

Quarter Note Triplet =



Virtuoso!
A True Musical Master for the Commodore 64

ONLY \$24.95

synthware

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Composer: The Composer module allows you to write musical compositions either by using your creative talents or by using a step sequencer. The Composer works with the Preset module, allowing you to create a true symphony! The Composer module is very powerful and allows you to do things no other music package allows you to do. Some of the features of the Composer are:

- Write compositions up to 256 notes per voice (3 voices, 768 notes total)

INTRODUCTION

Congratulations on your purchase of Virtuoso! You are about to venture in to the world of electronic music. This may sound complex, but Virtuoso! makes it easy! Virtuoso! is a complete music package that allows you to create sounds (presets), compose, and play back compositions with ease. Virtuoso! is easy to use for the beginner, but is also a very useful composing tool for the amateur or professional musician.

Here are some of Virtuoso!'s exciting features:

Presets: The Preset module allows you to create and change sounds. Using this module allows you to create instruments such as strings, horns, woodwinds, and even a few you've never heard of before! Here are some of its features:

- Allows you to change all the parameters of the Commodore 64's SID (Sound Interface Device) chip graphically, as if you were changing the controls of a real synthesizer.
- Allows variable modulation of up to 18 parameters of the SID chip.
- Realistic synthesizer panel graphics.
- Up to 24 presets in memory at one time.

Composer: The Composer module allows you to write musical compositions either by using your creative talents or by using sheet music. The Composer works with the Preset module allowing you to create a true symphony! The Composer module is very powerful and allows you to do things no other music package allows you to do. Some of the features of the Composer are:

- Write compositions up to 900 notes per voice (3 voices, 2700 notes total)

- Complete transposing features.
- Codas, repeats and other useful functions to make composing easy.
- Easily switch presets, change volume of a voice (or overall) or change key signature throughout a composition.
- Complete 8 octave scale.
- Use dotted whole notes down to 1/64 notes.
- Notes can be played staccato, legato, or normal.

Player: The Player module puts everything together. The Player plays compositions written by the Composer using presets created by the Preset module. Some of the Player's features are:

- Adjustable tempo to play back compositions from very fast, to very slow.
- Ability to play normally or in "background" mode that allows you to work on other things while your composition plays!
- A MULTI-COMPUTER feature that allows two or more Commodore 64's to be connected and play back multi-part compositions in synchronization.

But, that's not all! Virtuoso! lets you expand. You can add-on the following features:

- Play compositions written with Virtuoso! in the background of a BASIC program.
- A musical keyboard to play or compose music.
- A digital sampler that allows you to sample sounds using a microphone and use them in a composition.

GETTING STARTED

To load Virtuoso!, follow these instructions:

- 1) Turn the computer, disk drive, monitor or TV, and printer (optional) ON.
- 2) Place the disk into the drive with the label up and the small rectangular notch on the right side.
- 3) Type: LOAD"BOOT",8
- 4) The .64 will respond with:
SEARCHING FOR BOOT
LOADING
READY.
- 5) Type: RUN
- 6) The disk drive will run for about 30 seconds, after this you will see the "synthesizer" or preset panel for Virtuoso!, you are ready to begin!

MANUAL OVERVIEW

This manual is broke down in such a way that you will first get a taste of what Virtuoso! can do, and then you will take control of Virtuoso! and start creating sounds and compositions. In other words, the manual should be read from the start to end while using Virtuoso!. The manual also serves as a good reference once you become familiar with Virtuoso!

USING VIRTUOSO!

To become familiar with Virtuoso!, try the following steps. (After you have loaded Virtuoso! as instructed in "GETTING STARTED"):

<u>You Type</u>	<u>What Happens</u>
^	You go from the Preset Panel to the Main Menu.
1	Tell Virtuoso! to load a Preset from disk into memory.
bells RETURN	Disk Drive light comes on.
0 RETURN	Loads Preset from disk.
X	Go back to Preset Panel and watch the panel change to the new preset.
^	Go back to the Main Menu.
7	Go to Player sub-menu.
1	Load a composition from disk.
bells RETURN	Disk drive light comes on and a composition is loaded from the disk.
2	Set the Tempo.
3000 RETURN	Set Normal Tempo.
70 RETURN	Set Background Tempo.

(at this point make sure that the volume is up on your amplifier)

- 3 Play a composition in normal mode.
- SPACE BAR Composition starts to play!
- ^ Go back to Main Menu.
- 1 Load a different Preset from disk.
- bells2
RETURN Disk drive light comes on.
- 0
RETURN The new Preset is loaded from disk.
- X Watch the Panel change to the new Preset settings.
- ^ Go back to the Main Menu.
- 7 Go to Player sub-menu.
- 3
SPACE BAR Play composition in Normal mode, notice how the sound of the composition has changed.
- ^ Go back to the Main Menu.

We hope that this will have helped you get a little better understanding of how Virtuoso! works. The following sections will explain each option of Virtuoso! in detail.

THE PRESET PANEL

The Preset Panel is the first screen that will be displayed after Virtuoso! has been loaded from disk. This Panel represents a synthesizer panel that allows you to change sounds to your liking. The Preset Panel looks like this:

Virtuoso!

