferences.
- Expansion port** This is the external computer connector which permits adding memory and peripherals.
- File** Files are any computer data stored on diskette. The word can refer to programs, graphics or data.
- Guru meditation** When the Amiga stops working because of software problems, system crashes (see Section 2.5) etc., an *alert* appears at the top of the screen, calling the error a *Guru Meditation*. There's nothing you can do about this when it happens; just follow the instructions in the alert.
- Hardware** The computer, the chips inside and the keyboard are hardware. Printers and external disk drives are also sometimes called hardware, but are usually referred to as peripherals.
- Modem** Short for MODulator/DEModulator. This device converts Amiga signals into electrical impulses and transmits these impulses over telephone lines, and converts received impulses back into signals understandable by the Amiga.

- Multitasking** This is the name given to the Amiga's ability to perform several tasks simultaneously.
- Operating system** A computer has to know certain facts automatically. If the Amiga starts without a diskette inserted, the system notices this and requests the Workbench diskette. The operating system ensures that the Amiga performs its initial tasks and checks for keyboard or mouse input.
- Peripheral** All external units connected to the Amiga. External disk drives, printers, modems, etc. are peripherals.
- Pixel** Pixels are the individual dots on the screen. Coordinate (0,0) of the Amiga screen represents one pixel. The more pixels a computer can display, the better the *resolution*. The resolution defines the maximum number of dots into which a screen can be divided. The higher the resolution, the better and more reliable the display.
- Printer** Printers convey data to paper. The Amiga accepts a wide range of printers (see Section 2.10 for the current printer list). Two types of printers are most common: dot-matrix printers and daisywheel printers. Dot-matrix printers can print graphics, and daisywheel printers cannot. Until recently the main advantage of a daisywheel printer was that it produced letter quality type. A daisywheel printer is simply a typewriter connected to a computer. Manufacturers have recently produced printers that can print Near Letter Quality (NLQ) print.
- RAM** Random Access Memory. RAM is the free memory of the computer, the area used by you and your program. This memory can be read from and written to, and erases when you turn the computer's power off.
- ROM** Read Only Memory. ROM is the opposite of RAM: memory which allows you no access. The ROM contains the operating system. ROM cannot be erased when you turn the computer's power off.
- Software** Any programs located on diskettes or in other forms.
- Warm start** Warm starting the Amiga means restarting it without turning it off. Pressing <Ctrl><Commodore logo> (or left <Amiga>) right <Amiga> executes a warm start. Note for Amiga 1000 owners: When you perform a warm start, the Amiga 1000 doesn't need your Kickstart diskette—it goes right on to the Workbench phase of startup.

D The icon editor

The icon editor lets you create stunning icons for any program. For instance, in the lotto program, you could make an icon of little balls instead of the usual BASIC program icon. A videocassette database program could have a camera icon, a statistical graphics program could have a bar graph icon, etc.

Every time you load, edit and save a program in AmigaBASIC, an icon created before this editing session self-destructs and returns to the normal BASIC program icon. You'll save time and effort by creating a new icon after you finish the editing phases of the program. You also might want to store your favorite icon designs in a separate drawer for later use.

- Double-click the System drawer icon in the Workbench window.
- Double-click the IconEd icon.

Once the editor loads, a large white window appears. This window contains general data about the icon types available. Throughout this book you've seen that the Amiga has a separate information file for each program. Think of all the data displayed in the info window. One important piece of information is the program's source (BASIC, Notepad, etc.). The Amiga stores this information in a file that has the same name as the program itself, except for the addition of an .info suffix on the end of its name. When you create new icons, make sure you use icons of the same or similar type as the new program. Here's an overview of the various icon types:

Type	Example
diskette	Workbench icon
directory	empty drawer
tool	icon ed. icon
project file	notepad project icon

- Click on the OK gadget.

Now the icon editor displays the editor icon itself, in a large frame (the **Editor** window) and in nine smaller frames. The small frames could each contain different icons, since the icon editor lets you process up to nine icons at once.

Before you load an icon to be changed, you must specify the frame of the icon you want changed.

- Click on the third frame of the top row.

This frame turns black, indicating that this frame is active.

- Click on the top left small frame.
- Press and hold the right mouse button.

A menu bar appears at the top of the screen:

Color Copy Move Text Disk Misc HiLite

- Move the pointer to the **Disk** menu title, and select the **Load Data** item.

Now a black requester appears. A string gadget below the heading **Load Icon Image Data** lets you type in the name of the icon you want loaded.

- Click on the string gadget.
- If the field already contains text, use the <Backspace> key to erase everything to the left of the cursor, and the key to erase everything to the right of the cursor.
- Enter:

```
df0:trashcan
```

- Click the **Load Icon Image** gadget.

The **Trashcan** icon appears in the large frame and the upper left small frame.

You already know from the section on AmigaDOS that the Amiga has subdirectories. If, for example, you wish to load a program called **Dialog** from the **BASICDemos** drawer (subdirectory), then you must also specify this:

```
df0:BASICDemos/Dialog
```

The disk drive must always be specified as well. It is essential that you already know the name of the icon you wish to change, because the editor has no **DIR** or **LIST** command available.

