Music Digital

STUDIO I

Users Manual . Commodore 64

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Welcome to the musical world of STUDIO I, the MIDI Recording Studio brought to you by SYNTECH, Inc. We hope you enjoy many hours of music making with your STUDIO I.

MIDI is an acronym for Musical Instrument Digital Interface, a convention which has been adopted by the major synthesizer manufacturers to allow their units to transfer data (or "talk") from one to another, or to other electronic data devices such as a computer. This data takes the form of a stream of hexadecimal numbers (or "data bytes") which are output from your synthesizer in addition to the audio signal as you play. In the MIDI convention, different numbers have different meanings which convey such information as which note was played, the amount of keyboard velocity (requires a velocity-sensitive keyboard) of the note played, which patch or program number was chosen, etc. The most basic use of MIDI is to allow more than one synthesizer to be played from one keyboard, but many other exciting possibilities exist, such as the recording capabilities of your STUDIO I.

STUDIO I is designed to be used with a Commodore computer, a SYNTECH (or compatible) MIDI-Interface cartridge, and one or more electronic music synthesizers with MIDI capability. Used properly, STUDIO I offers you the convenience and versitility of a multi-track tape recording studio combined with the precision and sophistication of a computer.

With STUDIO I, you can record synthesizer music in as many as sixteen seperate sequences which you can then link together to form songs. Both the songs and the individual sequences can be saved on diskettes to be retrieved for playback at a later time.

While STUDIO I is intended to be simple and fun to use even for the computer novice, not all of its functions are self-evident from looking at the computer screen. A short time spent reading this manual will more than pay for itself in time saved as you use the STUDIO I

CHECK LIST OF NECESSARY EQUIPMENT

You will need the following items to use your STUDIO I:

1. STUDIO I Master Disk
2. A blank disk for your music data
3. MIDI Interface Card (SYNTECH, Passport, Yamaha, or Sequential Circuits Model 64 or 242)
4. Commodore Computer
5. Monitor (color or black & white T.V. or video monitor)
6. Commodore disk drive
7. One or more electronic music synthesizers with MIDI capability
8. Audio playback systems (anything from a small guitar amp to a state of the art audio system)
9. Assorted connecting cables

1. Make sure the Commodore, disk drive, and video monitor are installed and operating properly.

2. With the POWER OFF, insert your MIDI Interface device into the Commodore.

3. Make sure the synthesizer(s) and audio system are also installed and working properly.

4. Using standard MIDI cables (5-pin DIN), connect the MIDI OUT jack on your MIDI Interface card to the MIDI IN jack on your synthesizer, then connect the MIDI OUT jack on your synthesizer to the MIDI IN jack on the Interface card. If you are using more than one synthesizer, connect the MIDI THRU jack on your main synthesizer, to the MIDI IN jack on your #2 synthesizer, the MIDI THRU jack on #2 to the MIDI IN on #3, etc.

5. Turn on the power to your Commodore and your disk drive.

6. Insert your STUDIO I Master Disk in the disk drive.

7. Type LOAD "*",8,1 on the Commodore keyboard and press return.

8. After a brief pause you will be asked to select the MIDI Interface Cartridge you will be using with the STUDIO I

   PRESS "1" for SYNTECH
   PRESS "2" for Passport/Yamaha
   PRESS "3" for Sequential Circuits

   As soon as you make your selection, the disk drive will start to operate, loading STUDIO I for your cartridge.

9. Wait for your STUDIO I to load and when the disk drive stops running, you will see a message which says:

   PLEASE REMOVE YOUR FACTORY DISK

   Remove your STUDIO I Master Disk and press RETURN when you are ready.
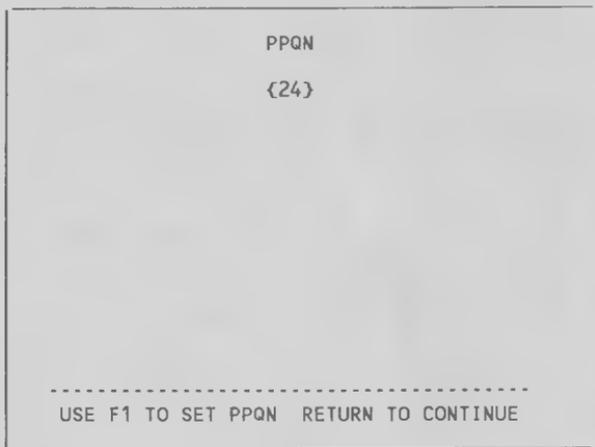
IMPORTANT NOTE: DISK DRIVE NOISE

   When loading your STUDIO I from disk, you may notice your disk drive "chattering" the way it does when you format a diskette. This is entirely normal and nothing to worry about.

GETTING STARTED

The first screen you will see when your STUDIO I begins is:

```
+------------------------------------------+
|                  PPQN                    |
|                                          |
|                  {24}                    |
|                                          |
|                                          |
|                                          |
|                                          |
|                                          |
|                                          |
|                                          |
|  ......................................  |
|   USE F1 TO SET PPQN  RETURN TO CONTINUE |
|                                          |
+------------------------------------------+
```

This screen allows you to choose the number (24, 48, or 96) of pulses per quarter note (PPQN) at which you wish your STUDIO I to operate. This number should correspond to the PPQN put out by your drumbox; if you don't know which PPQN your drumbox uses, consult your drumbox instruction manual (most drumboxes use a PPQN = 24).

Press F1 to change the PPQN number. If you have no drumbox, leave the PPQN at 24 for now. When you have selected the proper PPQN number, press RETURN and your STUDIO I will display the MAIN SEQUENCE SCREEN. This is the screen from which you will do most of the operations required to record and edit your music, so we will discuss its features in detail.

Note:

See Appendix-C for note Pulse values at different PPQNs.

SEQUENCE SCREEN

Make sure your screen shows the Sequence Screen. It should look like this:

```
                                                    _____ MSR BT PL _____
      _____            MEMORY
     | METER:        4/4 |           |99|          CTR    001:01:01
     | TEMPO:        100 |
     |                   |         INT DRUM         CUE    001:01:01
     | STEP  MODE   OFF  |         INT CLIK
     | AUTO  MODE   OFF  |         MIDI CLK          IN    001:01:01
     | MIDI  DRUM   OFF  |         EXT CLIK
     | COUNT DWN    OFF  |                          OUT    001:01:01
     | TOUCH FLT    ON   |
      _____           END    001:01:01

     | REC      PLAY    >  <<  >> |

     SEQ  A   B   C   D   E   F   G   H   I   J   K   L   M   N   O   P

     TRACK  -1-     -2-     -3-     -4-     -5-     -6-     -7-     -8-

     VOLUME

     CHANNEL

     MAIN MENU

     F1              F3                F5                    F7
     SEQUENCE+       TRACK+            SET CLOCK             AUTOPUNCH
```

Notice the two lines at the bottom of the screen labeled "MAIN MENU". There should be a dark line flashing on and off through the center of these two lines, indicating that the choices shown ("SEQUENCE+", "TRACK+", "SET CLOCK", and "AUTOPUNCH") are presently active.

Press F1 for "SEQUENCE+"; the lighter color (yellow on a color monitor) on the "A" in the "SEQ" line in the middle of the screen should move to the "B". If you hold down F1, the lighter color (consider it a cursor) should move rapidly through the letters from left to right. These letters denote the sixteen different Sequences (A-P) which are available to you. When the cursor is on a given Sequence letter, any recording, editing, saving or loading you do will affect that Sequence and that Sequence only.

Now hold down either "SHIFT" key. A different set of four choices is displayed under MAIN MENU, labeled now "F2", "F4", "F6", and "F8". While holding the "SHIFT" key down, press F2 for "SEQUENCE-" and watch the lighter color move from right to left through the Sequence letters. The second set of four choices ("SEQUENCE-", "TRACK-", "METER", and "TEMPO") is available only when the "SHIFT" key is depressed.

Find the "CTRL" (for Control) key on the Commodore keyboard and hold it down. A third set of four choices ("EDIT", "SONG", "DISK", and "TRK MODS") is displayed labeled "F1", "F3", "F5", and "F7", respectively.

Finally, hold down the "CTRL" key and at the same time hold down either "SHIFT" key. Yet another set of four choices appears ("SET CUE", "SET IN", "SET OUT", and "SET END") labeled "F2", "F4", "F6", and "F8", respectively.

There are sixteen choices available to you from the "MAIN MENU" even though only four are visible at any time. Each menu in your STUDIO I works the same way, although not all the menus have as many as sixteen choices. You might think of these as the different Levels of each menu. Remember, for each menu there are as many as four different Levels:

    Level 1. Regular - no SHIFT or CTRL key used.

    Level 2. Shifted - press either SHIFT key.

    Level 3. Control - press the CTRL key.

    Level 4. Shift + Control - hold down either SHIFT key and the
        CTRL key at the same time.

These keys let you see the different Levels of the menus; to activate a choice, you must also press the appropriate function key on the Commodore keyboard while the choice you want is visible.

We'll discuss each Level of each menu fully, but first let's record a little music so we have something to work with.

Make sure the Sequence cursor (the lighter-colored letter in the "SEQ" line) is on letter "A" and make sure the Track cursor is on "-1-" in the "TRACK" line.

Notice the box at the middle left of your screen which looks like
the following:

```
|REC  PLAY     >    <<   >>|
```

These are the "Tape" Controls which are designed to simulate the
action of a conventional tape recorder. The "Tape" Controls and
the Counter ("CTR 001:01:01" in the upper right corner of the
screen) should be highlighted in a lighter color (cyan). Whenever
the "Tape" Controls and the Counter are highlighted the "Tape"
functions (Record, Playback, Reverse, and Fast Forward) are active
(enabled).

FIRST RECORDING

Now hold down the "/" key - the "REC" button of the "Tape"
Controls lights up (red). Hold down the "/" and press the SPACE
BAR - the "REC" button and PLAY button will light and a metronome
will sound through the speaker in your video monitor (make sure
you have the volume up on your TV set or video monitor). At the
bottom of the screen where the menu bar was, you will see a
message which reads:

PRESS SPACE BAR OR FOOTSWITCH TO STOP

Also, you may notice the numbers at the right end of the Counter
counting very rapidly. Your STUDIO I is now ready to record on
"Track -1-" of "Sequence A".

To record, all you need to do is to play your synthesizer
keyboard. As soon as you play a note, the middle numbers in the
Counter will start to count, indicating that the recording process
has begun. Play a little music (at least four measures or so) and
then press the SPACE BAR (or FOOTSWITCH if available on your MIDI
Interface card) to stop. Notice that both the "A" in the "SEQ"
line and the "-1-" in the "TRACK" line are now displayed in
reverse field. This indicates that they have been recorded.

Press F1 to move to "Sequence B". Now the "-1-" in the "TRACK"
line is not in reverse field because "Track -1-" in "Sequence-B"
hasn't been recorded yet. Hold down SHIFT and press F2 to move
back to "Sequence A".

Notice also that the "END" in the Counter box no longer reads
"001:01:01". If you recorded exactly four measures, the END now
reads "005:01:01".

EXPLANATION OF COUNTER NUMBERS

The columns of numbers in the Counter box labeled "MSR", "BT", and "PL" are like the tape counter on a tape recorder, but with more musical precision.

        "MSR"   counts measures
        "BT"   counts beats within a measure
        "PL"   counts pulses within a beat

Press the SPACE BAR to play the Sequence you just recorded and watch the Counter (the "CTR" line in the upper right corner of the screen) moving. The Counter tells you where you are within the Sequence. Press the SPACE BAR to stop the playback - the Counter stops. Press the SPACE BAR again - the playback resumes from the place where you stopped.

Stop the playback in the middle of your Sequence and press F3 to move the Track cursor from "-1-" to "-2-". Now hold down the "/" key, press the SPACE BAR, and play your synthesizer. You are recording on Track -2- of Sequence A, starting from the place in the middle of the Sequence where you had stopped. When you reach the END of the Sequence, the recording process will stop and the Counter will return to "001:01:01". You have just done your first overdub.

