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Model 450
Video Tape Control Interface

For Apple(tm) and similar computers
For Industrial Use Only

Rev.B

LIMITED WARRANTY

BCD Associates, Inc. warrants this device/software system (excluding cables and connectors) to be free from defects in material and workmanship for a period of ONE YEAR from date of purchase. This warranty applies only to the first retail purchaser or user of the device/software system and does not cover consequential damages of any nature. BCD Associates, Inc. shall at its discretion, repair or replace this device/software system, provided the device/software system is returned to an Authorized BCD Associates Warranty Center. These are the only remedies available. This warranty shall be void if the device/software system has been tampered with or otherwise misused or abused. No other warranties of any kind, including, but not limited to MERCHANTABILITY or FITNESS OF PURPOSE are expressed or implied.

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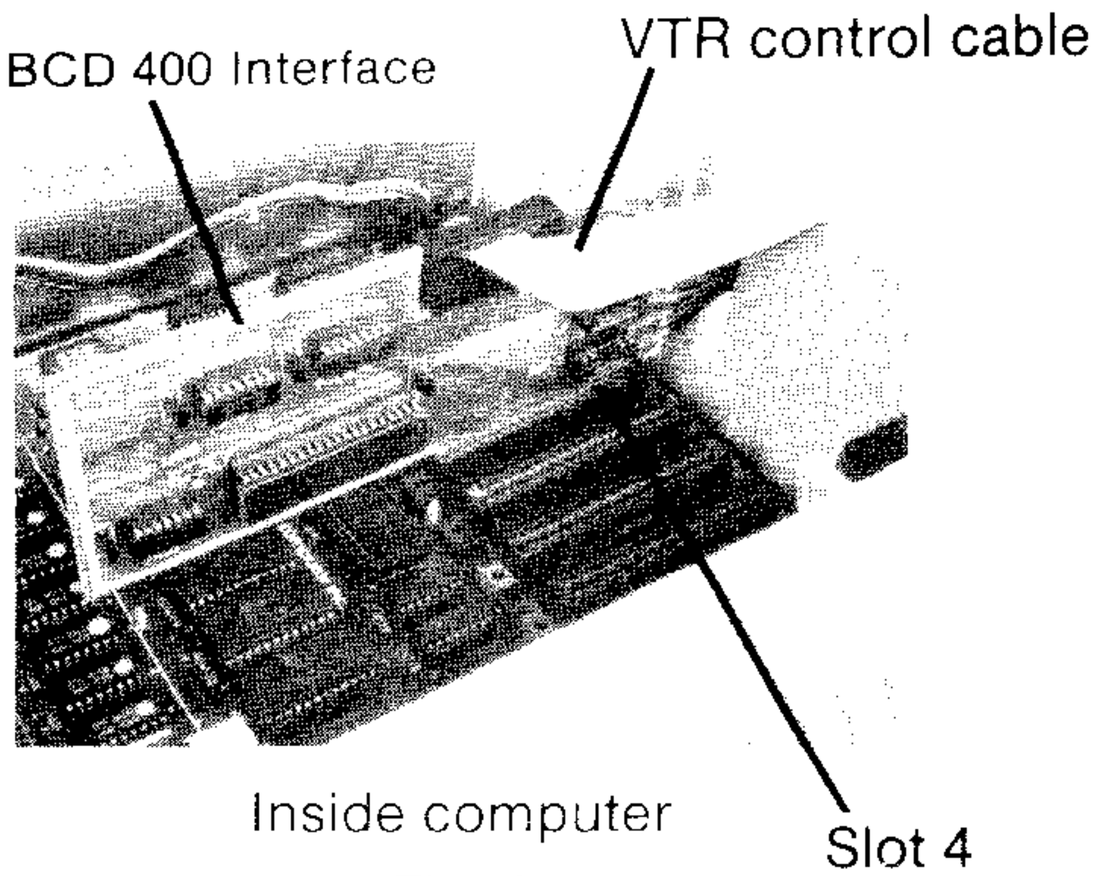
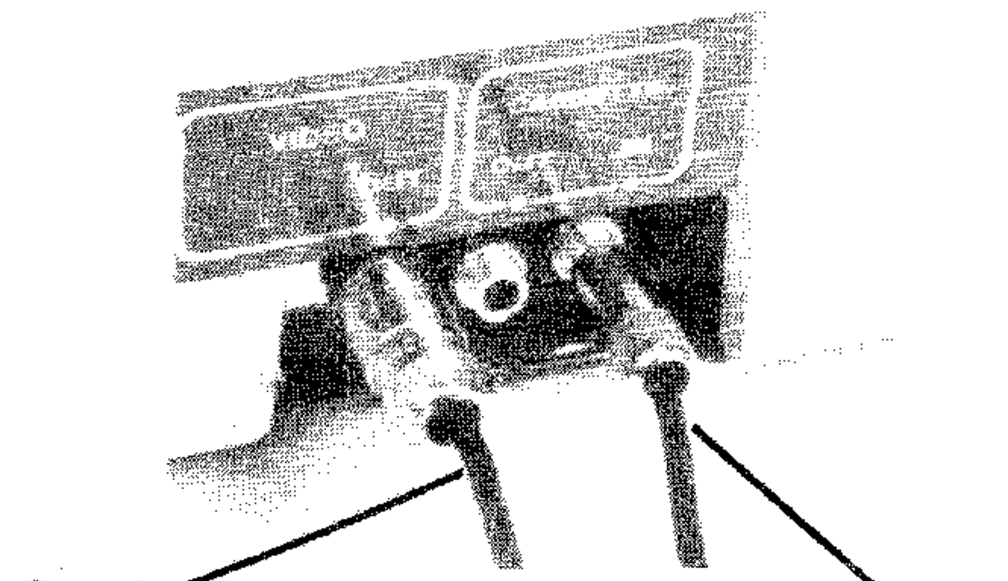