Voice 1																	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2	
Voice 2																		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2
Voice 3																		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2
Filter																							
Mod																							

Instructions for the Preset Panel:

- Columns 1-12: Pitch selection (C, C#, D, D#, E, F, F#, G, G#, A, A#, B, B#)
- Columns 13-16: Filter type (W, E, L, S)
- Columns 17-18: Oscillator type (L, H)
- Columns 19-20: Master/Output
- Columns 21-22: Voice parameters (1, 2)

You will notice at the top of the Panel there are instructions telling you how to operate the Panel. Let's take a look at each one of these:

MODULE SELECTION MENU OPTIONS

CRSR up/down to select module

Using the cursor up/down key will move the pair of dots on the left-hand side of screen. These red dots indicate which module is currently selected. You have five different modules to choose from:

- Voice 1 - Controls Voice 1 of the SID chip
- Voice 2 - " " 2 " " " "
- Voice 3 - " " 3 " " " "

Each of the above modules produces the raw waveforms that enable you to produce a sound.

Filter - Controls the Filter of the SID. The filter allows you to vary and enhance the harmonic structure of a raw waveform (Voice 1-3). This is known as varying the "color" of the sound.

Mod - Controls Modulation. This module allows you to use Voice 3 as a modulation source for Voice 1 and 2. With this module you can produce vibrato, tremolo, phasors and other interesting effects.

For more detailed explanation of the voices and filter please consult the Commodore 64 Programmer's Reference Guide.

+ = On

Pressing the "+" key will turn the Voice on allowing you to hear the sound you are working on. This key only works on the Voice modules. The color of the "V" on "Voice" will change to white.

- = Off

Pressing the "-" key will turn the Voice off. Here again, this key only works on the Voice modules. The color of the "V" on "Voice" will change to black.

CRSR Lf/Rt = Speed

Using the Cursor Left/Right key will change the tuning speed. This number will be displayed in the upper left-hand corner

of the screen. The larger the number displayed, the larger the increment of change. The slowest tuning speed is 1, the fastest is 99.

How to use the Panel controls

Controls on the Preset Panel are broken down into two types. The first type is a variable control and looks like:



Variable Control



Switch

The variable controls allow you to vary the frequency, pulse width, volume and many other items of the Preset Panel. The second type of control is a switch. These switches are similar to that of a telephone with a hold switch; pressing the switch once turns hold on, pressing it again turns hold off. The same is true for the Preset Panel's switches, only they have different purposes.

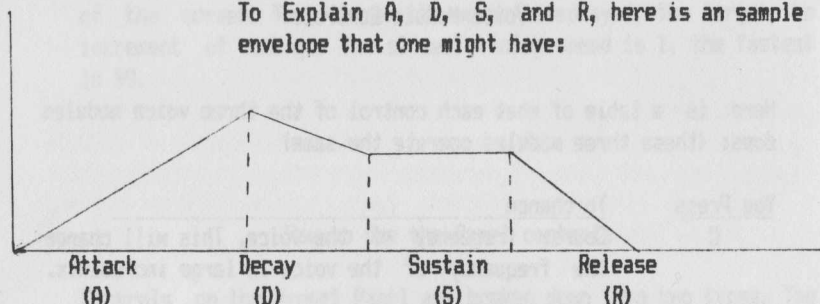
To select a control of the module currently marked by the red dots, simply press the letter of the control. If the control you selected is a switch it will be toggled on or off. If the control is variable then you can use the function keys marked F1 and F7 to tune up and down respectively. Pressing the RETURN key will quit the tuning and return you to the Module Selection Menu.

Voice Module Controls

Here is a table of what each control of the three voice modules does: (these three modules operate the same)

<u>You Press</u>	<u>To change</u>
C	Course frequency of the voice. This will change the frequency of the voice in large increments.
F	Fine frequency of the voice. This will change the frequency in smaller increments than the Course control.
W	Pulse width. This control only has effect if the Pulse waveform (P) has been selected. This control allows you to vary the harmonic structure of the Pulse Width control (also known as Duty Cycle).
A	Attack rate of the envelope.
D	Decay rate of the envelope.
S	Sustain level of the envelope.
R	Release rate of the envelope.

To Explain A, D, S, and R, here is an sample envelope that one might have:



Note that Sustain is a level of volume and not the time it takes for the sound to reach that volume. Attack, Decay, and Release all specify the time it takes for the sound to reach a particular volume.

- N Noise waveform on or off. The Noise waveform generates a sound similar to a FM radio that is not tuned to a station.
- P Pulse waveform on or off. The Pulse waveform gives a sharp, bright sound.
- Z Sawtooth waveform on or off. The Sawtooth waveform also gives a bright sound, although it is not as bright as the Pulse waveform.
- T Triangle waveform on or off. The Triangle waveform provides you with a mellow, diminished sound.

The above controls toggle the respective raw waveform on or off. Please note that if you are using the Noise waveform that you cannot use any other waveform at the same time. Pulse, Sawtooth, and Triangle may be used with each other in any combination.

- 1 Ring Modulation effect on or off. Ring modulation allows you to create the sounds of bells, gongs, or other special effects. In order for Ring modulation to be effective you must use an effects voice (see table below). Also, the triangle waveform of the current voice must be selected and the frequency of the effects voice must be set to some value other than zero. No other controls on the effects voice are concerned with Ring Modulation.

- 2 Synchronization effect on or off. This control allows you to synchronize one voice with other giving a "hollow" sound. This control also requires an effects voice, any waveform may be selected for the current voice, but only the frequency setting of the effects voice has any effect on the synchronization.