Press the SPACE BAR to play your Sequence and hear that the part you just added did indeed start in the middle. Either while the Sequence is playing or when it is stopped, press the "1" key on your Commodore . The reversed "-1-" in the Track line should turn black, and, if the Sequence is playing, the sound from Track #1 should stop. This is how you MUTE a Track in STUDIO I - simply press its number, whether the Sequence is running or not. To unMUTE the Track, press its number again (see Chapter Five).

"END" COUNTER

The END displays the length of any recorded Sequence. In the above
case of a four measure Sequence, the END would read "005:01:01",
meaning that when the Sequence reaches the first pulse of the
first beat of the fifth measure it has finished and either loops
back to the beginning or stops. If you record the first Track of a
Sequence, which ordinarily determines the length of the Sequence,
and fail to hit the SPACE BAR to stop recording at precisely the
time you intended, you can adjust the END later using the SET END
feature of Level Four (SHIFT + CTRL) of the MAIN MENU. This
procedure is discussed in detail in Chapter Two.

"CUE", "IN" and "OUT"

These displays are used in conjunction with the AUTOPUNCH feature
of Level One of the MAIN MENU and will be explained in the
discussion of that feature in Chapter Two.

REVERSE & FAST FORWARD

The two cursor keys on your Commodore keyboard activate the
Reverse and Fast Forward functions of the "Tape" Controls. Use
"CURSOR LEFT" for Reverse and "CURSOR RIGHT" for Fast Forward.
Holding either cursor key down will move the "Tape" Counter in a
manner similar to a tape recorder; hitting the cursor key once
will increment or decrement the CTR counter to the next or last
beat ("BT").

PLUS & MINUS (+,-)

Use the "PLUS" key and the "MINUS" key on your Commodore keyboard
like the cursor keys described above, but notice that the PLUS and
MINUS keys affect the pulse readings of the Counter rather than
the beat readings.

HOME & SHIFTed HOME

Pressing the "HOME" key on the Commodore keyboard will move the
Counter immediately to the beginning of the Sequence, and holding
down SHIFT and pressing HOME will move the Counter immediately to
the END of the Sequence.

POUND SIGN

The "POUND" key moves the Counter to the point within the Sequence
set in the CUE display. See the AUTOPUNCH discussion in Chapter
Two for an explanation of setting the CUE point.

All these features are designed to let you move around easily
within a Sequence in order to give you precise control over your
music.

Before moving on to the discussion of the menus, let's take a brief look at the other features of the Sequence Screen. The box in the upper left corner of the screen contains a series of indicators which tell you the status of some of the functions of your STUDIO I.

METER

This is a user-selectable time signature set from Level Two (SHIFT) of the MAIN MENU. Its default value (the value it has unless you specify another one) is 4/4.

TEMPO

The speed of the Commodore Internal Clock. It is also set from Level Two of the MAIN MENU. When STUDIO I begins, the TEMPO is initialized to 100 Quarter notes per minute.

STEP MODE OFF

Step Mode in STUDIO I is equivalent to a separate Clock setting where you press the RETURN (or CURSOR RIGHT or "+") key on the Commodore keyboard to advance the Clock. Step Mode is entered by pressing "S" on the Commodore keyboard and then selecting the size of the step you wish to use. (See detailed discussion in Chapter Five.)

AUTO PNCH OFF

This stands for "AUTOPUNCH OFF". AUTOPUNCH is one of two methods of "punch-in" available to you with STUDIO I. The AUTOPUNCH Mode is turned on and off using F7 in Level One of the MAIN MENU. (See detailed discussion in Chapter Two.)

MIDI DRUM OFF

This function is toggled on and off by pressing "M" on the Commodore keyboard. When it is "ON", MIDI DRUM causes your STUDIO I to send out Clock information from the MIDI OUT jack on your MIDI Interface card. This allows you to drive a drumbox or another sequencer (or both) from the STUDIO I.

COUNT DWN OFF

This stands for "COUNT DOWN OFF" and refers to the count-off feature of your STUDIO I. COUNT DOWN is turned on and off by pressing "C" on your Commodore keyboard. Once you have recorded the first Track of a Sequence or set an END to establish the length of a Sequence, the COUNT DOWN will be in effect. Make sure the indicator says "COUNT DWN ON" and then start recording from the BEGINNING of the Sequence; a box will appear in the middle of the screen; in it will be the number of beats per measure (depending on the METER). This number will count down to zero accompanied by the sound of the metronome, giving you one measure of count-off before the beginning of the Sequence before you start recording. If you are not at the beginning of the Sequence when you start recording the Count Down will be bypassed.

TOUCH FLT ON

This stands for "TOUCH FILTER ON" and refers to the "After Touch" data filter built into your STUDIO I. Some synthesizers, such as the Yamaha DX-7, output keyboard pressure information ("After Touch") after the initial attack of each note. This can add up to a HUGE amount of information which, if recorded, would use a large part of the computer memory. With the Touch Filter ON, STUDIO I will not record this information, and thus save that much more memory for recording music. If you DO want to record the After Touch data, press "T" on the Commodore keyboard to turn the filter off. "T" acts as a toggle switch to turn the filter on and off.

MEMORY (99)

This display gives you an indication of the amount of recording memory remaining at any given time. It is an indicator only - you cannot change it except indirectly through the processes you execute in STUDIO I. The MEMORY display starts out reading "99" and counts down from there as you fill up the computer memory; however, like some automobile fuel guages, the MEMORY indicator stays "full" for a while before showing reduced levels - it doesn't begin decremeting until about 20% of the recording memory has been used.

INT DRUM, INT CLIK, MIDI CLK, & EXT CLIK

These are four CLOCK options available to you in STUDIO I. The one
currently in effect is shown in reverse field; when STUDIO I
begins, it comes up set to INT DRUM (Internal Drum). In all CLOCK
settings a metronome flashes on your video monitor or TV set
during Record or Playback. Also in all Clock settings MIDI DRUM
(out) may be either "on" or "off".

INT DRUM - Internal Drum

This clock setting uses the internal clock on your interface
card to play and record Sequences while putting drum timing
signals out over the drum din connector (used on Roland drum
boxes for example). Selecting the INT DRUM setting allows
Sequences to be recorded and played backed at the tempo
indicated by the TEMPO display. Appropriate start and stop
signals are also sent over the drum din connector.

INT CLIK - Internal (TAPE) Click

This clock setting allows you to lay a click track down for
play back of Songs or Sequences at the tempo indicated by the
individual TEMPO display settings. To use this setting move
the clock select to INT CLIK and then select the track on
your tape recorder which you would like to devote to the
click track. Connect the click out on your interface card to
the line in of your tape recorder. Press the SPACE BAR to
play back the Song or Sequence with click out and adjust the
record level of your tape recorder to be around 5-vu. Next,
go to the beginning of your Song or Sequence by pressing
"home". Start your recorder and record several seconds of
silence. Now, press the SPACE BAR and begin playing the
Sequence or Song and laying the click track to tape. Play the
Sequence or Song beyound the end of where you wish to record
so you have an extra length of click track. You have now
created a click track with which you can move individual
tracks from your Sequencer to separate tracks on your tape
recorder. (See EXT CLIK below).

IMPORTANT NOTE:

You may require a "click box" on the input and/or output side
of your tape recorder or interface card to obtain a clean and
reliable click track. Also, you may have to carefully adjust
the output levels when recording and playing back the click
track to get repeatable results.

EXT CLIK - External (TAPE) Click

Allows you to use a click track, once recorded, (see INT
CLIK) as a clock source for playback of Sequence or Songs.
The EXT CLIK setting coupled with the unique STUDIO I muting
features enables you to roll individual Sequences from a

Sequence or Song on to seperate tracks on a tape recorder. To use the EXT CLIK setting, once you have recorded a click track, connect the line out of your tape recorder to the tape click in on your interface card (Again, a click box and careful level adjustment may be required here). Rewind the tape to somewhere in the recorded silence you put down before the click track. Go to the beginning of the Song or Sequence you wish to roll off by pressing "home". Now press the SPACE BAR to begin playback and you will see the message:

<p align="center">* START DRUM BOX TO BEGIN *</p>

The STUDIO I is now waiting for the click track to begin playback. Press play on your tape recorder initiating playback of the click track. When you reach the click track your Sequence or Song should begin playing at the correct tempo. If the tempo is incorrect or inconsistent, something is wrong with your level adjustments or you may require a "click box". After playback of your Song or Sequence has begun press F1 to stop playback at the end Song or Sequence, preventing looping.

MIDI CLK - MIDI Clock

This setting allows you to drive the STUDIO I from a drumbox MIDI output. Since it requires a connection to the MIDI IN jack on your MIDI Interface card, this setting makes recording impossible without a MIDI mixer. This setting is therefore recommended primarily for playback use.

IMPORTANT NOTES

1. As mentioned above, "MIDI DRUM" may be ON or OFF with any of these Clock settings. It is convenient to use the INTR DRUM setting with MIDI DRUM ON because it allows you to control the Tempo and the starting and stopping of your drumbox and the Playback/Record functions of the STUDIO I entirely from your computer. When using MIDI DRUM ON, be sure to enable MIDI Receive on your drumbox and connect the MIDI IN jack on your drumbox to the MIDI THRU jack on your synthesizer.

2. If you are using the MIDI CLK setting, the MIDI DRUM ON output (MIDI OUT) should not be connected to the MIDI IN jack of the same drumbox which is sending the MIDI CLK to your STUDIO I (This can cause a loop in which the drumbox is waiting for MIDI in order to send MIDI and the STUDIO I is waiting for the same thing and thus nothing happens). You can, of course use MIDI DRUM ON with the MIDI CLK setting to drive a different drumbox or another sequencer.

VOLUME

This line is used to display the Velocity settings for each Track. VOLUME is set in Levels One and Two of the EDIT Menu (See detailed

discussion in Chapter Three).

CHANNEL

This line displays the MIDI Channel override assignments for each
Track. CHANNELS are assigned in Levels One and Two of the EDIT
Menu (See detailed descussion in Chapter Three).

Now that you have some familiarity with the Sequence Screen and
its features, let's take a look at the choices available in the
other STUDIO I menus.

CHAPTER TWO

MAIN MENU

The MAIN MENU of STUDIO I is a four-level Menu which allows you to
do some general processes and to choose other Menus (or Sub-menus)
which offer different sets of choices. The MAIN MENU is also the
central point of STUDIO I. STUDIO I begins at the MAIN MENU and an
EXIT from another Menu returns you to the MAIN MENU.

ANY TIME YOU SEE A FLASHING MENU AT THE BOTTOM OF YOUR SCREEN (as
opposed to a message) YOU MAY PRESS THE "UP ARROW" KEY ON YOUR
COMMODORE KEYBOARD FOR AN INSTANT RETURN TO THE MAIN MENU.

LEVEL ONE

F1 SEQUENCE+

As discussed in the Introduction, pressing F1 allows you to choose
a Sequence on which to work. The current Sequence in effect is
denoted in the "SEQ" line by a lighter color (yellow on a color
monitor). Hold F1 down and watch the highlighted Sequence letter
move from left to right. Consider this highlighted letter to be
the "Sequence Cursor".

If the Sequence Cursor is on Sequence "J", for example then any
recording or editing that you do will be done to Sequence "J"
only. The displays of METER, TEMPO, and END will come from
Sequence "J". The TRACK, VOLUME, and CHANNEL lines will also
reflect the information in Sequence "J".

F3 TRACK+

Pressing F3 allows you to choose which Track within the current
Sequence you wish to work on. The current Track in effect is
denoted in the "TRACK" line by a lighter color (yellow). Consider
this to be the "Track Cursor".

For example, with the Track Cursor on "Track -3-", any recording
or punching you do will be done to "Track -3-" only. Editing
processes which operate on one track at a time will be done to
"Track -3-" only. Some editing processes affect the entire
Sequence; in that case the position of the Track cursor is
irrelevant.