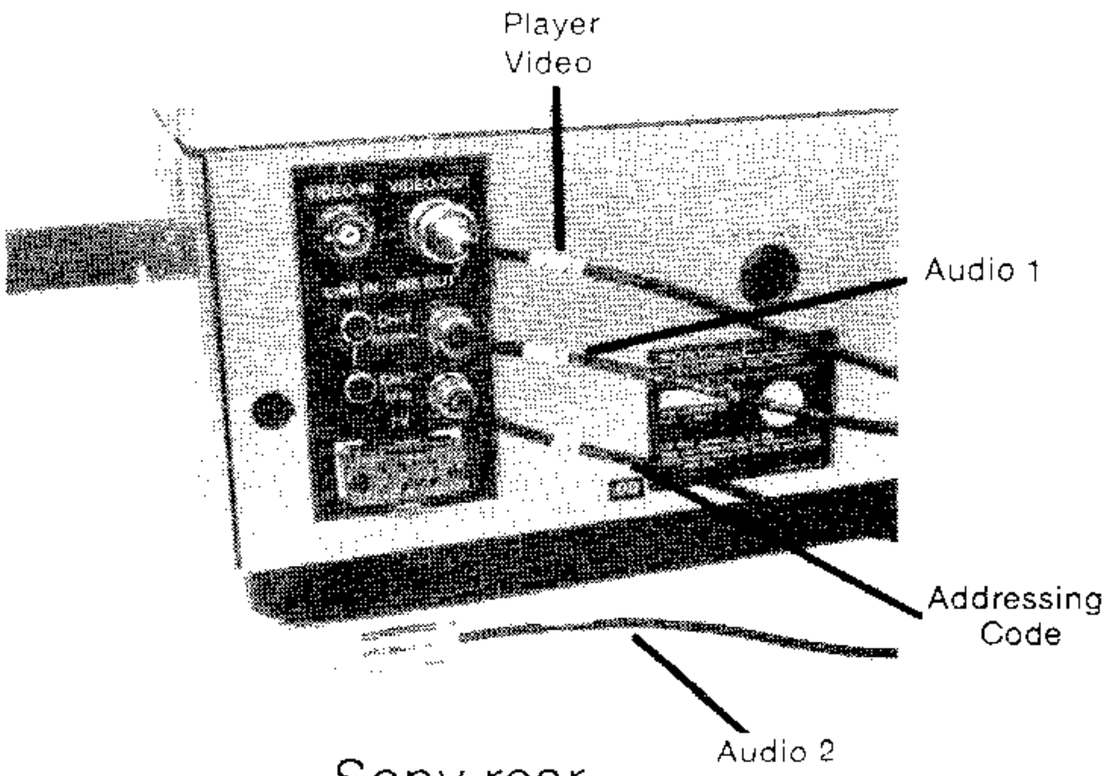
Inside computer

Fig. 1



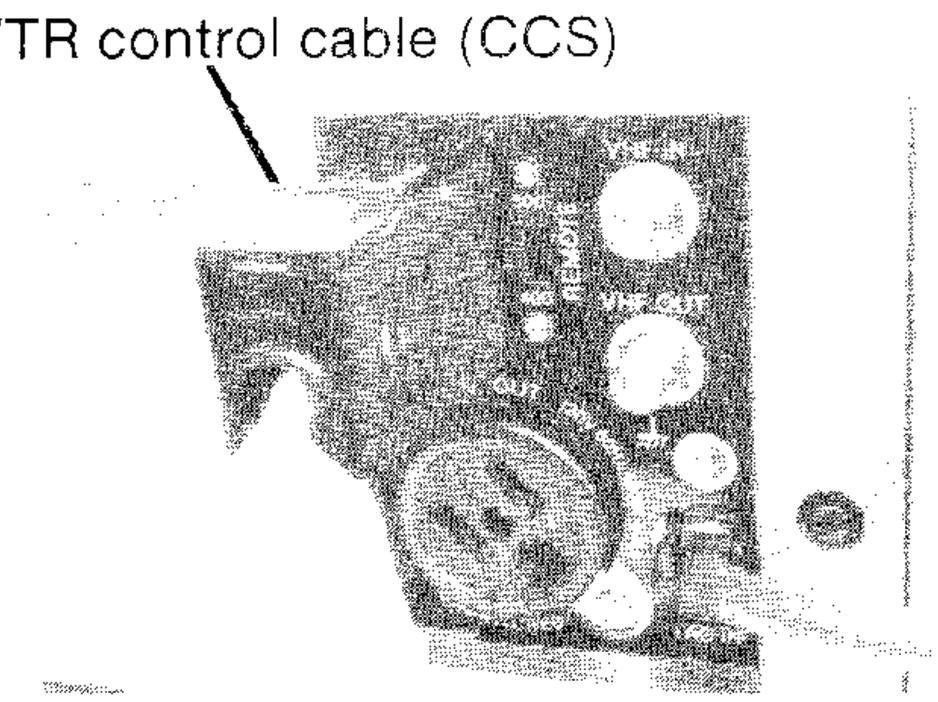
Computer rear

Fig. 2



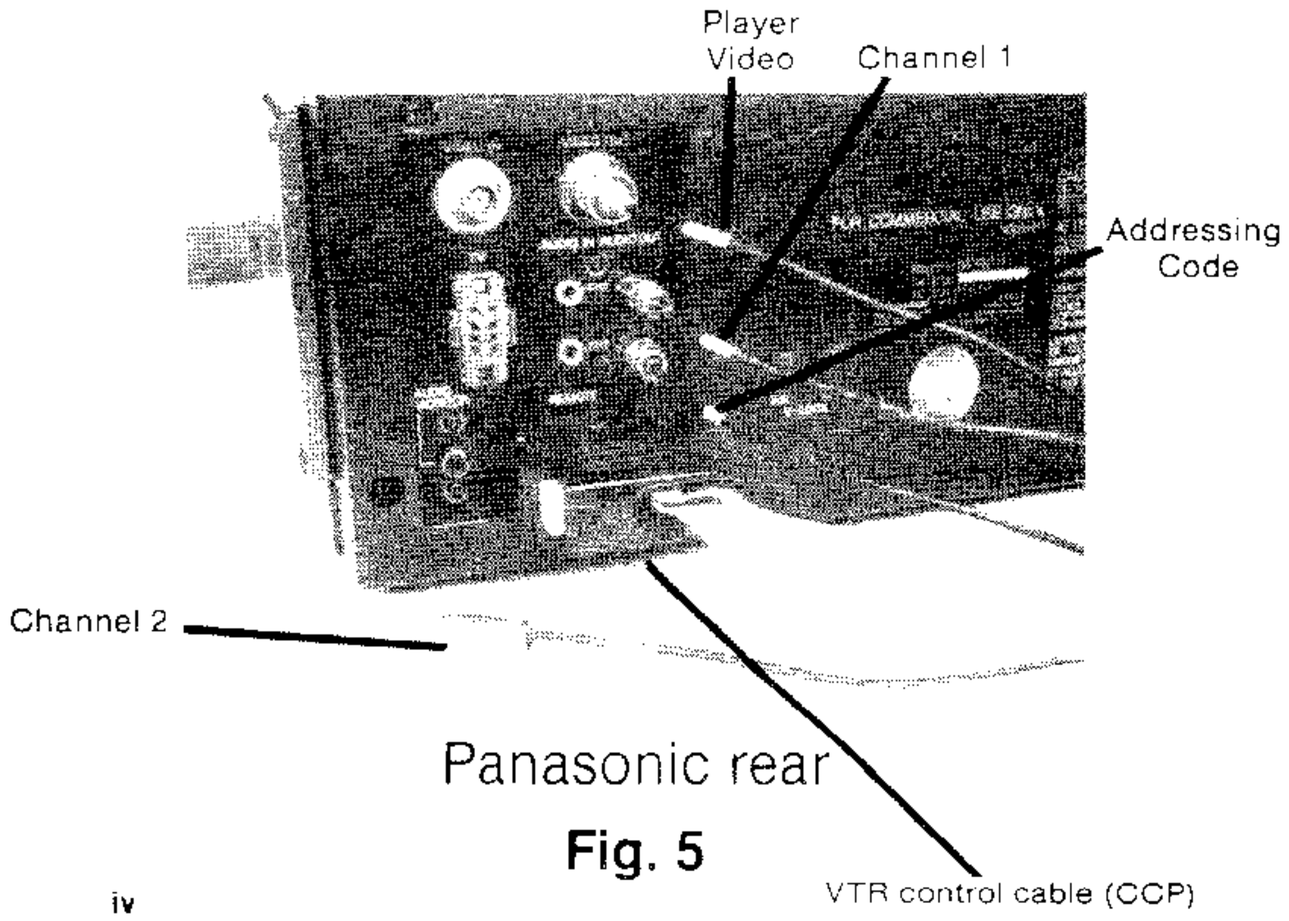
Sony rear

Fig. 3



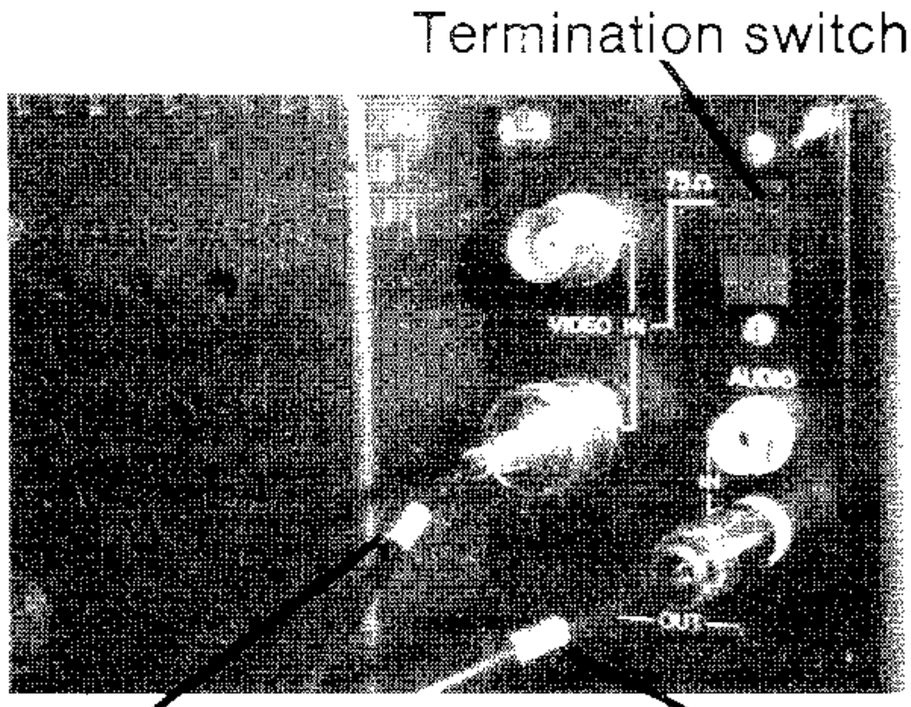
Sony rear

Fig. 4



Panasonic rear

Fig. 5



Monitor rear

Fig. 6

BCD Model 450 Video Tape Interface Installation Instructions

DESCRIPTION

The BCD 450 Video Tape Control Interface provides the connections and control between industrial video cassette recorder/players and Apple II**, and its clones like Franklin, Basis, Orange, Albert, etc. Some of these other brands may require dealer modification to operate properly. We will use Apple as a model.

INSTALLATION

1. IMPORTANT! Always turn power OFF before connecting any peripheral device! Leave the power cords plugged in to maintain system grounding.