Note: The last two effects (1 and 2) are used in conjunction with a second voice. Here is a short table showing the correspondence:

<u>Current Voice</u>	<u>Effects Voice</u>
1	3
2	1
3	2

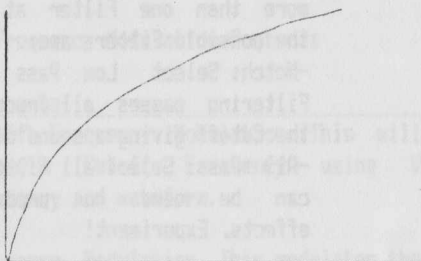
Filter Module Controls

The Filter module is probably the most valuable module on the Preset Panel since it allows you to vary the harmonic structure (or "color") of a raw waveform. To select a control on the Filter Module you use the same procedure as with the Voice modules. Here

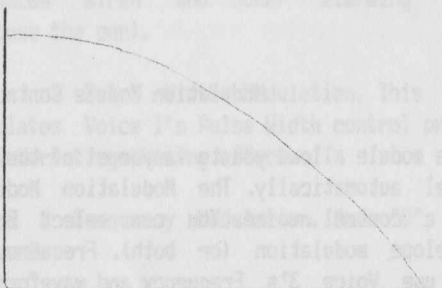
is a table of what each one of the controls do:

<u>You Press</u>	<u>To change</u>
C	Cutoff (or center) frequency. This control dictates what harmonic frequencies will be passed through the Filter and which will be suppressed.
R	Resonance. This control emphasizes the frequencies (components) being passed through the Filter at the Cutoff frequency. This causes a sharper, and in most cases, a more realistic sound.
E	External Audio on or off. When this control is on, the External Audio present at pin 26 of the Audio/Video port will be routed through the Filter. If the switch is off, the External Audio goes to the Audio Output. See the Commodore 64 Programmer's Reference Guide for more information on the Audio/Video port.
1	Voice 1 routing. If this switch is on, Voice 1 will be routed through the Filter. If it is off, Voice 1 goes directly to the Output.
2	Voice 2 routing. Same as above, but for Voice 2.
3	Voice 3 routing. Same as above, but for Voice 3.
0	Voice 3 on or off. If on, this switch will disconnect Voice 3 from the Audio Output. This is handy since Voice 3 is used for modulation and one may not want the Output of Voice 3 to be heard.
H	High Pass Filter on or off. If on, this switch passes all frequency components above the Cutoff

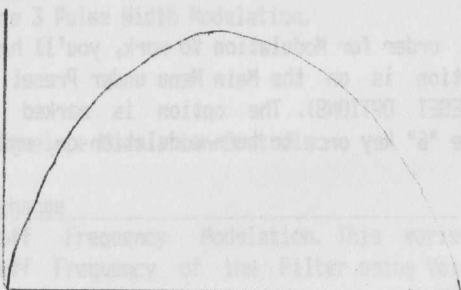
Frequency. High Pass Filtering produces a bright or tinny sound.



L Low Pass Filter on or off. When selected this control passes all frequency components below the Cutoff Frequency. The Low Pass Filter produces deep, full sounds.



B Bandpass Filter on or off. This control passes all frequency components around the Cutoff Frequency. The Bandpass filter produces thin sounds.



Note: Other Filters can be derived by selecting more than one Filter at the same time. Some of the possible Filters are:

-Notch: Select Low Pass and High Pass. Notch Filtering passes all frequencies above and below the Cutoff giving a sound of a "missing" element.

-All Pass: Select all Filters. All Pass filtering can be used to produce resonant-sounding effects. Experiment!

M Master Output. This control changes the overall volume of the Preset Panel. When Virtuoso! is started, this control is set to maximum.

Modulation Module Controls

This module allows you to vary most of the controls on the Preset Panel automatically. The Modulation Module utilizes Voice 3 as a control voice. You can select Frequency Modulation or Envelope modulation (or both). Frequency Modulation allows you to use Voice 3's Frequency and waveform to dynamically change controls on the Preset Panel. Envelope Modulation allows you to use Voice 3's Envelope Generator (ADSR) to dynamically change Preset controls. If there is anything important to be said here, it is that you have to EXPERIMENT to get used to all of the controls.

In order for Modulation to work, you'll have to turn it on. This option is on the Main Menu under Preset options (See MAIN MENU PRESET OPTIONS). The option is marked "6-Modulation", press the "6" key once to turn modulation on, again to turn it off. You

may select from the following controls:

Frequency Modulation Controls

<u>You Press</u>	<u>To change</u>
A	Cutoff Frequency Modulation. This will vary the Filter's Cutoff Frequency using Voice 3's Frequency and waveform.
B	Resonance Modulation. This modulates the Filter's Resonance control.
C	Master Output. This modulates the Master Output.
D	Voice 1 Frequency Modulation. This control produces siren and other "alarming" effects (excuse the pun).
E	Voice 1 Pulse Width Modulation. This control modulates Voice 1's Pulse Width control producing an interesting phasing effect.
F	Voice 2 Frequency Modulation. Same "D", but for Voice 2.
G	Voice 2 Pulse Width Modulation. Same as "E", but for Voice 2.
H	Voice 3 Frequency Modulation.
I	Voice 3 Pulse Width Modulation.

Envelope Modulation Controls

<u>You Press</u>	<u>To change</u>
J	Cutoff Frequency Modulation. This varies the Cutoff Frequency of the Filter using Voice 3's

Envelope (ADSR). Note: Envelope Modulation for any control only works when Voice 3 is turned on.