F5 SET CLOCK

F5 changes the Clock setting of STUDIO I from INT DRUM to INT CLIK
to MIDI CLK to EXT CLIK and back to INT DRUM. You can record
Sequences using the Internal Clock and then change the Clock
setting to MIDI CLK or EXT CLIK to play them back with a drumbox
or tape sync track. STUDIO I allows you to play back any Sequence
on INT DRUM, INT CLIK, MIDI CLK or EXT CLIK, no matter which way

it was recorded (Remember, though, that if your MIDI Interface card has no "Clock-In" jack, the EXT CLIK setting will not function).

Press F5 to set the Clock to MIDI CLK. Notice that the line which displays the TEMPO in the box in the upper left corner of the screen has been blanked out. That's because the TEMPO which you set from the computer applies to the Internal Clock only. With MIDI CLK or EXT CLIK, the Tempo is controlled form the device supplying the clock. Press F5 twice to set the Clock back to INT DRUM and hold down either SHIFT key. Notice that F8 is labeled "TEMPO" - that's the Menu selection you will use to actually set the TEMPO. Now release the SHIFT key and press F5 to set the Clock back to MIDI CLK; hold down the SHIFT key again and notice that the label for F8 is now blank - with MIDI CLK or EXT CLIK you must set the Tempo from the external device itself, so "TEMPO" disappears from the Menu.

F7 AUTOPUNCH

Your STUDIO I offers two different kinds of punch-in; AUTOPUNCH is the first of these. With AUTOPUNCH you can determine with great precision where to punch in and out, and then have STUDIO I make the punch for you automatically - all you have to do is play the right notes.

AUTOPUNCH is a specialized type of recording and is done one track at a time. It is a good idea to get in the habit of putting the Track Cursor on an empty track while you set up an AUTOPUNCH - this will prevent you from accidentally erasing any music you wanted to keep.

If you have previously pressed F7 to activate the AUTOPUNCH, you probably got a message at the bottom of the screen which said:

ILLEGAL PUNCH: "IN" ="OUT"

AUTOPUNCH uses the three counters labeled "CUE", "IN" and "OUT" on your screen. In AUTOPUNCH, recording starts on the current Track when the CTR counter reaches the point in the Sequence displayed in the IN Counter (the "punch-IN point") and recording stops when the CTR counter reaches the point displayed in the OUT counter (the "punch-OUT point"). The Sequence will start playing at the CUE point, start recording at the punch-IN point, stop recording at the punch-OUT point, and continue playing until the END of the Sequence. So you can see that it is necessary to first set the "IN" and "OUT" (and optionally, the "CUE") counters before an AUTOPUNCH is possible.

The rules for setting the counters are simple: OUT must be equal to or less than the END; IN must be less than OUT; and CUE must be equal to or less than IN. The way to set the counters is also simple: use the Fast Forward and Reverse (and/or the plus and minus) keys to move the CTR counter to the value you want and then use Level Four (SHIFT + CTRL) of the MAIN MENU to transfer that value to the appropriate counter.

Let's try a simple example. If you haven't already done so, record a simple Sequence of at least four measures, so that the END counter reads at least "005:01:01" when you have finished. Now imagine that the part you wish to punch in begins on the second half of the third beat of measure three and is over by the second beat of measure four; in other words, you want to punch IN at measure three, second half of beat three, and you want to punch OUT at measure four, beat two.

SET OUT

First, press SHIFT + HOME to move the CTR counter to the END of the Sequence. Next press the cursor down (for Reverse) key until the CTR counter reads "004:02:01" - this represents measure four, beat two - the point at which you want to punch OUT. With your left hand, hold down SHIFT + CTRL and with your right hand press F6 (same key as F5) for SET OUT. "004:02:01" should appear in the OUT counter.

SET IN

Now press the cursor down (or Rewind) key until the CTR counter reads "003:03:01" - this represents measure three, beat three and you want to punch IN on the second half of this beat. Press the "+" key to advance the "PL" part of the CTR counter to 13 (13 for a PPQN of 24, 25 for a PPQN of 48, or 49 for a PPQN of 96). With a PPQN of 24, the first half of the beat (an 1/8th note in 4/4 time) is the first 12 pulses, so the second half (1/8th note) starts on pulse 13 (see Appendix - C for a list of the different note pulse values). The CTR counter should now read "003:03:13", representing the beginning of the second half of beat three, measure three. Hold down SHIFT + CTRL and press F4 for SET IN. "003:03:13" should appear in the IN counter.

SET CUE

If this were a longer Sequence, you might not want to listen to it all the way from the beginning just to punch a place near the end. The CUE point is the place where the playback will start in AUTOPUNCH. Rewind the CTR counter (using the cursor down key) until it reads "002:01:01", then hold down SHIFT + CTRL with your left hand and with your right hand press F2 for SET CUE. "002:01:01" should appear in the CUE COUNTER. Finally, press the HOME key to set the CTR counter to the beginning of the Sequence. Your counters should look like this:

```
CTR 001:01:01
CUE 002:01:01
IN  003:03:13
OUT 004:02:01
END 005:01:01 (or greater)
```

Now press F7 to turn on the AUTOPUNCH and make sure that "AUTOPUNCH ON" appears in the box in the upper left corner of your screen (unless AUTOPUNCH is ON, record and play will function normally, even though you have set the counters). If you were to record now, STUDIO I would start playing at the CUE point, start recording at the IN point, stop recording at the OUT point, and stop playing at the END of the Sequence. You can assure yourself of having set the counters correctly by pressing the SPACE BAR to play (don't record) the Sequence now. Your STUDIO I will flash the border of the screen (yellow) when it starts recording at the Punch-IN point and put the border back (to blue) when it stops recording at the Punch-OUT. Use this feature to give yourself a "dry run" of your punches to make sure the settings are correct or to rehearse the music you wish to punch.

When you are ready to actually record the AUTOPUNCH, make SURE the Track Cursor is on the proper Track, and then hold down "/" and press the SPACE BAR to record. If the Track has been recorded, the MIDI-STUDIO will warn you:

                    PUNCH WILL DESTROY SOME TRACK DATA
                         IS THIS OK? (Y/N)

This is because the AUTOPUNCH will record from the IN to the OUT whether you play or not (you may want to use this feature to insert some precisely controlled rests into your music). If everything is OK, press "Y" for yes and the AUTOPUNCH process will begin, flashing the border when recording starts and stopping again when the recording has stopped.

IMPORTANT NOTES

1. Notice that we set the counters from the bottom up - first OUT, then IN, then CUE. The rule is that OUT must be greater than IN and IN must be greater than CUE. If you attempt to set an illegal value in one of these counters, nothing will happen - no message or warning, just no result. Once you understand this simple process it will seem quite natural.

2. Notice also that we used the "+" and "-" keys to control the "PLS" (pulse) part of the CTR Counter to set a precise location within a Beat. This is one of the many advantages of working with a computer instead of tape - precise control. The following table gives the "PLS" readings which corresponds to each part of one quarter-note for each of the three possible PPQN settings: 24, 48, 96.

   Note: •

   See Appendix-C for note Pulse values at different PPQN's.

F2 SEQUENCE

Moves the Sequence Cursor from right to left.

F4 TRACK

Moves the Track Cursor from right to left.

F6 METER

Use this selection to change the time signature (or METER) of the current Sequence. (Each Sequence may be given its own METER.) When you press F6, the "METER" line in the box in the upper left corner of the screen which says:

USE +/- TO SET TOP RTN TO CONTINUE

Press "+" or "-" to change the first "4" of the METER. The first number (the "TOP") of the time signature represents the number of beats in one measure; STUDIO I allows you to set the TOP within a range from 1 - 24.

When you have set the TOP of the METER to the value you want, press RETURN. The message at the bottom of the screen changes to:

USE +/- TO SET BOTTOM, RTN TO CONTINUE

The BOTTOM (second number) of the time signature represents the size of the beats within the measure; STUDIO I allows you choices of quarter notes (4), eighth notes (8), or sixteenth notes (16). Press "+" or "-" to set the BOTTOM to the value you want, and then press RETURN. The MAIN MENU will return to the bottom of your screen.

IMPORTANT NOTES

1. Changing the METER does NOT change the music in the Sequence; it does, however, change the display of the Counters. If you have recorded a four-measure Sequence in 4/4, the END Counter will read "005:01:01". If you then change the METER to 2/4, there will be twice as many measures (but exactly the same amount of music), so the END counter will read "0009:01:01" (4 bars of 4/4 = 8 bars of 2/4). The METER and the Counter displays are for your information and convenience; they don't affect the actual data in the Sequence.

2. Changing the BOTTOM of the METER does affect the way the
    metronome counts. The TEMPO is based on the number of quarter
    notes per minute and is not affected by METER changes, but the
    metronome put out by your Commodore (through the speaker of
    your T.V. set or video monitor) sounds - on each quarter note
    if the BOTTOM of the METER is "4", each eighth note (twice as
    fast) if the BOTTOM is "8", or each sixteenth note (twice as
    fast again) if the BOTTOM is "16".

    3. Notice that while you are setting the METER and the
    messages have replaced the Main Menu at the bottom of the
    screen, the "TAPE" CONTROLS and the "CTR" counter lines are
    faded the same color as the rest of the screen. This means you
    cannot play or record. As soon as you press RETURN after
    setting the bottom of the METER, the main menu returns and the
    "TAPE" and "CTR" are again highlighted. Now the record and
    playback functions are active again. Whenever these indicators
    are faded the "TAPE" controls are inactive; whenever they are
    highlighted, they are active.

F8 TEMPO

As discussed in Chapter One, this selection is available only if
the current Clock setting is "INT DRUM or INT CLIK; in MIDI CLK or
EXT CLIK this menu selection will be blank. In INT DRUM or INT
CLIK, press F8 to set the TEMPO (speed) of the Internal Clock
generated by your STUDIO I. The screen fades, the TEMPO line in
the upper left box is highlighted, and this message appears at the
bottom of the screen:

                USE +/- TO SET TEMPO   RTN TO CONTINUE

Press "+" OR "-" to step through the range of TEMPO's offered by
the STUDIO ´I. Fifty different TEMPO settings are available, from
44 to 240 quarter notes per minute, stepped in increments of 4.
The TEMPO setting becomes part of the data of the Sequence,
allowing you to assign different speeds to different Sequences and
then create SONGS (chains of Sequences) with TEMPO changes
intact.

STUDIO I remembers the last TEMPO selection you make so that you
can record one Sequence (at 80 for example) and then move to
another UNRECORDED Sequence and record it at the same TEMPO
without having to select the TEMPO again. RECORDED Sequences
display their assigned TEMPO's as you move the cursor past them,
but UNRECORDED Sequences are all ready to be recorded at the last
TEMPO you selected.

F1 EDIT

Use F1 to go to the EDIT Menu of STUDIO I (see Chapter Three).

F3 SONG

Use F3 to go to the SONG Menu of STUDIO I (see Chapter Four).

F5 DISK

F5 gives you a DISK MENU - selections of disk operations. The DISK MENU which you enter from the MAIN MENU performs its LOAD, SAVE, and DELETE operations on the individual Sequence where the Sequence Cursor is; the DISK MENU available from the SONG MENU performs its LOAD, SAVE, and DELETE operations on entire SONG SETS, including all the individual Sequences contained in the SONG SET (see Chapter Six).

F7 TRK MODS

This stands for Track Modifications and refers to a two-level menu which allows you to remove the "real-time controller" data from an individual Track. These controllers (such as Pitch-wheel and Mod-wheel) can put a lot of data into a Track and use large chunks of computer memory. With the TRK MODS MENU you can re-claim some of that memory if you are running short. Also in the TRK MODS MENU you can remove the PROGRAM CHANGES (Preset assignments) from an individual Track.

TRK MODS MENU

The TRK MODS (Track Modifications) MENU of your STUDIO I is a two-level menu which allows you to remove certain types of data from an individual Track. This capability to selectively remove data from a Track is intended to allow you to recover some of the information sent to the synthesizer's controllers without having to re-record the entire Track.