2. Remove the cover from the Apple and insert the interface card into Slot #4, (see Fig. 1) with the cables extending through the rear of the enclosure. (NOTE: If Slot # 4 is unavailable, please see Changing Slots, Page 34.)

3. Insert the flat VTR Control Cable onto the top edge of the interface card. It only fits one way. As you face the computer keyboard, the cable leads from the right side of the interface card.

4. Lay the ribbon cable across the top rear edge of the Apple enclosure to provide strain relief. Replace the Apple cover.

5. Connect the short lead marked "Computer Video" from the interface to the Video Out on the computer (Fig. 2). Connect the short lead marked "Cassette In" to the CASSette IN on the computer.

6. Connect signal cables marked Player Video, Channel 1, and Addressing Code as shown in Fig. 3 for Sony Betamax. See Fig. 5 for Panasonic VHS. The audio channel 2 cable, marked Channel 2 is not used with Absolute Addressing code, so leave it unconnected if you're using code.

7. Connect the cables marked Video In and Audio In to the video monitor (Fig. 6). Adapters are supplied for monitors which have UHF or RCA connectors. Place the termination switch in the LO-Z or 75 ohm ON position.

This is the most common configuration of the BCD 450 system. This uses audio channel 1 for your lesson (program) audio, and channel 2 for address code. If you use Ch. 1 for Code and Ch. 2 for audio, just plug the "Addressing Code" cable into your Code Channel and the Channel 2 cable into audio Ch. 2 Line Out on the VTR.

If you anticipate using Absolute Addressing sometimes, and 2 channels of program audio at other times, you may either switch cables from time to time, OR use an audio "Y" connector at the OUTPUT of the Code Channel.

ADDRESS CODE WRITE CABLE CONNECTIONS

* Computer Cassette OUT ---> VTR Code Channel MICrophone IN.
(Mini-phone ---> 1/4" or mini-phone)
(Be sure to route this cable AWAY from the TV Monitor.

MONITOR ADJUSTMENTS

The monitor should be terminated. Place its termination switch in the LO Z or 75 Ohm ON position. Adjust your monitor for the best picture from video tape. You may operate your VTR manually now to playback video. Then adjust the Video Gain knob inside your Apple for the best computer display. (See your Apple Reference Manual for the location of the Video Gain knob.)

8. Connect the VTR connector on the ribbon cable to the remote socket on the rear of the recorder/player. See Fig. 4 for Sony (CCS Cable), Fig. 5 for Panasonic (CCP Cable).

SONY SPECIAL NOTES

The Sony SLO-323 has a two-position switch near its remote control socket. (Fig. 4)

Use the "300" position for student lesson presentation. This allows the computer to detect whether or not the student has inserted a video cassette. This is called "cassette in" detection. If it's in the "400" position, the system will ask the student to "Press the Space Bar" after insertion. The system will work with the switch in EITHER position.

Use the "400" position when you log your video tapes with either the LOGGER I or LOGGER II program. The "400" position enables the "S/F" (variable speed) function on the SLO-323. Sorry, you can't have both "cassette in" detection and "S/F" at once.

Some Sony machines may have more than one function light (on the front of the VTR) lit before the system is initialized. That is, just after a computer RESET. This condition is OK and will not harm your machine.

This completes the installation of the BCD 450 Interface.

Principles of Operation:

The BCD 450 Interface uses the "control track" method augmented by BCD's Absolute Addressing to locate specific portions of video programs. The video tape control track may be considered to be "electronic sprocket holes" as if one were using 16mm film. There is one control pulse per frame.

If BCD's Absolute Addressing code is not used, the system initializes itself by rewinding the tape to its beginning and setting the frame counters to zero. As the tape is played, the system counts frames to determine specific scene locations.

On tapes with Absolute Addressing the tape need not be initialized. Calling the Read Code subroutine will set the tape counter to the current address and read the Tape I.D. Number from the tape.

Whenever a control pulse occurs, the interface generates an "Interrupt" to the Apple's 6502 CPU. The interrupt handling routine, called "CTL", increments or decrements the pulse count in the computer's memory, depending on whether the tape is moving forward or in reverse.

Terminology

Address (Computer) - a name or number designating a specific memory location (byte) in the computer.

Address (Video Tape) - The indication of the current position of the video tape, expressed in frame numbers.