- K Resonance Modulation.
- L Master Output Modulation.
- M Voice 1 Frequency Modulation. Modulates Voice 1's Frequency using Voice 3's Envelope.
- N Voice 1 Pulse Width Modulation.
- O Voice 2 Frequency Modulation. Same as "M", but for Voice 2.
- P Voice 2 Pulse Width Modulation. Same as "N", but for Voice 2.
- Q Voice 3 Frequency Modulation.
- R Voice 3 Pulse Width Modulation.

MAIN MENU PRESET OPTIONS

There are a number of Preset Panel management options available to you on the Main Menu. To get to the Main Menu from the Preset Panel, press the up-arrow key. You will see a number of options displayed on the left-hand side. These options deal with the Preset Module of Virtuoso! and are numbered 1-6. Option "X" returns you to the Preset Panel. To select any option, simply press the letter or number associated with it. Here is the options that you have available to you on the Main Menu:

Virtuoso!
Main Menu

Preset

1-Load
2-Save
3-Store
4-Edit
5-Table
6-Modulation
X-Goto Panel

Utilities

7-Player
8-Compose
9-Exit
Virtuoso!

Modulation:off

The following section describes the Main Menu Preset Options.

Main Menu Option 1 - Load

This option is used to load a previously saved preset (See Option 2 - Save) from disk into memory. You will be asked for a preset

name, enter the name of the preset that you want to load. If you had entered a preset name previously then that name will appear next to the question mark. To use the name that might appear here, simply press RETURN, otherwise enter the name of the preset and press RETURN. Next you will be asked where you want to put the preset, you have 24 different preset memory locations that you may use:

<u>Preset Location</u>	<u>Description</u>
0	This is the preset the you see on the Preset Panel. If you select to load into this preset your old preset on the Preset Panel will be replaced with the one you load.
1 through 23	These are preset locations that are mainly used for compositions. However, you may choose to use them for temporary storage. If you load into one of these locations, you will not be able to use it until you use Option 4 - Edit.

The disk will run for a few seconds after you select the Preset Location and then you will be returned to the Main Menu. You should use Option X - Goto Panel to to put the new preset into effect after loading.

Main Menu Option 2 - Save

This option is used to save the preset currently in use on the Preset Panel (Preset Location 0). You may enter a name one to fourteen characters long, followed by pressing the RETURN key. The disk will run for a few seconds and then you will be returned to the Main Menu. This option does not affect the Preset Panel.

Main Menu Option 3 - Store

This option is used to store the preset currently in use on the Preset Panel into one of the Preset Locations described

in Option 1 - Load. Since every preset has a name associated with it, you will be asked for a preset name. Enter the name (1 to 14 characters) followed by pressing the RETURN key. Next you will be asked which Preset Location you want to store it into, you may enter any number from 1 to 23 (0 is the Preset Panel). A copy of the Preset Panel will be stored into to this location for later use. This does not affect the Preset Panel.

Main Menu Option 4 - Edit

This option allows you to edit a preset previously loaded or stored (See Options 1 and 3). More specifically, you will be moving a preset stored in a Preset Location, numbered from 1 to 23, to the Preset Panel. You will be asked for the Preset Location to edit, enter a number from 1 to 23. This will replace the old contents of the Preset Panel with the Preset Location specified. This will destroy the previous contents of the Preset Panel, but the Preset Location specified will not be disturbed. You should use Option X - Goto Panel to to put the new preset into effect after loading.

Main Menu Option 5 - Table

This option produces a handy cross-reference table between Preset Locations and preset names. All Preset Locations (0-23) will be displayed along with their assigned names (if any). Press any key to return to the Main Menu.

Main Menu Option 6 - Modulation

This control is used to turn Modulation on or off (See Modulation Module Controls). Pressing "6" once will turn it on, pressing "6" again will turn it off. You will note the the message displayed on the Main Menu will change to "Modulation:on" or "Modulation:off" depending on its condition.

Main Menu Option X - Goto Panel

This option simply returns you to the Preset Panel.

USING THE COMPOSER

The composer is the true heart of Virtuoso! because it allows you to write music, which we will call compositions. To get to the Composer Menu, select Option 8 of the Main Menu (labeled Composer). The Composer menu should now appear on the screen.

The Composer Menu looks like:

```

#####
#           #
#   Composer   #
#           #
#####

```

```

1 - Edit
2 - Load
3 - Save
4 - Prepare
5 - Clear Text
6 - List
7 - Quit

```

To select an option, simply press its corresponding number. Press the up-arrow key will return you to the Main Menu.

It has been said that the best way to learn is "learning by doing", so let's jump right in and write a composition. For now, press "1" to edit a composition. Since there is no composition in memory right now, you will be starting from

scratch. The screen should now look like this:

Ln 1 Col 1
F1-PgUp F3-BgLn F5-Top F7-InsLn
F2-PgDn F4-EndLn F6-Bot F8-De1Ln
+-Exit

The upper ten lines of the screen are your work area, this is where you will type in your composition. You might not realize it, but you have much more than ten lines to work with. Depending on line size, you can have up to 600 lines! Also, you might already know that the Commodore 64 has a 40 column screen. Well, you guessed it, we have fixed this too. Press and hold down the CRSR right (cursor right) key. Note that when you get toward the right hand of the screen, the cursor will jump back to the beginning of the screen. This means that your line length can be up to 78 characters, only you view 40 character "chunks" at a time. When you get to column 40 (indicated by "Col 40" on the screen) the screen will allow you to view the second "chunk" of the line. The same is true for the upper 10 lines, you view 10 line "chunks" of your composition at a time. If you want to see more you can scroll that area up or down.