Make sure your screen displays the STUDIO I MAIN MENU. Then hold down CTRL and press F7 for "TRK MODS". Above the menu you will see the legend: "REMOVE TRACK DATA". This is the TRK MODS Menu.

LEVEL ONE

F1 PROG CHGS

This stands for Programs Changes and refers to the preset or patch changes that determine which sound your syntesizer will play. If you have a Track which contains Program Changes that are unwanted, you can remove them from the entire Track without affecting any of the other data within the Track. Simply press F1; STUDIO I asks you to confirm your action by pressing "Y" or "N" for yes or no.

You can then insert Program Changes back into the music by punching them into the Track, or recording them on a separate Track and bouncing them back in. (Or you might want to keep them on a separate Track so you can MUTE and UNMUTE them during playback.)

F3 TRACK +

Moves the Track cursor from left to right.

F5 AFTER-TCH

If you have recorded a Track with After-Touch data included (that is, with the TOUCH FILTER "OFF"), you may find that you subsequently wish to remove the After-Touch data from the Track in order to reclaim some recording memory. In that case, press F5 and then press "Y" to answer yes to the confirmation message. As is the case with the Pitch Wheel and Modulation Wheel selections below. the After-Touch can amount to a HUGE chunk of data in your Track, and removing it can take several minutes; therefore, don't be concerned if you see a message at the bottom of your screen which says:

PROCESSING

and stays there for a while. The longer it stays there, the more memory you are recovering. Notice the MEMORY remaining indicator before and after one of these removals - you should see it increase when the * PROCESSING * message disapears.

F7 EXIT

Takes you back to the Main Menu.

LEVEL TWO (SHIFT)

F2 PITCH WHL

This stands for Pitch Wheel and allows you to remove the Pitch-Bend information from an entire Track. You may wish to do this to recover memory, or you may wish to re-record the Pitch Wheel information without re-recording the entire Track. If this is the case, move the Track Cursor to an empty track and record that Track while you "play" the Pitch Wheel; then BOUNCE the new Track into the one from which you removed the data (or you might want to keep the Pitch Wheel data on a separate Track so you can MUTE or unMUTE it during playback).

F4 TRACK

Moves the Track cursor from right to left.

F6 MODS WHEEL

This stands for Modulation Wheel and allows you to remove the LFO
Modulation Wheel information from an entire Track. Use this
selection the same way you use F2 PITCH WHL above.

F8 EXIT

Takes you back to the Main Menu.

F2 SET CUE

Use F2 to set the CUE point (see AUTOPUNCH discussion above).

F4 SET IN

Use F4 to set the punch IN point (see AUTOPUNCH discussion above).

F6 SET OUT

Use F6 to set the punch OUT point (see AUTOPUNCH discussion above).

F8 SET END

Use F8 to set the END of the current Sequence (Remember all Sequences must be at least one beat long). First move the CTR counter to the point at which you wish the Sequence to END, then hold down SHIFT + CTRL with your left hand and press F8 (same key as F7) with your right. The value in the CTR counter appears in the END counter.

If the END you are setting will make the Sequence shorter, a message appears which reads:

> ENDING HERE MAY DESTROY SOME DATA
> IS THIS END CORRECT? (Y/N)

Check the counter to make sure that the END is where you want it and if it is, press "Y" for yes. If you press "N", the old END will reappear in the END counter and no operation will take place.

If the end you are setting will NOT make the Sequence shorter, the message which appears is:

> IS THIS END CORRECT? (Y/N)

In this case it is safe to just press "Y" for yes and then listen to the Sequence to be sure you have it right. If it isn't what you want, you can reset it because you haven't lost any data.

There are several uses for this SET END feature:

1. If, when you record the first Track of a Sequence and you fail to press the SPACE BAR or the FOOTSWITCH to stop recording at precisely the time you intended, you can set the END so the Sequence has the right length without having to re-record the Sequence.

2. You can set the END before you record any Tracks in the Sequence. This allows you to use the COUNT DOWN feature to get a measure of count-off before recording, and/or record a Sequence with a rest (silence) at the beginning.

3. When you are SHIFTing Tracks from the EDIT Menu (see Chapter Three), you may find the SHIFTed Track runs up against the END of the Sequence before you have SHIFTed it as far as you want. If that is the case, you can temporarily make the Sequence long enough to accomodate your SHIFTs and then reset the END back to the original length when you have finished (the data that you SHIFT PAST the original END will be lost when you reset the END back to its original position however).

EDIT MENU

The EDIT MENU of STUDIO I is a four-level Menu which allows you to edit or reshape the data in your individual Sequences. Most of the functions contained in the EDIT MENU are processes which affect one Track at a time (the "current" Track), but some of them operate on the Sequence as a whole. If the EDIT function you are using affects only one Track, MAKE SURE the Track Cursor is on the Track you wish to EDIT.

LEVEL ONE

F1 VOLUME +

Press F1 to raise the "VOLUME" (velocity) setting of the current Track (where the Track Cursor is). Notice the numbers that appear in the VOLUME line - "+1", "+2", etc. The range of possible settings is from -7 to +7.

In STUDIO I, "VOLUME" is used to refer to the Keybord Velocity component of the synthesizer's sound; if you are using a synth that doesn't have a Velocity-Sensitive keyboard or doesn't accept MIDI Keyboard information, the STUDIO I VOLUME settings will have no audible effect. Used with a synthesizer which accepts the Keyboard Velocity data, the STUDIO I VOLUME settings are a powerful tool allowing dramatic or subtle mixes to help you get the most out of each synth. Of course the effects of the Keyboard Velocity depends on the particular Program (patch or preset) currently in the synthersizer; some patches apply Velocity to Volume, some apply it to Timbre, etc.

The VOLUME settings are actually a scaling of the Velocity information which is already in the Track, so your accents and crescendos and diminuendos are preserved, either expanded or compressed by the positive or negative VOLUME settings. Notice that the setting between "+1" and "-1" is a blank, rather than "0"; when the Volume line for a particular Track is blank, no Velocity scaling will be done, and the Velocity information will be reproduced just as you played it. The range of settings from "-7" to "+7" corresponds to a scaling range from X(1/16) to X4.

The actual audio signal volumes are not under the control of STUDIO I, and you should set those either on the front panels of your synthesizers or at the point where the audio signals are mixed.

F3 TRACK +

Press F3 to move the Track Cursor from left to right.

F5 CHANNEL +

Use F5 to raise the number (1-16) of the MIDI CHANNEL override for
the current Track. STUDIO I normally (if no number is displayed in
the CHANNEL line) plays back a Track outputting the same MIDI
Channel imformation which was recorded . The CHANNEL + and CHANNEL
- selection allow you to assign a different MIDI CHANNEL (and thus
a different synthesizer) to a Track for playback.

Using this feature, you can record all your Tracks from one
keyboard and then later reassign them to the different instruments
as you choose. Consult the owners' manuals of the synthesizers you
are using to find out how to assign the MIDI Receive Channel for
each synth.

Notice that between the settings "1" and "16" there is a blank
space. This allows you to select NO MIDI CHANNEL OVERRIDES, in
which case the Track will play whatever Channel information is
contained in the Track.

F7 EXIT

Press F7 to EXIT from the EDIT MENU back to the MAIN MENU.

F2 VOLUME -

Press F2 to lower the VOLUME (Keyboard Velocity) setting of the
current Track. The range of possible settings is from -7 to +7.

F4 TRACK -

Press F4 to move the Track cursor from right to left.

F6 CHANNEL -

Use F6 to lower the number (1 to 16) of the MIDI CHANNEL OVERRIDE
for the current Track.

F8 AUTO-CORR

This stands for AUTO-CORRECT, which is also commonly referred to
as "quantizing". AUTO-CORRECT is a process which allows you to
correct rhythmic irregularities in a Track you have recorded. The
AUTO-CORRECT in you STUDIO I is a powerful tool which can greatly
enhance the precision of your music.

Make sure the Track cursor is on the Track which you wish to
AUTO-CORRECT.   Hold down SHIFT and press F8 to select the
AUTO-CORRECT function. A window appears in the middle of your
screen with a list of rhythmic values and a message at the bottom
of the screen says:

USE +/- TO SELECT RETURN TO CONTINUE

Press "+" or "-" to move the cursor (the reversed horizontal bar)
down or up the list until it is on the note value you want. This
value should be the SMALLEST rhythmic value in the Track you are
AUTO-CORRECTing.

When you have selected the right value (or "subdivision"), press
RETURN. A smaller window appears at the bottom of the screen with
the message:

AUTO-CORRECT: TRACK #N
ARE YOU SURE? PRESS "Y" OR "N"

This is your chance to back out in case you have the Track Cursor
on the wrong Track or are unsure of the rhythmic value you have
selected. AUTO-CORRECT changes the data in the Track permanently
(you can't "un-AUTO-CORRECT" the track once it's done), so be sure
you have the right Track and subdivision before you press "Y" for
yes.

IMPORTANT NOTES

1. Because the AUTO-CORRECT changes cannot be undone, it's not a bad idea to "back up" the Track you are going to AUTO-CORRECT by BOUNCEing it to an empty Track (see Level Three) before you do the AUTO-CORRECT. That way if there is a problem you can do the AUTO-CORRECT again; also, you have something with which to compare the AUTO-CORRECTed Track to assure yourself that the process is actually working as you intend (use the MUTE or SOLO functions to compare the Tracks - see Chapter Five). Once you are satisfied with one or the other versions of the Track, ERASE the one you don't want in order to re-claim that amount of recording memory.

2. AUTO-CORRECT basically takes the Track as you have recorded it and then rounds off each note to occur on the nearest one of the rhythmic values you have chosen, while preserving the note's length. If you have played a note late (or early) BY MORE THAN HALF of the chosen subdivision, the AUTO-CORRECT process will move the note to the next (or previous) one and the result will sound like a mistake. So there is still the need to play the part with reasonalble accuracy.

3. Do NOT AUTO-CORRECT Tracks which contain grace notes, guitar-like strums, rolled chords, or other humanoid rhythmic nuances which you want to preserve. AUTO-CORRECT can't distinguish between a grace note and a note that is just a little bit early and treats them just the same, so the subtlety of a grace note can easily be turned into your common everyday clam.

4. If you are unsure which value to choose for an AUTO-CORRECT, it is better to select the smallest value. You can later AUTO-CORRECT again to a greater value if necessary. AUTO-CORRECTing to a greater value first will round all the notes in the Track to that value, and any subequent correcting of the same Track cannot recover any smaller values.

F1 BOUNCE TRK

Use F1 to BOUNCE a recorded Track from one Track to another within
a Sequence. This is the command to use if you wish to duplicate or
"back up" a Track; it is also the way to make a "sub-mix" in your
STUDIO I - just BOUNCE several recorded Tracks onto the same
Track.

To BOUNCE a Track, be SURE the Track Cursor is on the Track you
wish to BOUNCE, then hold down CTRL with your left hand and press
F1 with your right. A message appears in a window at the bottom of
the screen:

> BOUNCE TRACK #N TO WHICH TRACK? {N}
> USE +/- TO SELECT RETURN TO CONTINUE

Press "+" or "-" to select the number of the Track to which you
wish to BOUNCE the current Track, and then press RETURN. If the
Track to which you are BOUNCING (the "destination" Track) was
empty, its number on the Track line should now be reversed,
indicating that the data from the current Track has been
duplicated. If the destination Track was recorded before the
BOUNCE, the data from the current Track now has been added to the
data that was already there.

MUTE the current Track by pressing its number and play the
Sequence. You should still hear the music that was on that Track
because it has been BOUNCED and is now being played on the
destination Track.