Whenever you wish to load other icons, you must activate a new frame into which the icon goes. Anything else in this frame erases.

Color

The **Color** pulldown menu enables you to specify the color in which you wish to draw. Select the color you want. The active color has a checkmark to the left of the color bar.

Copy

This menu moves icons between icon frames. The **Undo Frame** item cancels all changes made to an icon, provided the original icon is still on diskette. The **Snapshot Frame** item stores the image currently in the **Editor** window. Selecting **Undo Frame** restores the original icon.

- Select the **Snapshot Frame** item from the **Copy** pulldown menu.

From Frame relocates an icon from one frame into the currently active frame. The window from which the copy comes is indicated by a set of number options.

- Move the pointer onto the **From Frame** item of the **Copy** pulldown menu (do not release the right mouse button).

A set of number options appears, numbered 1 to 9.

- Move the pointer onto the option number 4 and release the right mouse button.

The **Trashcan** icon disappears. **From Frame** transfers the old icon to the **Editor** window, and erases the old icon from its original frame. However, you clicked **Snapshot Frame** earlier, so you can easily restore the **Trashcan** icon.

- Select the **Undo Frame** item from the **Copy** pulldown menu.

You can also copy the **Trashcan** icon using this method:

- Click the upper right frame.
- Press and hold the right mouse button and move the pointer onto the **Copy** pulldown menu.
- Move the pointer onto the **From Frame** item.
- Move the pointer onto option number 1 and release the right mouse button.

You now have a duplicate of the **Trashcan** icon.

The **Merge With Frame** item lets you merge two icons in one frame.

- Select 2 from the **Merge With Frame** item.

This displays the icon editor icon on top of the **Trashcan**. However, the colors have changed. The **Trashcan** remains almost the same except that part of its black line has disappeared. But the icon editor is a completely different color. The reason is that certain color conditions

apply to the editor. The following explanation assumes that your Amiga system uses the default Workbench colors:

When blue overlaps any other color, the other color appears instead. When orange overlaps white or black, orange appears.

Keep these color combinations in mind when merging different icon frames.

You can now perform one of the basic items of the editor, drawing with the mouse cursor, just as you learned with the **Pointer Editing** window in **Preferences** (see Section 2.10).

- Drag the pointer into the **Editor** window field.
- Press and hold the left mouse button and move the mouse.

This draws lines in the **Editor** window. The lines here are finer, which lets you create higher quality graphics.

- Select another color from the **Color** pulldown menu.
- Move the pointer into the **Editor** window again.
- Press and hold the left mouse button and move the pointer around.

This line appears in the selected color.

- Select the **Undo Frame** item from the **Copy** pulldown menu to display the original Trashcan icon.

Move

The **Move** pulldown menu has two items. The **In-Frame** item moves icons within the **Editor** window.

- Select the **In-Frame** item from the **Move** pulldown menu.

A black requester named **Move Image In-Frame** appears. This requester contains four arrow gadgets (up, down, right and left) and a blank box in the center of these arrows. The icon moves in the direction of the arrow you click. If you click the up arrow gadget, the icon moves up, and so on. The box in the center of the arrow gadgets restores the icon to its original position in the **Editor** window.

This requester defaults to the **Single** gadget, which moves the icon in single steps. If you click on the **Repeat** gadget, the icon moves in the direction selected for as long as you hold the left mouse button. Click on the **OK** gadget to accept the new icon position, or the **Cancel** gadget to exit this requester and return the icon to its original position.

- Click on the **Cancel** gadget.

Text

The **Exchange With Frame** item exchanges the active icon frame with the icon frame selected from the numbered option.

This menu lets you enter text on the icon. Do not confuse the text on the icon with the name below it; the Amiga assigns this program name to the icon. The **Text** menu has just one item, **Write Into Frame**.

- Select the **Write Into Frame** item from the **Text** pulldown menu.

A string gadget appears, into which any text can be entered.

- Click the **Text** string gadget and enter text.

The Amiga limits you to the amount of text you can enter. The screen flashes if the text is too long.

The **Foreground** gadget specifies the text color, and the **Background** gadget specifies the background color.

- Click the **Foreground** gadget until you see a **Workbench** color you like.
- Click the **Background** gadget until you see a **Workbench** color you like.

The **Font** gadget specifies the font size. There are only two options: **TOPAZ_SIXTY** and **TOPAZ_EIGHTY**.

The **Mode** gadget offers four types of text display. **JAM 1** displays the text directly on the icon (i.e., in the foreground color). **JAM 2** displays the text in the selected background color. **COMPLEMENT** displays the exact complement of the background color for the text. That is, a blue text appears on an orange background. However, if there is a black dot within the orange area, the text there appears in white. **INVERSE** reverses the colors and interchanges the text and background colors.

The **Position** gadget specifies the location of the text. When you click on **Position**, the requester displayed is almost the same as the requester from the **In-Frame** item of the **Move** pulldown menu.

- Click on the **Position** gadget.
- Look at the requester, then click on its **Cancel** gadget.

The **Reset** gadget resets the text window to its initial values. The **Cancel** gadget stops the process without changing the icon text, and the **OK** gadget accepts all the changes in the **Editor** window.