Let's look at the keys you can use for editing:

<u>Key</u>	<u>Description</u>
(up)	Moves the cursor up one line. If you are at the top of the text, you cannot go any further.
(down)	Move the cursor down one line. If you are at the bottom of the text, you cannot go any further.
(left)	Moves the cursor one character left. If you are at the beginning of the line, you cannot go any further.
(right)	Moves the cursor one character right. If you are at the seventy-eighth column, you cannot move any further.
RETURN	Moves the cursor to the beginning of the next line. If you are at the bottom of the text, another line will be added.
INS	Inserts a blank character at the cursor position.
DEL	Deletes a character at the cursor position.
F1	Page Up. Moves the cursor up 10 lines, if possible.
F2	Page Down. Moves the cursor down 10 lines, if possible.
F3	Beginning of Line. Moves the cursor to the beginning of the current line.
F4	End of Line. Moves the cursor to the end of the current line.
F5	Top. Moves the cursor to the top of the text.
F6	Bottom. Moves the cursor to the bottom of the

text.

F7 Insert Line. Inserts a line at the cursor position.

F8 Delete Line. Deletes a line at the cursor position.

^ Exit. Exits editing mode.

Try entering the following text, note that characters are always entered in lower case:

```
rem this is the first composition
voice 1
repeat 3
4 c3;4 d3;4 e3;4 f3;4 g3;4 a3;4 b3;4 c4
4 c4;4 b3;4 a3;4 g3;4 f3;4 e3;4 d3;4 c3
cont
1 r;8 a3;1 c4
```

Check the text carefully to make sure you did not make any mistakes. If it is all right, then press the up arrow key to exit back to the Composer Menu. From here, press 4 to Prepare your composition for playing. Enter a composition name, followed by RETURN. After a few seconds, the number of notes generated for each voice will be displayed along with any errors. At this point, press any key to return to the Composer Menu. Now press the up arrow key to return to the Main Menu and press 1 to load a preset (use a preset name of "test") into Preset Location zero. Now press 7 to select the Player module. Select 1 from the Player Menu to load the composition you have just prepared. Press RETURN when it asks you for a composition name. Now let's set the tempo, press 2 and enter 4000 and 70, both which are followed by a RETURN. Ready? Press 3 for Normal playing and hit the Space Bar. Now that your computer has done its exercise, it is time to take a break and figure out how

you made your computer do that.

Let's take another look at the text:

```
rem this is the first composition
voice 1
repeat 3
4 c3;4 d3;4 e3;4 f3;4 g3;4 a3;4 b3;4 c4
4 c4;4 b3;4 a3;4 g3;4 f3;4 e3;4 d3;4 c3
cont
1 r;8 a3;1 c4
```

Now let's look at what each line does:

<u>Line</u>	<u>Description</u>
1	This is simply a remark in your text to describe what the composition is or what is happening in your composition. The keyword "rem" followed by a space tells the Composer that this is just a remark and to ignore it.
2	This tells the Composer that you are going to be composing with voice 1.
3	This tells the Composer that the following notes will be repeated 3 times.
4	This line contains 8 notes, all separated by a semi-colon (;). Let us take a look at the first note for an example. "4 c3" stands for a quarter note played with a value of "4" in the third octave.
5	This is another line of notes.
6	This continues the repeat. The notes between the "repeat 3" and "cont" are repeated three times.
7	This adds the little "da-dah" at the end. Notice the "1 r"? This stands for a whole rest.

Composer Commands

In this section we will go into detail about each command that you can use in the Composer. After each command examples will be given to further explain their use.

First, some general notes:

- 1) You may put blank lines in your composition, this will help clarify your text.
- 2) Most commands require at least one space between parameters, you may use more than one space, but you **MUST** use at least one. Where a space is required, an underscore (`_`) will appear.
- 3) Most commands may be combined on one line by separating them with a semi-colon (`;`), these are known as multi-line commands. There are a few commands that must appear on a single line by themselves, these will be marked by an asterisk (`*`).
- 4) ALL commands are entered in lower case.

Now for the commands.

`rem`

The `rem` command is used to place remarks in your text. The syntax is:

```
rem_your comment
```

example:

```
rem this is a comment
```


notes

A note is used to play (or rest) a frequency for a certain duration. The general syntax is:

V_N

where: V is the duration of the note. For a quarter note, V would be 4. So, 1/V is the actual duration. V may range from 1 (whole note) to 64 (sixty-fourth note). The note value may also be followed by one or more periods indicating a dotted note. You may have more dots than one, for example, you may have double or triple dotted.

N is the frequency value of the note. N may be one of the following:

-A letter a-g representing one of the notes on the scale, followed by an optional sharp, flat, or natural signature (indicated by #, b, or n respectively), and the octave in which the note is to be played in. Octaves range from 0 to 7.

-or-

-A number from 0 to 4000 representing the frequency in Hertz (the standard measure of frequency) followed by a space and then "hz".

-or-

-A "r" representing a rest.

The following notes are all valid:

Note	Description
4 c4	Would play a quarter note in middle "C".
16 ab4	Would play "A" flat in the fourth octave for a sixteenth note duration.
2 en5	Would play "E" natural in the fifth octave for a half note duration.

8. f#3 Would play "F" sharp in the third octave for a dotted eighth note duration.