Absolute Addressing - BCD's proprietary method of assigning a number to each frame on the video tape. This binary code is written on an unused audio track. Absolute Addressing also contains a Tape I.D. number. Different from, but similar in operation to SMPTE Time Code.

BOOT - Short for Bootstrap. The process of loading the Disk Operating System (DOS) from the computer's disk. This is described in the computer's instruction manuals.

Control Track - The linear track along the edge of a video tape which contains one pulse per video frame.

File - Computer information stored on a magnetic diskette.

Flow Chart - A diagram of the order and flow of a process.

Frame - One video picture. The video standard of the United States shows 30 frames per second. European television has 25 frames per second.

Frame Counter - A set of specific memory locations in the computer's memory which holds the current frame number. The frame counters count control track pulses during Play, Fast Forward and Rewind. If Absolute Addressing is used, the counters are updated to the EXACT current frame each time the VTR is put into Play.

Interrupt - a signal from an external device to the computer which temporarily halts the current computer operation, allowing the computer to perform another action.

Monitor - A television display which displays direct Video from a Video Tape Recorder or a Computer. Some monitors can receive TV programs "off the air", but many cannot. The BCD 450 system requires a TV Monitor, NOT a TV set.

Page - One TV screenfull of information.

SMPTE - (Society of Motion Picture and Television Engineers) An international standard method of Absolute Addressing. SMPTE Time Code read is an option with the BCD 450 system.

VTR - Video Tape Recorder

**Apple is a trade mark of Apple Computer Corporation.

Interactive Video

Combine the live action, full color, and actual sound of an instructional video program with the logic and branching ability of a computer ... the result is Computer Assisted Video Instruction, and the interface that makes it possible is the BCD Model 400.

BCD Associates, Inc. began producing interactive video interfaces and software systems in 1979. Since then, hundreds of corporations and institutions have discovered increased effectiveness from their pre-existing video tapes.

The frame-accurate video tape positioning of the BCD 400 lets you update even the most tightly edited program to become interactive.

But that's only part of the story. When you take the time and effort to design a lesson SPECIFICALLY for interactive video, you have the world's most effective training system ... almost as good as a human!

"The Instructor" is technically called a 'Prompted, Screen-Oriented Lesson Authoring System.' It is specifically designed to encourage non-computer people to write and present Computer Assisted Video Instruction lessons.

In operation, the system plays a short lesson portion of the video tape. The computer stops the VTR and asks the student a question. If the student's response is correct, the system plays some more video.

If the student's response is incorrect, the system may:

1) Replay the same lesson video and branch back to the question.
2) Play a different section of remedial video.
3) Display text or computer graphics for reinforcement.

..... your options are always open.

Typically, the presentation sequence goes like this:

Play Video Lesson Segment
Display Question 'page' to student.
Play reinforcing video
Branch to next 'page' as determined by student's response.

Here's an overview of the lesson creation process:

PLAN the lesson
Goals, Objectives, Evaluation Criteria.

DESIGN the lesson structure.
Which information comes from video?
Which information comes from computer?
When and where will you ask questions?
To which page will each student response branch?

PRODUCE your video tape.
Put frequently accessed segments close together.

LOG your tape. (The Instructor)
Assign scene numbers to video segments.

Author your course ... with The Instructor.

Please Remember ...

The Instructor is incredibly versatile. It offers the ability to branch from any page to any page ... show video segments as long as two hours or as short as one frame ... the system can even activate your VTR's RECORD function to record the student's performance on video tape.

The bottom line is EFFECTIVE TRAINING, and that takes proper lesson planning.

Even with the ease of authoring afforded by The Instructor, you can't create an effective lesson by the seat of your pants!

Logger I
(6/1/83)

Logger I is the basic video tape logging program used with the BCD 400/450 VTR interface system. BCD's Logger II has significant enhancements and is supplied by itself or as part of BCD's "The Instructor" Authoring System.

Notes! We use the symbol <R> to indicate pressing the RETURN key.
Apple IIe users...please make sure the CAPS LOCK key is pressed. Logger doesn't recognise lower case letters.

This program is called "Logger I" (or just Logger), and its purpose is to create a video tape log of your video scenes and to save it onto the computer disk for use by other programs. We call this tape log a "-DATAFILE." You may use this file with "The Instructor" or with your own BASIC programs. (See the "-DATAFILE" section for details.)