Disk The **Disk** pulldown menu has items for saving and loading data. When you select the **Save Data** item, the **Save Icon Image Data** requester displays the last icon name used.

Misc This menu title is the abbreviation for **Miscellaneous**. The **Clear This Frame** item erases the contents of the **Editor** window. The **Flood Fill** item fills in enclosed areas.

- Select the **Flood Fill** item from the **Misc** pulldown menu.

This displays **Flood Fill Activated** in the title bar. If you now click within an area such as the **Trashcan** icon's lid, the entire area fills with the selected color. Remember to select the color before performing this operation.

- Click within the **Trashcan** icon's lid.

Flood Fill deactivates immediately after use.

The **Set Bottom Border** item sets the spacing between the bottom of the icon and the icon's program name. The option offers 0 (no space) or 1 (one space).

HiLite This last menu title specifies whether the icon should appear in **Inverse** (black becomes white, etc.) or **Backfill** (different background color).

- Select the **Save Data** item from the **Disk** pulldown menu.

A requester containing a string gadget and three other gadgets appears.

The string gadget accepts filename input. This gadget retains the last icon name used for loading data or saving data. The **<Backspace>** and **** keys erase text.

The **Save** gadget saves the icon to diskette. The **Cancel** gadget exits the requester without saving the icon data.

The **Frame and Save** gadget lets you select the size of the area around your icon before saving.

- Click the **Frame and Save** gadget.
- Click in the upper left corner of the **Editor** window icon.
- Move the mouse down and to the right of the icon.

A rectangular frame moves with the pointer.

- Surround the icon with the frame and press the left mouse button.

The Amiga saves the icon you have designed.

E Technical data

- Processor** Motorola MC 68000 with a clock speed of 7.16 MHz.
- User RAM** 512 kilobytes available, internally expandable to 1 megabyte, externally expandable to 8 megabytes (Amiga 1000: 256 kilobytes available, expandable to 512 kilobytes).
- System ROM** 256 kilobytes of ROM, containing startup data (Amiga 1000 uses the Kickstart diskette instead of system ROM).
- Mass storage** Built-in floppy disk drive, uses 3.5" double-sided, double density floppy diskettes, with a capacity of about 900 kilobytes per diskette. External floppy disk drives are available.

Interfaces

Serial keyboard connector with coiled cable (Amiga 1000 only).

RS-232 (serial) interface for connection to a modem, etc.

Centronics (parallel) interface for connection to printers.

Dual joystick/mouse/paddle jacks.

Two audio outputs for connection to a stereo system.

RGB for connection to an RGB monitor.

MONO for connecting to monochrome monitor.

Graphics

Video display modes:

320x200 pixels with 32 possible colors, using a scan frequency of 60 Hz (interlaced). Two colors displayed require about 10 kilobytes of memory. 32 colors require 50 kilobytes.

320x400 pixels with 32 possible colors, using a scan frequency of 30 Hz (interlaced). Two colors displayed require about 20 kilobytes of memory. 32 colors require 100 kilobytes.

640x200 pixels with 16 possible colors, using a scan frequency of 60 Hz. Two colors displayed require about 20 kilobytes of memory. 16 colors require 80 kilobytes.

640x400 pixels with 16 possible colors, using a scan frequency of 320 Hz (interlaced). Two colors displayed require about 40 kilobytes of memory. 16 colors require 160 kilobytes.

There are a possible 4096 colors available on the palette. The graphic processor can have all 4096 colors on the screen in hold and modify mode (HAM), but your screen design is limited in this mode.

The processor can build two different screen displays simultaneously with 8 different colors (not to be confused with window colors).

In addition, 8 sprites can be simultaneously displayed, with a 16 pixel horizontal resolution and an unlimited vertical resolution. The graphic processor (blitter) can use any part of RAM for display memory, and can rapidly transfer other data quickly through the DMA.

Sound

4 channel synthesizer uses a variable waveform with 8-bit resolution at 0 to 7000Hz. Can also generate speech from phonetic interpretation of text.

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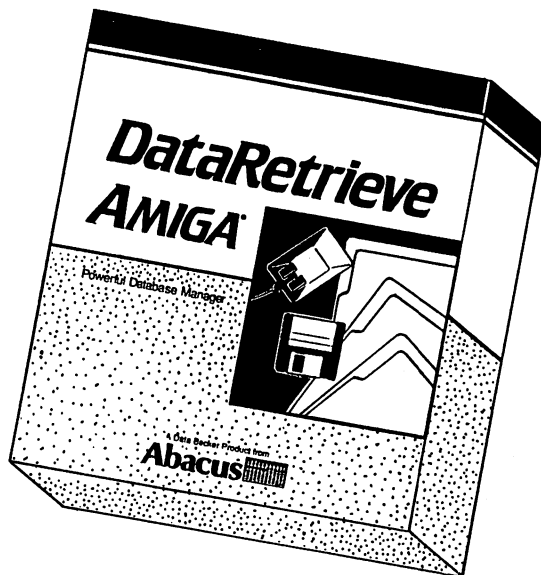
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
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