4 r Would silence for a quarter rest.

32 440 hz Would play a thirty-second note with a frequency of 440 hertz (hz). 440 hertz happens to be the "A" above middle "C".

repeat, cont

The repeat and cont commands are used to repeat a certain section of notes. The syntax for repeat is:

repeat_N

where N is the number of times to repeat the notes. N may range from 1 to 255.

The syntax for cont is simply:

cont

example of repeat and cont:

```
repeat 4
4 a4;8 b5
cont
```

which also may be written in multi-line format as:

```
repeat 4;4 a4;8 b5;cont
```

Repeats may also be nested up to 10 deep, for example:

```
repeat 10
4 a4;4 b4
repeat 4
8 b4;8 e4
cont
cont
```

move

The `move` command moves a preset from the preset table into the the Preset Panel. This command is very useful for changing instruments from within a composition. The syntax is:

```
move_N
```

where `N` is the Preset Location (1-23) to move into the Preset Panel.

set

The `set` command has multiple purposes. The general syntax is:

```
set_A_B
```

where `A` is a sub-command. The syntax for each one of the sub-commands is:

`set_sus_N` Sets the sustain time (staccato, normal, or legato). For staccato, `N` is 1. Normal, `N=2`. Legato, `N=3`.

`set_vol_N` Where `N` is the value to set the overall volume to. `N` may range from 0 (softest) to 15 (loudest). This command is useful for piano and forte effects.

`set_susvol_N` This command sets the volume for a particular

voice so that one voice may play softly, while another may play louder. N may range from 0 to 15.

set_N_V This command is used to set key signature. N may be a note "a" through "g". V is the key signature, which may be a sharp (#), flat (b), or natural (n). Once key signature has been set, all notes specified by this command will be played in that signature.

Example: set f #;8 f5; 4 d3;2 f3 - would play all f's sharp.

octave

The octave command is used to transpose the octave of a note. The syntax is:

octave_N

where N represents the number of octaves to transpose, which may range from -7 to +7, depending on the original note. PLEASE NOTE: This command will change the octave that was specified for a note. For example, if N was -2 and the octave of the note was 4, the resulting octave would be 2.

Example:

octave +2 (sets the octave transposition to +2)
4 a4;4 b4 (these notes would be played: 4 a6;4 b6)
octave -3 (set the octave change to -3)
4 a4;4 b4 (these notes would be played: 4 a1;4 b1)

The octave command will be useful for transposing codas and string definitions, which we will discuss later. The octave command stays in effect until an "octave +0" or other octave command is issued.

transpose

The transpose command is similar to the octave command, but it allows you to transpose notes down to the half-step. The syntax is:

```
transpose_N
```

where N is a number representing the number of half-steps to transpose, which may range from -96 to +96, depending on the the original note value. Here is an example table of notes and their transposed values:

Original	-----N value-----					
Note	-2	-1	+0	+1	+2	+14 +12
e4	d4	d#4	e4	f4	f#4	f#5 e5
a2	g2	g#2	a2	a#2	b2	b3 a3

Note that transposing by +12 is the same as "octave +1".

voice

The voice command defines which voice your working with. This command must be used before any notes can be played. The syntax is:

```
voice_N
```

where N is the voice number from 1 to 3. PLEASE NOTE: The voice command can only be used once for each voice. For example, "voice 1" can only be used once (i.e. there cannot be several "voice 1" commands).

(string definition),play *

The string definition command is used to define a string of notes for later use. This is very useful since the basis for most music is repetitive, you do not have to retype notes. This command is a single-line command. A string definition may occur anywhere in your text, but must have a unique name. The syntax is:

(STRINGNAME)_NOTES

where STRINGNAME is a name for the string of NOTES. NOTES may be any string of notes and/or commands that you would usually enter. For example:

(bass1) 4 a3;8 b3;8 g3;4 e3;8. a3;16 a3

would define a string of notes called "bass1", in this case a bass line measure. To play this string definition, use the command:

play bass1

The general syntax for the play command is:

play_STRINGNAME

where STRINGNAME is the string of notes to play. This command can only be used after a voice command.

coda, endcoda, docoda *

These commands are used to define and play codas. Our definition of "coda" is not the exact musical definition of "coda", but serves the purpose quite well. A coda in the Composer is similar to a string definition, only you may define multiple lines of notes. A coda definition may be placed anywhere in your text, and may be called upon at any time. To define a coda, the syntax is:

coda_CODANAME

(these are lines of notes and/or commands)

endcoda

where CODANAME is the name of the coda which must be unique.
PLEASE NOTE: Coda definitions may not contain coda definitions,
but a coda definition may call another coda. To use a coda,
use the "docoda" command. The syntax is:

docoda_CODANAME

where CODANAME is the name of a coda definition in your text.
Here is an example composition to explain codas a little better:

```
coda dudu
repeat 5
8 d4;8 d4;4 r
cont
8 d4;8 e4
endcoda
```

```
voice 1
4 a4;8 b4;8 b4;2 c5
docoda dudu
octave +1
docoda dudu
octave +0
docoda dudu
```

would play 4 notes, execute the coda "dudu", set octave change to +1, play "dudu" an octave higher, set octave change to normal and play "dudu" once more.

offset

The offset command is a special effect feature, it allows voices to be slightly mistuned which gives a "phasing" effect. This effect can be pleasing or mysterious, depending on the amount of mistuning. The syntax is:

offset_N

where N is a number from -255 to +255. You will have to experiment with this command to get the right effect for your composition. The offset command stays in effect until a "offset +0" or other offset command appears.