While the BCD 450 Interactive Video system designates video segments by their starting and ending frame numbers, humans usually refer to video segments by "Scene Numbers." The -DATAFILE saves the IN and OUT points of each scene so you need to deal only with Scene Numbers. Logger prints your file as Frame numbers. 3/4" and Beta I tapes have 108000 frames per hour. VHS has 108000 per hour or 216000 per 2 hour tape.

NOTE: Most of the keyboard inputs for Logger require only a single keypress. Some, however, require you to press the <RETURN> key. In this manual, we use the designation <R> to mean <RETURN>.

Make your Video Program.

Please be sure that you have video recorded on the ENTIRE tape. No "snow" on the head or tail of the tape. (If your program is only 15 minutes long and you have a 30 minute tape, we recommend that you record ANYTHING (color bars, camera black, etc.) for the last 15 minutes.) Allow at least 5 seconds of video before the start of your FIRST scene.

Use only one channel (the primary channel) for audio. You'll use the other "Audio Dub" channel for the Address Code after your tape is completed.

MASTERING and DUPLICATING TAPES
Many organizations produce their duplicating master tapes on 3/4" or 1" tape. Then they make release dubs on 1/2" Beta or VHS. That's what we do.

It's good practice to write your Absolute Addressing Frame Code on you duplicating master tape. That way, all your dubs will have the same code as the Master. Naturally, you may log either your Master or a Duplicate since all the frame code numbers will be the same.

For your organization, you should decide which channel the Frame Code will be on. Our system doesn't really care, but it does want to know where to look for the code and the audio. Remember, the audio channel designation is SAVED in your -DATAFILE.

As a quasi-standard, we suggest that you put audio on channel 1, and put Frame Code on channel 2. (Channel 2 is usually "inboard" on the video tape and is less vulnerable to tape "edge damage."

SPECIAL NOTE about duplicating coded tapes:
Absolute Addressing will easily "dub dowvn" one generation. That is, if you make a copy of your Duplication Master tape, you are assurred that the copy will have good, readable code on it.

WE DO NOT RECOMMEND MAKING COPIES OF COPIES! (3rd generation code)
It will probably be too "degenerated" for the computer to read it properly. (See "Duplicating Tapes", below.)

Take care of your Duplication Master tape!

REMEMBER: The video tape log (-DATAFILE) your user uses should indicate the correct audio/code channels. Again, make sure there is no "snow" at the head of your duplicating master tapes, or a code reading error could occur.

Starting the System

BOOT the BCD "Standard Disk"
according to normal Apple proceedures.

First make sure your Video, Audio and control cables are connected properly. Then type RUN LOGGER I.

If you haven't already done so, the system will ask you to insert a video cassette.

Next, the VTR will play while Logger fiqures out whether you're using a Sony or a Panasonic VTR.

The final phase of this initialization is for Logger to try to read the frame address code. For the first time, it will beep and say
ERROR #1
NO CODE ON TAPE
Dumb computers! Of course there isn't, yet, but give it credit for trying.

Now you'll see Logger's Main Menu. Let's review it.

```
                LOGGER I
STOP...'SPACE'          STATUS
PLAY                 ADDRESS: 83
FAST FORWARD          TAPE #  00000
REWIND
TRANSPORT              GOTO
WAIT (PAUSE)           IN MARK
SLOW/FAST              OUT MARK
X2 SPEED               DISPLAY FILE
COMPUTER VIDEO         N INITILIZE TAPE
VTP VIDEO              ADDRESS/SYSTEM STATUS
COMMAND >LABEL#
SCENE#       IN                    OUT
```

Logger I Main Menu

BCD Model 450 * 'Logger I' *

Notice the two columns of commands, the Status area in the upper right corner, and the Tape Address area on the Bottom four lines of the screen.

The left column contains VTR and video/audio switcher commands.

STOP . . . 'SPACE'	VTR Stop
PLAY	VTR Play Video & Audio
FAST FORWARD	VTR Fast Forward
REWIND	VTR Play w/Computer Video & read Code
TRANSPORT	VTR Pause & UnPause
WAIT (PAUSE)	Variable Speed (VHS & Beta)
SLOW/FAST	Fast Play (VHS only)
X2 SPEED	Displays Apple Video
COMPUTER VIDEO	Displays VTR Video
VTR VTRPA	

Logger I Main Menu (Left Column)

The right column contains special commands for system set-up, file handling and VTR searching.