IMPORTANT NOTES

1. If you BOUNCE more than one recorded Track to the same
    destination Track, any different VOLUME or CHANNEL settings
    you have made before the BOUNCE to the source Tracks will
    become a part of the data for the destination Track,
    preserving the source Track's mix before the BOUNCE; therefore
    the original VOLUME and CHANNEL assignments will NOT appear on
    the screen under the destination Track. If you make a new
    CHANNEL setting on the destination Track after the BOUNCE, it
    will overide the ones that have been mixed into the Track;
    select NO MIDI CHANNEL (the "blank" position) and the
    assignments made before the BOUNCE will be restored again.

2. Using BOUNCE in this way, you can make quite complex sub-mixes
    on one Track (using different VOLUME settings and MIDI CHANNEL
    assignments). After a Track has been BOUNCED into a sub-mix,
    you can then ERASE the source Track (the one you BOUNCE FROM)
    in order to have it free for more music. In effect, your
    STUDIO I becomes a multi-track recorder with an unlimited
    number of Tracks. Take some care with the VOLUME and CHANNEL
    assignments before you BOUNCE because the settings cannot be
    extracted from the Track once the BOUNCE has been made.

F3 XPOSE TRK

This stands for TRANSPOSE TRACK. Hold down CTRL and press F3. A
message appears at the bottom of the screen which says:

PLAY NOTE TO TRANSPOSE RTN TO EXIT

Make sure the Track cursor is on the (recorded) Track you wish to
TRANSPOSE, and then play a note on the keyboard of the synthesizer
which you are using to record your music. That's all there is to
it.

STUDIO I executes its TRANSPOSES relative to "Middle C". If you
press the "G" above "Middle C", for example, the current Track
will be TRANSPOSED up a perfect fifth (not necessarily to the key
of "G"). If you press the B-flat below "Middle C", the Track will
be TRANSPOSED down a major second.

F5 SHIFT TRK

Use F5 to SHIFT the current Track (if recorded) forward or
backward in time by individual pulses. This feature is intended to
allow you to "match up" synthesizers which fire at slightly
different times and thus never sound exactly in sync; however, you
may also want to use the SHIFT in conjunction with BOUNCE and
other functions to create interesting effects, such as a precisely
controlled delay/advance.

Make SURE that the Track Cursor is on the Track you wish to SHIFT,
then hold down CTRL and press F5. A message appears at the bottom
of the screen which says:

SHIFT TRACK # N: 00

USE +/- TO SELECT RETURN TO CONTINUE

Press "+" to SHIFT the Track later in time, press "-" to SHIFT the
Track earlier in time. The two zeros in the message will change
and show you the actual number of PULSES you are SHIFTing the
Track. When you have SHIFTed the Track the correct number of
PULSES, press RETURN and listen to it to be sure.

IMPORTANT NOTES

1. If you SHIFT a Track so far forward ("+" = later in time) that
    the end of the last note in the Track runs into the END of the
    Sequence, the border of your screen will flash and no further
    SHIFTing will be allowed in the same direction. If you wish to
    SHIFT the Track farther, you can use the SET END command (see
    Chapter Two) to extend the length of the Sequence and create
    more room for "+" SHIFTing.

2. If you SHIFT a Track so far backward ("-" = earlier in time)
    that the beginning of the first note in the Track runs into
    the beginning of the Sequence, the border of your screen will
    flash and no further SHIFTing will be allowed in the same
    direction. If you wish to SHIFT the Track earlier, you can
    punch a hole at the beginning of the Track to make more room
    for "-" SHIFTing.

3. A maximum of 96 pulses is allowed in any one SHIFT. If you wish
   to move a Track farther than 96 PULSES in one direction,
   simply move it the first 96, press RETURN, and then hold down
   CTRL, press F5, and continue SHIFTing (this assumes that you
   have the room within the borders of the Sequence to do that
   amount of Shifting).

F7 ERASE TRK

Use F7 to ERASE a Track that you don't want for whatever reason.
Make SURE the Track cursor is on the Track you wish to ERASE, then
hold down CTRL and press F7. A message appears in a window at the
bottom of the screen which says:

                 ERASE: TRACK # N ARE YOU SURE?
                       PRESS "Y" OR "N"

If it is indeed the Track you want to ERASE, press "Y" and that's
all there is to it. Notice that the amount of MEMORY remaining may
increase when you ERASE A track.

F2 NAME TRK

This feature allows you to give a three-character name to the
current Track. Hold down SHIFT and CTRL and press F2 Three periods
("...") appear where the Track number was with a block cursor at
the left-most one; also, a message appears at the bottom of the
screen which says:

ENTER NAME & PRESS RETURN TO CONTINUE

STUDIO I allows you to enter up to three letters or numbers for
the name of any Track. Spaces are not accepted; the only
separators allowed are "." and "/". If you make a typing error,
you can use the DELETE key at the upper right corner of your
Commodore keyboard to move the cursor to the left. When you have
entered the right name, press RETURN.

F4 NAME SEQ

This feature allows you to give an eight-character name to the
current Sequence. The procedure is the same as naming a Track,
except that the eight characters are entered in the middle left of
the screen, where the word "SEQ" was.

F6 APPEND SEQ

This stands for APPEND SEQUENCE and refers to a process which adds
the entire current Sequence on to the END of whichever destination
Sequence you specify. Hold down SHIFT and CTRL and press F6. In a
window at the bottom of the screen you will see a message which
says:

APPEND SEQ <X> TO WHICH SEQUENCE?
<X> USE +/- TO SELECT   RETURN TO CONTINUE

There are three different cases of which you should be aware. You
can:

1. APPEND the current Sequence to itself. This will double
   the length of the current Sequence.

2. APPEND the current Sequence to an empty Sequence. This
   will copy the current Sequence into another Sequence; use
   this case for making a back-up copy of the current
   Sequence.

3. APPEND the current Sequence to another recorded Sequence. This will tack the current Sequence on to the END of the destination Sequence, so if you like to work with building blocks, this can be a powerful tool.

Press "+" or "-" to select a destination Sequence and when you have it right, press RETURN. The message in the window at the bottom of the screen changes to:

APPEND: SEQUENCE <X> TO SEQUENCE <Y> ARE YOU SURE?
PRESS "Y" OR "N"

Press "Y" and STUDIO I takes over. All of these cases use as much memory as the current Sequence itself occupies, so manage your use of APPEND carefully. The MEMORY indicator at the top of your screen should give you an idea of just how much memory your APPENDS are using.

F8 ERASE SEQ

Use F8 to ERASE the current Sequence. Hold down SHIFT and CTRL and press F8 (same key as F7). The window at the bottom of the screen displays:

ERASE: SEQUENCE <X> ARE YOU SURE?
PRESS "Y" OR "N"

If you're sure, press "Y" and the current Sequence is history. Notice that the MEMORY remaining may increase when you ERASE a Sequence.

SONG MENU

Make sure your screen displays the MAIN MENU, and then hold down
CTRL and press F3 for SONG. Your screen should look like this:

```
SONG  #1                              SET:
 01.( )                               13.( )
 02.( )                               14.( )
 03.( )                               15.( )
 04.( )                               16.( )
 05.( )                               17.( )
 06.( )                               18.( )
 07.( )                               19.( )
 08.( )                               20.( )
 09.( )                               21.( )
 10.( )                               22.( )
 11.( )                               23.( )
 12.( )                               24.( )

 TRACK  -1-   -2-   -3-   -4-   -5-   -6-   -7-   -8-

 VOLUME

 CHANNEL

 SONG MENU
 F1           F3            F5            F7
 SECTION+     SEQUENCE+     INSERT        EXIT
```

This is the SONG SCREEN, the only other screen of your STUDIO I
besides the SEQUENCE SCREEN. From this screen, you can construct,
edit, and play back SONGS, or chains of up to twenty-four
SECTIONS, made up of the Sequences you have recorded in the
Sequence Screen. SONGS are a way of getting more music out of your
Sequence without using any more of the computer's recording
memory.

The SONG MENU is a four-level Menu of selections which enable you
to do this.

F1 SECTION +

Press F1 to move the SECTION cursor (the reverse-field rectangular bar) down the list of SECTIONS. Each SECTION may contain one Sequence, and when you play the SONG (by pressing the SPACE BAR, as you did in SEQUENCE MODE), the Sequences are played in the order you specify in your list of SECTIONS.

F3 SEQUENCE +

Use F3 to select which Sequence will be played in the current SECTION. Hold down F3 and notice the Sequence letters (A-P) cycling along between the brackets at the left of the SECTION cursor. If you have named any of your Sequences, their names will appear on the line to the right of the brackets, and any information which was displayed on the TRACK, VOLUME, and CHANNEL lines in the Sequence Screen will also be displayed in the Song Screen.

When you see the Sequence you wish to have played in the current SECTION, release the F3 key and press the F1 key to move the SECTION cursor down to the next SECTION. Then press F3 to select the Sequence you wish to have played in that SECTION. This is how you build a SONG in STUDIO I. It's that simple.

F5 INSERT

Use F5 to INSERT a blank SECTION into your list of Sequences. The INSERT function moves the Sequence in the current SECTION (and all following SECTIONS) one postion down the list and INSERTS a blank where the SECTION cursor is. If you do an INSERT when a Sequence has been selected in SECTION #24, that Sequence will disappear from the end of the list.

F7 EXIT

An EXIT from the SONG MENU takes you back to the Sequence MAIN MENU.

F2 SECTION

Press F2 to move the SECTION cursor up the list of SECTIONS.

F4 SEQUENCE

Press F4 to move backwards through the sixteen Sequences, from P to A.

F6 DELETE

Use F6 to DELETE the current SECTION from your list of Sequences. The DELETE function removes the Sequence from the current SECTION and moves all following SECTIONS up one position on the list. It does not DELETE the Sequence from the computer's memory or in any way affect the Sequence data.

F8 XPOSE SEQ

This stands for TRANSPOSE SEQUENCE and allows you to have a Sequence played in any key. Other repetitions of the same Sequence may be played in different keys. This TRANSPOSE function does not change the key of the actual Sequence; it merely assigns a key for playback in the SECTION for which it is specified.

Hold down SHIFT and press F8. A message appears at the bottom of the screen which says:

                    PLAY NOTE TO TRANSPOSE   RTN TO EXIT

Press a key on the keyboard of the synthesizer you have been using to record your Sequences. Unless you pressed middle C, you will see the name of the note you pressed displayed on the right end of the SECTION cursor, followed by a number which represents its octave (middle C is C3). Now ANY Sequence which is entered in that SECTION will be transposed up or down by the same amount that the note is above or below middle C. Once again, STUDIO I transposes relative to middle C - if you play D3 (1st D above middle C) on your synthesizer, the Sequence in that SECTION will be played a major second above where you recorded it (but not necessarily in the key of D).

To remove the TRANSPOSE from the current SECTION, press F8 to activate the TRANSPOSE function, and then press middle C on your synthesizer keyboard. Now any Sequence selected for the current SECTION will be played in the same key in which it was recorded.

F1 NAME SET

In STUDIO I, SONGS are saved to and loaded from the disk in SETS
of four SONGS. Each SONG in the SET of four will get its Sequences
from the same group of sixteen Sequences (A-P) which are currently
in the computer's memory.

You may wish to have four entirely different SONGS in a SET, in
which case you will need to be fairly careful about how many
different Sequences each SONG uses; or you may wish to have four
different arrangements of the same Sequences for compositional
purposes. Either way, it's very simple to do with your STUDIO I
Song functions.

Hold down CTRL and press F1 to name the SET of four SONGS which
are currently in the computer's memory. The screen fades, a cursor
and eight periods (".......") appear in the upper right corner of
the screen just to the right of the word "SET:", and a message
appears at the bottom of the screen which says:

              ENTER NAME & PRESS RETURN TO CONTINUE

You can enter as many as eight characters (letters, numbers,".",
and "/" are accepted). Press RETURN when the name is right. You
will then see the Song Menu re-appear at the bottom of the
screen.

F3 NAME SONG

Hold down CTRL and press F3 to name the current SONG, the one of
the SET of four which is currently shown on your screen. The
screen fades and the cursor and eight periods (".......") appear
at the upper left corner of the screen right after the word "SONG
#n:". Enter the name (up to eight characters) and press RETURN
when you have finished.