Closing Notes on Commands

There are ten compositions included with this package. The only way to get a real feel for composing is to look these compositions over to get a better idea of how to use all of the commands. We have tried to use all the the commands, so you should be able to get a pretty good idea of how they are used. And a last note: always, always, EXPERIMENT! This is probably the best learning experience you can have.

Composer Menu Options

This section will describe each of the Composer Menu options in detail.

Composer Menu Option 1 - Edit

Option 1 sends you into the full-screen editor that allows you to enter and edit text for your compositions. See USING THE COMPOSER for more information about the editor.

Composer Menu Option 2 - Load

This option allows you to load a previously saved composition from the disk into the editor's memory. First you will be asked if you are sure that you want to load, answer "y" for yes, "n" for no. Simply enter the composition name you wish to load, followed by RETURN. WARNING! This option will erase any text previously in the editor.

Composer Menu Option 3 - Save

This option allows you to save the text in the editor's memory. Simply enter the composition name you want, followed by RETURN. This option does not tamper with the editor's text.

Composer Menu Option 4 - Prepare

This option allows you to prepare a composition in the editor's memory for playing. To start the preparation, enter the composition name followed by RETURN. Next, the Composer will indicate what lines it is preparing. After it is completed, the number of notes for each voice will be displayed along with the number of errors (See Appendix A for error messages) for your composition. Press any key to return to the Composer Menu. Note that when you go to the Player Menu to play the prepared

composition, you must use Player Menu Option 1 - Load to load the composition.

Composer Menu Option 5 - Clear Text

This option will clear any text in the editor's memory. You will be asked if you are sure, enter "y" for yes, "n" for no. **WARNING!** All text currently in the editor's memory will be lost.

Composer Menu Option 6 - List

This option allows you to list the text in the editor's memory to your printer. Press "P" to start printing, "S" to stop. If you find that you do not want to print at all, hit any other key.

Composer Menu Option ^ - Quit

This option will quit the Composer and return you to the Main Menu.

USING THE PLAYER

The Player module of Virtuoso! allows you to play back compositions created with the Composer using presets created with the Preset Panel. To select the player, press the "7" key at the Main Menu. The Player Menu should now be displayed on the screen and look like:

```
#####  
# Player #  
#####
```

```
1-Load  
2-Tempo  
3-Normal  
4-Background  
↑-Quit
```

The next section describes each of the Player Menu options.

Player Menu Option 1 - Load

The Load option allows you to load a previously prepared composition (see Composer Menu Option 4 - Prepare) from disk into the Player's memory. When you use Composer Menu Option 4 - Prepare to prepare your composition, it is prepared and saved on the disk, it is not automatically placed in the player's memory. Therefore, you must load the prepared composition into the player's memory before playing it.

Player Menu Option 2 - Tempo

This option allows you to set the Normal (foreground) and Background tempos. You will first be asked for the Normal Tempo, you may enter a number between 1 and 65279. The larger the number the slower the tempo. Next, you will be asked for the Background Tempo, this is the tempo that is used for playing in the background (see Player Menu Option 4 - Background). You may enter a number between 10 and 255, here again, the larger the number the slower the tempo. CAUTION! The Background Tempo directly affects the 64's interrupt speed. If you run at a fast tempo, the Preset Panel (along with other modules) will work slower. If you are not planning on using Background playing, it is suggested that you set Background Tempo to 70 (this is approximately the normal interrupt speed). Please see Appendix B for a cross-reference between tempo numbers and beats per minute.

Player Menu Option 3 - Normal

This option activates Normal playing of a composition. There must be a composition in memory (see Player Menu Option 1 - Load) in order to play a composition. In Normal playing, you wait for the composition to finish, you cannot do anything meanwhile. Simply press any key to start playing, you may stop playing by pressing any key.

Player Menu Option 4 - Background

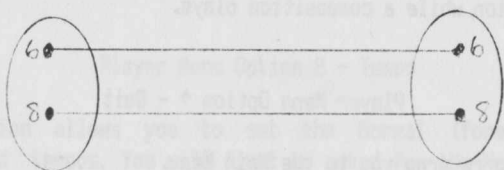
This option switches Background playing of a composition on or off. There must be a composition in memory (see Player Menu Option 1 - Load) in order to play a composition. Pressing "4" once turns on Background playing. Pressing "4" again will turn it off. This option allows you to work on a preset or write a composition while a composition plays.

Player Menu Option ↑ - Quit

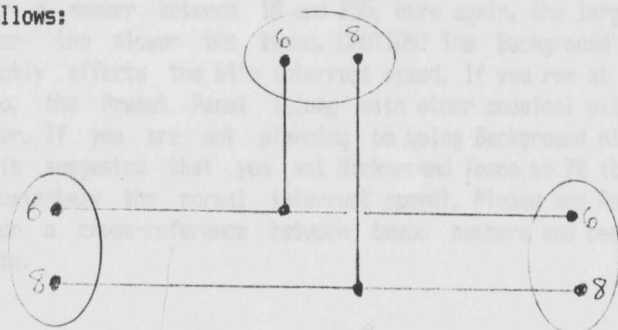
This option returns you to the Main Menu.