F5 DISK

Hold down CTRL and press F5 to enter the DISK MENU. When you
perform DISK operations from the SONG Screen, the loading or
saving you do is done on one whole SONG SET at a time (see Chapter
Six).

F7 EXIT

Takes you back to the Sequence Screen MAIN MENU.

F2 ERASE SNG

This stands for ERASE SONG. Hold down SHIFT and CTRL and press F2 to erase the current SONG (whose number and name are displyed in the upper left corner of your screen). STUDIO I asks you for your confirmation; if you press "Y" , the SONG is ERASED immediately.

ERASE SONG does just that - it ERASES the current SONG, but it doesn't affect the individual Sequences in the computer's memory or the other SONGS in the SET. All that will be ERASED is the list of Sequences currently on the screen and the SONG name (if any).

F4 NEXT SONG

This selection takes you to the NEXT SONG within the SET of four currently in the computer's memory. Hold down SHIFT and CTRL and press F4. The SONG # in the upper left corner will change from #1 to #2, the SECTION cursor will jump to the top of the list, and the list of SECTIONS itself will blank out (unless you have previously built a SONG #2 in this SET). SONG #2 is now ready to be built or edited or played. It should be the same as you left it, and won't be affected by anything you do to SONG #2 or the other SONGS in the SET.

F8 EXIT

Takes you back to the Sequence Screen MAIN MENU.

HIDDEN COMMANDS

Hidden Commands are those commands which are activated by pressing a key which is not displayed on a Menu. Some of the most powerful functions of your STUDIO I are called by Hidden Commands, so you should read this chapter very carefully.

STEP MODE (S)

One of the most versatile features of STUDIO I is STEP MODE, a mode in which the Clock is advanced manually (by you) by pressing RETURN or "+" or CURSOR RIGHT. In STEP MODE, all the features of the Sequence Screen continue to function as before (e.g.,Record, Playback, AUTOPUNCH, "LIVE" PUNCH, and all Menu functions) - the only difference is that the Clock is entirely under your control; it advances ONLY when YOU advance it.

Be sure you are viewing the Sequence Screen and then press "S" on your Commodore keyboard to enter STEP MODE. The STEP MODE indicator in the box at the upper left corner of your screen changes from "OFF" to "ON" and a window appears in the middle of your screen with a list of rythmic values and the familiar message appears at the bottom of your screen:

USE +/- TO SELECT   RETURN TO CONTINUE

You are being asked to select the size of STEP you wish to use. Press "+" to move the cursor to "1/8TH NOTE" and then press RETURN. You have chosen to STEP in eighth-notes. This means that each time you press RETURN to advance the Clock, the Clock will move forward one eighth-note.

Pressing "+" will advance the Clock by one PULSE, and pressing CURSOR RIGHT will advance the Clock to the next BEAT (dependent upon the METER). Pressing RETURN will advance the Clock by the value that you select from the window at the time you enter STEP MODE.

Next make sure the Sequence cursor is on an empty Sequence and hold down "/" and press the SPACE BAR to record. To record a series of eighth-notes in STEP MODE, hold down a key on your synthesizer keyboard, press RETURN to advance the Clock, and THEN release the key on the synthesizer keyboard. Now press another key on the synthesizer, press RETURN to advance the Clock, and THEN release the synthesizer key. Repeat this process until you have recorded several measures of eighth-notes.

When you have finished recording, press the SPACE BAR to stop recording, and then press it again to start the playback. You should hear the first note you recorded. Now press RETURN to advance the Clock, and you should hear the first note stop and the second note start; press RETURN again and the second note stops and the third note starts, and so on. You are controlling the playback by pressing RETURN to advance the Clock. When you have finished stepping thru the Sequence, press the SPACE BAR to stop the playback.

Now press "S" to leave STEP MODE (Notice that the STEP MODE indicator changes from "ON" to "OFF"). Press the SPACE BAR to play - your previous Clock setting takes over and plays the Sequence of eighth notes. No AUTO-CORRECT is necessary, because by recording in STEP MODE, you can enter the noted directly on the exact pulse you want.

IMPORTANT NOTES

1. In STEP MODES the Clock moves ONLY when you advance it by pressing RETURN (or "+" or CURSOR RIGHT). This means that, when you are recording, if you press a key on your synthesizer keyboard and release it WITHOUT advancing the Clock, STUDIO I will record the beginning and the end of the note on the same pulse. At best, your synthesizer will play this back as a very stacato (short) note; at worst, it will be played back as silence (how your synthesizer plays the note depends on the attack time of the sound currently in the synthesizer). So it is VERY IMPORTANT to remember to HOLD DOWN the key on your synthesizer while you advance the clock (by the desired amount) on the computer keyboard. By the same token, you can record rests in Step Mode by advancing the clock while you are not holding down anything on the synthesizer.

2. In or out of STEP MODE, Record and Playback both display the message:

        PRESS SPACE BAR OR FOOTSWITCH TO STOP

    When you are Playing or Recording in STEP MODE, because no activity is taking place unless you advance the Clock, it is easy you to overlook the fact that you are in a Playback or Record condition, where certain functions are not available (e.g., Rewind, the "-" key, the HOME key, any Menu functions, or any Hidden Commands which are not "live" - see below). If you are in STEP MODE and something is not working as you expect it to, it is a good idea to check the bottom of the screen - if the above message is displayed there, you are still Playing or Recording. Press the SPACE BAR and then try your command again.

3. You may find it convenient to insert PROGRAM CHANGES (instructions to the synthesizers to change presets, or patches) in a Track using STEP MODE. In Step Mode record the program changes on an empty Track at the precise pulse you desire and bounce them into the appropriate Track. A PROGRAM CHANGE dosen't require you to advance the clock (because the command itself has no duration - it can be located on one pulse) when you Record it, but you should remember that your synthesizer may require some small amount of time to execute the PROGRAM CHANGE. So try to put the PROGRAM CHANGES at least an eighth-note BEFORE you want the new sound to start; this may not always be convenient within your music, but your synthesizers will make the changes more cleanly when they have a small rest within which to do it.

4. You can use the "+" key in Playback in STEP MODE to play your Sequences PULSE by PULSE. This can be a powerful editing tool because it allows you to hear what's going on at each individual pulse of the Sequence. Use this feature along with the STUDIO I MUTE and SOLO commands (see below) to find and correct errors or problems in a Track, or just to convince yourself that a Track has been recorded correctly. Used together with a "LIVE" PUNCH, this is an easy way to fix a wrong note or chord.

"Live" Commands are those which are active while the Sequence is being Played or Recorded. Some of them, like mute and unmute work whether the Sequence is running or stopped.

"LIVE" PUNCH (P)

This is the second type of punch-in (after AUTOPUNCH) offered by your STUDIO I. To do a "LIVE" PUNCH, first MAKE SURE THE TRACK CURSOR IS ON THE TRACK YOU WISH TO PUNCH. Then Play the Sequence (STEP MODE can be either ON or OFF). With the Sequence Playing, press "P" on your Commodore keyboard when you want the PUNCH to start. The border of your screen should change to yellow indcating that you are now in "live" punch. Anything you now play (or don't play) will be inserted into the track the cursor is now on. To punch-out again, press "P", the border of your screen flashes back to blue and the Playback continues to the END of the Sequence (unless you stop it). If you don't punch OUT, STUDIO I will punch you out automatically at the END of the Sequence. It's that simple.

IMPORTANT NOTES

1. Like AUTOPUNCH, "LIVE" PUNCH (yellow), RECORDS whether you play any notes or not. This means that it will ERASE any data on the current Track from the point where you punch IN to the point where you punch OUT. "LIVE" PUNCH doesn't give you any warning or confirmation messages - it is designed to be quick and simple to use. But that means you should be very careful when you use it; always check the Track cursor and don't forget to punch OUT when you have finished the part of the Track you mean to PUNCH.

2. You can do only ONE "LIVE" PUNCH on each pass thru the Sequence. STUDIO I needs a few fractions of a second after a PUNCH to organize the date in the Track, which it does as soon as you stop the Playback. If you have several places in one Track you wish to PUNCH, you will have to do it in several passes through the Sequence (although it isn't necessary to Play the entire Sequence each time.)

MUTE (#1-8)

To MUTE a recorded Track (or defeat its Playback) in STUDIO I, all you need to do is to press its number on the Commodore keyboard (whether the Sequence is running or not). Its reversed number or name in the TRACK line turns black (if it is the current Track only the middle of its number or name turns black) to indicate that it has been MUTED and will not be Played. If you wish to MUTE all recorded Tracks at the same time, hold down the LEFT ARROW key and press ZERO ("0").

To UNMUTE the Track, press its number again - its number or name returns to its normal color and Playback of that Track is enabled. If you have a number of Tracks MUTED and you wish to UNMUTE them all at the same time, press ZERO ("0") on your Commodore keyboard. All recorded Tracks will return to their normal colors and have their Playbacks enabled.

When you SAVE a Sequence or Song Set on a diskette, the MUTES currently in effect are saved as part of the data - the next time you LOAD that Sequence or Song Set the same Tracks will be MUTED as when you SAVED it. This allows you additional ease of operation and musical flexibility.

SOLO (LEFT ARROW and #1-8)

To SOLO a recorded Track (to play it back by itself), hold down the LEFT ARROW key and press the number of the Track you wish to SOLO (whether the Sequence is running or not). The names or numbers of all recorded Tracks except the ones whose number you pressed turn black and their Playbacks are defeated. If the Sequence is running, you will hear ONLY the Track you have chosen to SOLO. To UNMUTE all recorded Tracks, press ZERO ("0").

F1

Press F1 any time during Playback of a Sequence or a Song to stop
the Playback at the END of the Sequence or Song.

F7

When you are recording the first Track of a Seuqence, pressing F7
(after you have held down "/" and pressed the SPACE BAR) will
start the Recording process immediately, rather than waiting for
the first note you play. This allows you to Record a Sequence with
a rest (or silence) at the beginning.

RETURN

During Playback, RETURN acts as a "pause" control. The first time
you press RETURN the Playback stops and the second time you press
RETURN it starts it again. STUDIO I waits one beat and then
resumes playback on the next even beat.

For example, if your METER is 4/4 and you want Playback to resume
on "1", press RETURN after "3" but before "4" - STUDIO I waits one
beat (or until after "4") and then resumes the Playback on the
next even beat, which is "1".

The PAUSE function is not active during Record.

In ANY Clock mode, the pause control (RETURN) stops only the
STUDIO I Sequence, any drumbox or outboard sequencer you may be
using will continue.

The following is a list of one-key commands which perform various functions in your STUDIO I. These commands are NOT active during Playback/Record operations.

LETTER C

Turns the COUNT DOWN feature on and off (see Chapter One).

LETTER M

Turns the MIDI DRUM output on and off (see Chapter One).

LETTER O

Press the letter "O" on your Commodore keyboard to send an OMNI MODE OFF/POLY MODE ON command over all MIDI Channels. Some sythesizers, when they are first turned on, come up in OMNI MODE, which means they have MIDI Receive enabled for all MIDI Channels - they will play all the music being played by your STUDIO I, in spite of any MIDI CHANNEL Assignments you may have made.

If this is the case, press the letter "O" to send the OMNI MODE OFF/POLY MODE ON command to all Channels. It will affect all units which you have connected to the MIDI OUT jack on your MIDI Interface card and which are turned on at the time you press "O". After you press "O", your synths will play information comming from only the specific MIDI Channel to which they are assigned. If you don't want certain synths to receive this command, be sure they are turned off or disconnected when you press "O". Then turn them on or reconnect them.

LETTER S

Turns STEP MODE on and off (see the beginning of this Chapter).

LETTER T

Turns the TOUCH FILTER on and off (see Chapter One).