Multi-Machine Playing

Virtuoso! allows you the unique option of synchronizing several Commodore 64's together to play a multi-part composition. In order to do this you need a special cable that connects to Control Port 2. The connectors required are standard female 9-pin DIN (joystick) connectors. To connect two 64's together, you need two connectors and a piece of two conductor wire. The connectors wired as follows:



To connect three or more 64's, you will need the same amount of connectors as the number of 64's. The connectors are wired as follows:



After the 64's are connected together, Virtuoso! must be loaded into each one. Next, the respective parts of the composition must be loaded each Player's memory. Select Player Menu Option 3 - Normal playing and press the SPACE BAR on any one of the 64's, instantly all of the 64's will start to play! To stop playing, press the SPACE BAR on any one of the 64's.

SAMPLES INCLUDED

Virtuoso! comes with 10 compositions and 20 presets. This section reviews each of compositions and presets. The complete text has been supplied for the compositions, so it might be a good idea to review these to see some tricks of composing.

<u>Composition Name</u>	<u>Preset Name</u>	<u>Tempo</u>	<u>Description</u>
bells	bells	3000	Christmas Carol, "Carol of the Bells".
whip it	whip it	2372	"Whip It" by Devo.
tmtr	tmtr	3500	"Take Me to the River" by the Talking Heads.
our lips	our lips	2800	"Our Lips are Sealed" by the Go-Go's.
dont stand	dont stand	3000	"Don't Stand So Close to Me" by the Police.
fascination	fascination	3500	"Fascination" by ABC.
inv8	inv8	3350	Invention #8 by J.S. Bach.
rondo	rondo	3300	Rondo by W.A. Mozart.
sonatina	sonatina	2840	Sonatina in G by Ludwig Van Beethoven.
first loss	first loss	3650	First Loss by Robert Schumann.
opus	opus	3500	Opus 36, #2 by Clementi.

Other presets:

Preset Name	Description
bells2	Second preset for the <u>bells</u> composition.
piano	Piano preset, all three voices set-up as a piano.
snare	Snare drum preset.
xylophone	Xylophone preset.
harpsichord	Harpsichord preset.
trumpet	Trumpet preset.
violin	Violin preset.
banjo	Banjo preset.
chime	Chimes preset, voice 1 only.

APPENDICES

- A. Prepare Error Messages
- B. Tempo/BPM cross-reference table
- C. Command Quick-Reference Summary

APPENDIX A
Prepare Error Messages

The following errors may appear during preparation of a composition. See Composer Menu Option 4 - Prepare.

<u>Error Message</u>	<u>Description</u>
Syntax Error	The Composer cannot understand the line of text.
Note Duration too short	The note duration specified is too short. Note durations may not fall below 1/64.
Invalid Note	The octave of the note is less than 0 or greater than 7. Also check octave and transpose commands as they might throw the note out of range.
Voice not defined	You have tried to play notes without a voice being defined. See the voice command.
Voice out of range	The voice specified is out of range. You may only use voice 1, 2, or 3.
Out of Range	This is a general error message. The parameters for the given command are out of range.
String not found	The string specified to be played cannot be found. This is usually do to a typing error.
Coda Error	This error relates to the use of codas. It may be caused by one or more of the following: -If the line displayed is the start of a coda definition, then a matching endcoda could not be found. -If the line displayed is an endcoda, then a matching coda definition could not be found.

-If the line displayed is a docoda, then the specified coda could not be found.

One other error can occur after preparation is complete. After preparation, the Composer checks the number of repeats and the number of cont's to see if they match. If they do not match the following error is displayed:

**** of repeats not equal to cont's***

You should check your text over carefully.

APPENDIX B
Tempo/bpm Cross-reference

This is a useful cross-reference table between tempos used in the Composer and actual beats per minute (bpm).

<u>Normal</u>	<u>Background</u>	<u>Bpm</u>
7450	250	60
5650	188	80
4550	150	100
3690	125	120
3050	107	140
2700	94	160
2500	83	180
2150	75	200
1975	68	220
1845	63	240

voice not defined

You have tried to play notes without a voice being defined. See the voice command.

voice out of range

The voice specified is out of range. You may only use voice 1, 2, or 3.

out of range

This is a general error message. The parameters for the given command are out of range.

string not found

The string specified to be played cannot be found. This is usually due to a typing error.

code error

This error relates to the use of codes. It may be caused by one or more of the following:

-if the line displayed is the start of a code definition, then a matching bracket could not be found.

-if the line displayed is an example, then a matching code definition could not be found.

APPENDIX C
Command Quick-Reference Summary

Command	Syntax	Description
rem	rem_comment	Places a comment into the text.
notes	V_N	Plays a note of specific duration and frequency.
repeat	repeat_N	Repeats a section of notes.
cont	cont	Continues a repeat.
move	move_N	Moves a preset from the specified Preset Location into the Preset Panel.
set	set_sus_N	Sets sustain time, staccato, normal, or legato.
	-or-	
	set_vol_N	Sets overall volume (Master Output).
	-or-	
	set_susvol_N	Sets volume for a particular voice.
	-or-	
	set_N_V	Sets key signature.
octave	octave_N	Transpose notes by octaves.
transpose	transpose_N	Transpose notes by half-steps.
voice	voice_N	Defines the voice in which notes are to be played in.
(string)	(STRING)_NOTES	Defines a string of notes for later playing.
play	play_STRING	Plays a previously defined string of notes.
coda	coda_CODANAME	Starts a coda definition and defines the name.
endcoda	endcoda	Ends a coda definition.
docoda	docoda_CODA	Plays the specified coda.

offset offset_N Special effects feature, see manual.

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