LETTER Z

Press the letter "Z" to send a ZERO Pitch and Mod Wheels command over all MIDI Channels. Most synthesizers read this as a command to zero the Pitch and Mod Wheel values, which will have the effect of centering the Pitch Wheel and turning the Mod Wheel all the way down. Use this command to ZERO all your synths' wheels after a Playback or Record which may leave the wheels in a non-zero position.

POUND SIGN

Moves the CTR Counter to the CUE point (see the AUTOPUNCH discussion in Chapter Two).

RUN/STOP and RESTORE

Hold down the RUN/STOP key and press RESTORE (firmly) to ERASE all Sequences and Songs currently in the computer's memory. STUDIO I asks you for a confirmation, and, if you press "Y" for yes, takes you to the beginning PPQN select screen. Use this command to clear the computer's memory or to set a new PPQN, but remember that EVERYTHING IN STUDIO I MEMORY IS ERASED.

UP ARROW

Any time you see a flashing menu at the bottom of your screen you can press the up arrow key for an immediate return to the SEQUENCE MAIN MENU.

DISK MENUS

(For both Sequence & Song Screens)

Most disk operations you will need when using STUDIO I are
provided on the Sequence and Song disk menus. If you wish to
perform disk functions not on these menus you should consult your
Commodore reference manual.

When using the disk menu commands you may occasionally see the
message:

DISK ERROR ... PRESS RETURN

This message will appear if any disk error is encountered. The
usual disk errors include:

        (1) An improperly connected disk drive
        (2) An open disk drive door
        (3) An attempted save to a write protected diskette
        (4) Disk operations to an unformatted diskette
        (5) No disk in the disk drive slot

If you encounter a disk drive error check to see if the source is
one of these common errors. If it is not you may have a bad
diskette. Try the operation with another formatted disk. Its a
good idea to periodically save your Sequences and Songs to more
than one diskette creating a backup.

Remember to keep your diskettes away from dirt and magnetic fields
(such as loudspeakers). Never touch the exposed area on your
diskettes and keep them in a diskette envelope when not being
used.

Disk menu commands are very similar for the Sequence and Song
Screens except saves, loads and deletes (scratches) in the
Sequence Screen apply to Sequences only and in the Song Screen
apply to Song Sets only. The directory and new disk (formatting)
commands are identical in the Sequence and Song Screens.

On diskettes Sequences are saved as the letters SEQ - followed by
the eight letter names given in the save operation. Song Sets are
saved as the letters SNG - following the eight letters given in
the save operation.

Before performing any disk operation, be sure you have a data disk
in your drive. If you try to perform an operation without a disk
in the drive the Screen will display a "DISK ERROR" message.

F1 SEQUENCE + (in Sequence only)

Pressing F1 in the Sequence Screens allows you to move forward through the various Sequence letters. If you perform a Sequence load the Sequence on diskette will be loaded into Sequence letter selected. If you perform a Sequence save the Sequence letter will be saved on diskette.

F3 DISK LOAD

In the Sequence Screen pressing F3 allows you to load a Sequence from diskette into the Sequence letter selected. After pressing F3 you will see the message:

LOAD SEQUENCE:........
ENTER NAME AND PRESS RETURN TO CONTINUE

Enter the eight letter (or less) name of the Sequence you would like to load. The Sequence will be loaded into the Sequence letter you have selected. If the Sequence you are trying to load is larger than the amount of memory remaining in the STUDIO I, you will have to free additional memory.

In the Song Screen F3 allows you to load an entire Song set into STUDIO I. A Song set includes four Song descriptors and and all Sequences in STUDIO I. When you load a Song set all Sequences and Song descriptors in memory are lost. After pressing F3 in the Song Screen you will see the message:

LOAD SONG SET:........
ENTER NAME AND PRESS RETURN TO CONTINUE

Enter the eight letter (or less) name of the Song set you would like to load and press return. After entering the name and pressing return the STUDIO I will ask you for confirmation and warn you that the other things in memory will be erased when the Song set load is performed. If you wish to go ahead and load the Song answer "Y" (yes).

In both the Sequence and Song Screens disk loads may result in the message:

FILE NOT FOUND...PRESS RETURN

If you encounter this message you should be sure you have correctly entered the Song or Sequence name and that you have the proper diskette in the disk drive. If you aren't sure of the file name you may wish to verify it by using the directory command. (see directory)

F5 DISK SAVE

In the Sequence Screen pressing F5 allows you to save the Sequence
you have the cursor on to diskette. If the Sequence you have the
Sequence cursor on is not recorded and you attempt a save you will
be given a Sequence not recorded message. If the Sequence has been
recorded you will see the message:

SAVE SEQUENCE: (Sequence name here)
ARE YOU SURE? PRESS "Y" OR "N"

If you press "Y" (yes) the Sequence that the Sequence cursor is on
will be saved to diskette with the assigned name. If a Sequence
has already been saved to the diskette under that name you will be
given a warning and asked if you still wish to save the Sequence
under that name. If you wish to replace the old Sequence with the
new one go ahead and answer yes here. If you wish to save both the
new Sequence and the old one you should answer no here and give
the new Sequence a different name (see EDIT chapter).

If you press "N" (no) the Sequence save will be aborted and you
will be returned to the disk menu.

Pressing F5 in the Song Screen will result in the message:

SAVE SONG SET:........
ENTER NAME AND PRESS RETURN TO CONTINUE

If you wish to save the Song set which includes the four available
Song descriptors and all Sequences in memory you should enter a
name (up to eight character) and press return. If you enter no
name and press return you will go back to the Song Screen disk
menu. Entering a name of a Song set which has been previously
recorded will result in a warning message which will ask you if
you wish to replace the previously saved Song set with the new
Song set. If you do press "Y" (yes). If you don't wish to replace
the old Song set press "N" (no), go back to the disk save
selection on the menu and give the Song a different name.

F7 EXIT

Pressing F7 in the Sequence Screen returns you to the MAIN Menu.
F7 in the Song Screen returns you to the SONG Menu.

F2 SEQUENCE -

In the Sequence Screen moves the Sequence Cursor from right to left. (Has no function in Song Screen)

F4 DIRECTORY

The directory command for the Sequence and Song Screens is identical.

Pressing the F4 in both Screens will give you the directory of the diskette currently in your drive. The first line of the disk directory will display the name you gave the diskette in the New Disk command (see below). All files on the diskette will be displayed including non-Sequence and non-Song-set files. Any Sequences on the diskette will be preceded by the four chacters SEQ - and any Song Sets will be preceeded by SNG-. If there is more than one page of directory entries press RETURN to view the additional pages. When you are on the last page of directory entries RETURN will take you back to the disk Screen from which you called the directory command.

F6 DELETE

The delete command allows you to delete (scratch) Sequences or Song Sets you would like to remove from one of your diskettes.

Pressing F6 in the Sequence Screen brings up the message:

DELETE SEQUENCE:........
ENTER NAME & PRESS RETURN TO CONTINUE

Enter the name of the Sequence you wish to remove from your diskette, be sure the proper diskette is in the drive and press RETURN. If the Sequence you have specified is not on the diskette you will be returned directly to the Disk Menu. If this happens check to be sure you have the correct name and diskette. If the Sequence is on the disk you will be asked to confirm that the Sequence is to be deleted. If you have changed your mind and don't wish to delete the Sequence you may press "N" (no) here.

The Delete function in the Song Screen is exactly like Delete in the Sequence Screen (see above) except it allows you to scratch Song Sets rather than individual Sequences.

IMPORTANT NOTE:

When you use either the Sequence or Song Screen Delete commands make absolutely sure you want the files you specify deleted. Once deleted there is no way to recover the Song-set or Sequence you have scratched.

F8 NEW DISK

The NEW DISK (or formatting) command is identical for the Sequence
and Song Screen.

The NEW DISK function allows you to format new diskettes on which
you can save your Sequences and Song-Sets. A diskette fresh out of
the box requires formatting before it can be used at all.

IMPORTANT NOTE:

Formatting an old diskette erases everything previously on the
diskette. So if your're going to reformat an old diskette make
sure there's nothing on it you need to save.

After pressing the NEW DISK command you will be asked to insert
the disk you would like to format in the drive and press RETURN.
After pressing RETURN you may enter up to a sixteen character name
for your diskette. After entering the name and pressing RETURN you
will be asked to confirm that you want the diskette formatted.
Pressing "N" (no) exits you back to the Disk Menu. Pressing "Y"
(yes) starts the formatting process which takes very little time
for a previously formatted disk and about three to four minutes
for a new disk.

STUDIO I MENU MAP

MAIN MENU

Control	f1	f3	f5	f7
Regular	sequence+	track+	set clock	auto punch
Shifted	sequence-	track-	meter	tempo
Ctrl	EDIT	SONG	DISK(seq)	TRK MODS
Shft/Ctrl	set cue	set in	set out	set end

EDIT MENU

Control	f1	f3	f5	f7
Regular	volume +	track+	channel +	exit
Shifted	volume -	track-	channel -	autocorr
Ctrl	bounce trk	xpose trk	shift trk	erase trk
Shft/Ctrl	name trk	name seq	append seq	erase seq

TRACK MODS MENU (Remove Track Data)

Control	f1	f3	f5	f7
Regular	prog chgs	track+	after-tch	exit
Shifted	pitch whl	track-	mod wheel	exit
Ctrl	----	----	----	----
Shft/Ctrl	----	----	----	----

DISK MENU (Sequence)

Control	f1	f3	f5	f7
Regular	sequence+	seq load	seq save	exit
Shifted	sequence-	directory	delete seq	new disk
Ctrl	----	----	----	----

SONG MENU

Control	f1	f3	f5	f7
Regular	section+	sequence+	insert sec	exit
Shifted	section-	sequence-	delete sec	xpose seq
Ctrl	name set	name song	DISK(song)	exit
Shft/Ctrl	erase song	next song	----	exit

DISK MENU (Song)

Control	----	----	----	----
Regular	----	load set	save set	exit
Shifted	----	directory	delete sec	new disk
Ctrl	----	----	----	----
Shft/Ctrl	----	----	----	----

TRANSPORT COMMANDS

space bar	- start/stop play & stop record
/ and space bar	- start record
left/right cursor	- fast forward (by even beats)
up/down cursor	- fast reverse (by even beats)
+	- forward by 1 click
-	- backward by 1 click
home	- set counter to start (001:01:01), or if in song go to the first song element.
shifted home	- go to end of sequence (only if set), or if in song go to last song element.

SPECIAL PLAYBACK or RECORD COMMANDS

f1	- if hit during playback stops play at end of sequence or song
f7	- when hit on first track recording starts record (rather than waiting for the first note)
return	- pause control during playback. When hit first time stops play. Hit again waits till next beat to start

LIVE COMMANDS (those commands active while transport is moving)

#'s 1 to 8	- Toggle mute unmute of individual tracks
Left arrow & #'s	- Solo's voice # hit
# 0	- Unmutes all tracks
Left arrow & # 0	- Mutes all tracks
Letter P	- Live punch in/out. When first hit turns punch in on & when hit again punches out. If not hit again uses sequence end for out

Letter T   • Toggles After touch filter on/off (on when
                indicator lit)

Letter C   • Toggles Overdub count off. Count off given
                only when overdubbing from start of track
                (on when indicator lit)

Letter S   • Toggle in and out of step mode (effects all
                play/record functions). NOTE: |n step mode
                Return moves forward by set amount, + Plus
                moves forward by 1 pulse and Cursor Right
                moves forward by 1 beat

Letter M   • Toggle midi clock byte sends ($F8's, FA's, &
                $FC's). |f on sends midi timing bytes
                in all clock modes. Can be used to automatically
                control M|D| Drum boxes.

Letter O   • Sends out omni mode off/poly mode on over all
                channels

Letter Z   • Zero pitch and mod wheels over all channels

Up Arrow   • When pressed always takes user to main menu

Run/Stop-Restore• Erases everything in memory and takes user to
                opening PPQN menu

Pound Sign   • Sets counter (CTR) to cue location

X   TOGGLES PLAY THRU on/off

(Special Features)

PROGRAM CHANGES

Your STUDIO I records PROGRAM CHANGES (commands to change the patch or preset of the synthesizer) in the same way it records the notes you play. Any time you are recording (in the normal record mode, or in STEP MODE, or in either AUTOPUNCH or "LIVE" PUNCH) the STUDIO records the notes you play, their keyboard velocities (if you are using a velocity-sensitive synthesizer to record the track), any MOD or PITCH WHEEL data you "play", and any PROGRAM CHANGES you enter on the recording synthesizer.

A simple, precise, and convenient way to record PROGRAM CHANGES is to record them in STEP MODE (see Chapter Five), using a vacant track. In STEP MODE, you can locate the exact point within the track where you want the PROGRAM CHANGE to occur; recording it on a vacant track allows you to be sure it's right. Once you have the PROGRAM CHANGE as you want it, you can BOUNCE that track into the track to which it applies. If you later decide that the PROGRAM CHANGE you BOUNCED into the track is not what you want, you can remove it from the track using the REMOVE PROGRAM CHANGES option of the TRK MODS menu (this procedure will remove all the PROGRAM CHANGES in the track). Or you can remove one PROGRAM CHANGE from a track by finding its exact PULSE location within the track using STEP MODE and then "LIVE" PUNCHing a rest on that PULSE only.

Some synthesizer, such as the Yamaha DX7, require a certain small amount of time to execute a PROGRAM CHANGE. If music is playing as the PROGRAM CHANGE is called, a glitch may be heard from the audio output of the synthesizer. To avoid this, you should ensure that your PROGRAM CHANGES occur during rests (or silences) in the track. At most TEMPO's, an eight-note of rest is sufficient for a DX7 to execute a PROGRAM CHANGE, but let your ear be the judge.

Remember that the PROGRAM CHANGE, like any other track data, will be output over the MIDI Channel to which its track's output is assigned. Thus, you can have your different synths changing sounds at different times, if you music requires it.

The DX7 considers its internal memory to be programs 1-32 and its cartridge memory to be programs 33-64. This whole range corresponds to programs 00-63 on a Sequential Circuits Six-Trak, or programs 1-1 to 8-8 on a Roland Juno-106. You can see that if you are recording a PROGRAM CHANGE on one synthesizer on a track which is intended to be played back on a different synthesizer, you may have to do a little calculation to get the program you want.

The following table should be of some help. A PROGRAM CHANGE sent from a synth in one column to synth in another column will result in the corresponding program.

"Dec" - stands for "decimal" and refers to those synthesizers which number thier programs from 00 to 99 (e.g., some Sequential and Moog units).

"DX7" - stands for Yamaha DX7. The "c" in front of the later program numbers refers to the cartridge memory. If no cartridge is present, thes PROGRAM CHANGES will "wrap around" to the corresponding number in the DX7's internal memory.

"Rol" - stands for "Roland" and refers to those synthesizers which number their in "banks" of eight (e.g., Roland and some Sequential units).

Dec	DX7	Rol		Dec	DX7	Rol
00	1	1-1		16	17	3-1
01	2	1-2		17	18	3-2
02	3	1-3		18	19	3-3
03	4	1-4		19	20	3-4
04	5	1-5		20	21	3-5
05	6	1-6		21	22	3-6
06	7	1-7		22	23	3-7
07	8	1-8		23	24	3-8
08	9	2-1		24	25	4-1
09	10	2-2		25	26	4-2
10	11	2-3		26	27	4-3
11	12	2-4		27	28	4-4
12	13	2-5		28	29	4-5
13	14	2-6		29	30	4-6
14	15	2-7		30	31	4-7
15	16	2-8		31	32	4-8

Dec	DX7	Rol		Dec	DX7	Rol
32	c 1	5-1		48	c17	7-1
33	c 2	5-2		49	c18	7-2
34	c 3	5-3		50	c19	7-3
35	c 4	5-4		51	c20	7-4
36	c 5	5-5		52	c21	7-5
37	c 6	5-6		53	c22	7-6
38	c 7	5-7		54	c23	7-7
39	c 8	5-8		55	c24	7-8
40	c 9	6-1		56	c25	8-1
41	c10	6-2		57	c26	8-2
42	c11	6-3		58	c27	8-3
43	c12	6-4		59	c28	8-4
44	c13	6-5		60	c29	8-5
45	c14	6-6		61	c30	8-6
46	c15	6-7		62	c31	8-7
47	c16	6-8		63	c32	8-8

LETTER X

Press "X" on your computer keyboard to turn on and off the PLAY THRU feature of your STUDIO. There is no on-screen indicator for this function - it comes up OFF, and each time you press "X", it toggles the PLAY THRU on or off.

PLAY THRU allows you to record from one synthesizer keyboard and AT THE SAME TIME hear what you are recording played by a unit on a different MIDI Channel. This function works ONLY when you are RECORDING; if you merely want to play another synth from your recording keyboard without recording, you must re-patch or use a MIDI THRU box with a an Channel Select switch.

TO USE PLAY THRU:

1. Assign the current Track (the one which you will be recording) to the MIDI Channel received by the unit you wish to hear (use Level 1 or 2 of the Edit Menu). If you don't assign a Channel on the Track you're recording, the STUDIO will output the incoming MIDI information on whatever Channel or Channels are being received (not necessarily the Channel your target receiving synth is on).

2. Next, turn the volume of your recording keyboard all the way DOWN so you don't hear that unit and make sure the volume of the one you do wish to hear is UP so you do hear that one.

3. If you haven't already done so, press "X" on your computer keyboard to turn the PLAY THRU function ON. Now you are ready to record.

4. Record a brief sample of music - you should hear the second synthesizer (the one whose MIDI Channel you selected for the current Track) playing as you record.

If you don't stop recording and press "X" on your computer keyboard - you may have inadvertently pressed "X" twice, turning it ON tnd then OFF again. Try another Record - if you still don't hear the second synthesizer playing, check all your connections and start this process over again from the beginning.

Once you successfully turn ON the PLAY THRU and use it for a Recording, it will be very clear to you when it is ON and when it is OFF.

LETTER Z

A DAMPER (sustain) PEDAL OFF command (to all MIDI Channels) has
been added to this Hidden Command so that now, in addition to
zeroing the PITCH and MOD WHEELS, pressing "Z" on your computer
keyboard has the effect of releasing the sustain pedals of your
synths. This DAMPER PEDAL OFF command is also sent with each exit
from a Record or Playpack operation, so you will probably never
need to use "Z" for this purpose - still it's there just in case.

CLOCK OPTIONS & MIDI CARDS

The following table is intended to indicate which clock options
work with which of the available MIDI interface cards. A "?" in a
column means that a given option may work, depending on your other
hardware - different drumboxes march to different clicks. In
general, if a jack is available for a function on your interface
card, that function can be used. Sometimes, however, a certain
amount of tinkering may be required to find exactly the right
set-up.

INTERFACE	INT-DRUM	INT-CLIK	MIDI-CLK	EXT-CLIK	EXT-DRUM
	drum out	tape-click out	MIDI-clock in	tape-click in	drum-click in
SYNTECH (w/o tape-sync)	Y	N	Y	N	N
SYNTECH (w tape-sync)	Y	Y	Y	Y	?
PASSPORT (w/o tape-sync)	Y	N	Y	N	N
PASSPORT (w tape-sync)	Y	Y	Y	Y	?
SEQUENTIAL 64	N	N	Y	?	Y
SEQUENTIAL 242	N	N	Y	?	Y

MENU COLORS

If you are using your STUDIO I with a color TV or video monitor,
you will notice that some of the menu options at the bottom of the
screen are colored white (actually "cyan") and some are colored
yellow. The choices (e.g. "EDIT", "SONG", "DISK") take you to a
different menu (a whole different screen in the case of "SONG")
and a different set of options. This distinction is a visual one
for your benefit and doesn't require any different procedure on
your part to execute a choice. A white option does some action and
a yellow one takes you to a different menu.

(Note pulse values at different PPQN)

The following Table gives the pulse numbers for various note values for different PPQN settings:

```
---Note Value----------------------------------------------

     QRTR:    1    -    -    -    -    -    -    -

     8-th:    1    -    -    -    -    -    -    -

     16-th:   1    -    2    -    3    -    4    -

     32-th:   1    2    3    4    5    6    7    8

PPQN  -----------------------------------------------------

24   "PLS":  01   04   07   10   13   16   19   22

48   "PLS":  01   07   13   19   25   31   37   43

96   "PLS":  01   13   25   37   49   61   73   85

-----------------------------------------------------------
```

Example: at a PPQN of 24, the fourth sixteenth-note within any quarter-note begins at "PLS" (pulse) 19; at a PPQN of 48 the same sixteenth begins at "PLS" 37; and at a PPQN of 96 it begins at "PLS" 73.

(SYNCING TO/FROM TAPE)

When you 'SYNC TO TAPE', you get your clock signal to drive your sequencer from a sync-tone which you record on a track of your tape recorder. This allow you to make many passes with your sequencer to the same piece of music on tape. This is very useful if you need to lay down more keyboard parts on tape than you have keyboards to play them.

Syncing to tape requires that you reserve one tape-track for the sync-tone. Once you are finished recording sequences and are sure you will not need the sync-tone any longer you can go ahead and record over it, thus recovering the track for non-sequence material.

Before recording the sync-tone, it is a good idea to have a sequence already finished in your computer. This sequence will help in determining the length of the sync-tone on tape and will also set the tempo of all of the following passes that you sync to it. This first sequence must be recorded with your sequencer clock set to INT CLIK. For best results, set the PPQN (pulses per quarter note) to 96.

To record the sync-tone, connect a cable from the TAPE OUT jack on your interface card to a track INPUT on your tape machine. Play the sequence, to set the input level of the sync-tone on the track. The sequencer will always output a sync-tone from the TAPE OUT jack whenever the clock is set to INT CLIK and the sequence is playing. Set the record level to -5db. Recording the signal too hot can cause as many errors as recording a weak signal.

After you have your levels, stop the sequencer. Record some silence on the tape-track for a leader then start the sequence. It isn't necessary to record any music on the first pass. Run the sequence all the way through so that the tone will be at least as long as the longest sequence you will be recording. It is not a bad idea to put some extra sync-tone down in case you decide to add more music later. Just let the sequence loop if you want more.

Once you have a sync-tone on tape, this tone will be the master clock for all of your following sequencer passes being recorded. Connect a cable from the Sync-tone track's OUTPUT to the TAPE IN jack of your interface card. Set your sequencer's clock to EXT CLIK whenever syncing to tape. To test if the tone is working, rewind the tape to a point just before the tone starts, set your sequencer to play, then run the tape. Set the output level of the sync-tone to -5db. If your VU meters do not follow your output controls, as in many home recorders, set the output level somewhere near the middle of the control. You can experiment with

the level by raising it until you hear errors (too much will make the music speed up) then lowering it until it starts to drop out (music will slow or stop). Set the level midway between those two points.

To make all of your subsequent passes, your sequencer must be set to EXT CLIK whenever using the sync-tone to drive the sequencer. You can record your sequences without syncing to tape and sync them later on playback if you wish, just be sure to use the same PPQN as the sync-tone you intend to sync to.

To drive your drum box from the sync-tone along with your sequence, you need to have the drum machine read the sync-tone directly from the tape (this usually requires some special hardware). If yours is a MIDI drum machine, then you can drive it with the MIDI clock by turning MIDI DRUMS ON (see Chapter I-Indicators, in your STUDIO I/II manual.

IMPORTANT NOTE:

When using the SYNTECH Interface and 'syncing to tape' with EXT CLIK ON, both the CLIK OUT and the TAPE SYNC OUT are disabled. The CLIK OUT (sometimes refered to as Drum Out) will still send a pulse out at half the rate of the EXT CLIK driving the sequencer - this was not intended for use during 'sync to tape', but is merely the nature of the hardware. Should you try to drive a drumbox (set at the same PPQN) from the CLIK OUT, you may find that it will run at half-tempo.