GOTO	Plays from frame # XXXX to YYYY
IN MARK	"Logs" the beginning frame # of the scene
OUT MARK	"Logs" the ending frame # of the scene
DISPLAY FILE	Accesses the "D" sub-menu
N INITILIZE TAPE	Rewinds the tape & sets counters to zero
ADDRESS/SYSTEM STATUS	Accesses the "A" sub-menu

Logger I Main Menu (Right Column)

The Status corner presents the current tape ID Number, Current tape address (in frames) and current VTR status (Stop, Play, etc.)

The Tape Address area displays the Scene Number, IN (Starting) frame number, OUT frame number, and the Duration of the scene in frames. The current scene is always on the bottom, opposite the right arrow prompt.

"A" sub-menu

Always start a session by pressing A on the Main Menu to access the A sub-menu.

```
FILE NAME IS '   '
PROGRAM AUDIO IS ON CHANNEL 1
FRAME CODE IS ON CHANNEL 2
TAPE # 01010
CHOICES
 0. RETURN TO VTR CONTROL
 1. SELECT AUDIO & CODE CHANNELS
 2. READ CODE ON/OFF
 3. WRITE CODE
 CHOICE >


WHICH CHANNEL(S) HAVE PROGRAM AUDIO ?
    0 = BOTH
    1 = CH. 1
    2 = CH. 2
    3 = NO AUDIO
PRESS 0, 1, 2, OR 3 :1
WHICH CHANNEL HAS 'FRAME NUMBER CODE'?
    0 = NO FRAME CODE
    1 = CH.1
    2 = CH.2
PRESS 0, 1, OR 2 :2
WHAT IS THE TAPE I.D. #1010
```

First you'll need to tell the system which channel has audio on it, which has (or will have) Address Code, and what the Tape I.D. number is. Press 1.

Now answer these questions:

"Which channel has program audio?" We usually put audio on channel 1 so type 1.

"Which channel has Frame Number Code?" Channel 2 is usually the "audio dub" channel for 1/2" VTRs so press 2.

"What is the Tape I.D. number?" When you write address code on the tape, you may assign the tape any number from 0 to 65535. Let's type 1000. You must press RETURN here because you enter several digits.

"Which slot is the student printer in?"
If your user's location will have a printer in it, and you want to print lesson scores (or whatever your program does) type in the appropriate Apple slot number. Usually it's 1.

Confirm your settings by pressing Y or <R>.

Now its time to actually write the frame code onto the tape.

(NOTE: We call this "The 'A' Sequence" and you should do it each time you run LOGGER.)

Write Address Code

FIRST ... make sure that the Code Write cable is connected from the Apple's CASSette OUT jack to the master VTR's MICrophone IN jack for your code channel. See page 1 for connecting address code write cable. This is a separate cable, NOT included in the interface cable bundles.

Important

Be sure to route the Code Write cable AWAY from the TV monitor. Monitors can create interference and cause improperly written code!

You should still be in the A sub-menu...
Press #3 to "Write Code". The system will completely rewind the tape and then create a test tone. Make sure that the Apple's CASS OUT jack (from the Apple) is connected to your VTR's MICrophone IN jack for the Audio DUB channel ... usually CH. 2 for 1/2" machines. (See Installation Instructions, FIG. 2)

Set the VTR's record level to 0 dB or +1 dB (usually just at the red part of the VU meter.) You may have to press the Audio DUB button to get the VTR's meter to move. Press the SPACE bar when the audio level is set.

Press and HOLD the "Audio Dub" button on the VTR and press the SPACE BAR on the computer to proceed. Release the Audio Dub button once the process has begun.

(NOTE: Some editing VTRs (Sony SLO-383, VO-5850, Panasonic NV-8500 & NV-9600 require you to manually perform an "Insert Audio Edit" at this point. Please consult your VTR manual and/or call BCD.)

If you change your mind about the Tape I.D. # or something else, you may press the ESCape key to return to the "A" sub-menu.

The VTR should stop by itself when it reaches the end of the tape, or you may press the computer's space bar to terminate code recording. The system will return to the "A" sub-menu. Press "0" to return to LOGGER's main menu.

Now, DISCONNECT the Code Write cable from the VTR MIC jack and the Apple's CASSette OUT jack.

Note that the words "Code On" have appeared in the upper right corner of Logger's main screen.

Logging a Tape (with Address Code)

Note that we use mnemonic (sound alike) VTR commands as much as possible. "P" means Play, "F" means Fast Forward, etc. The only exceptions are "W" for Pause, since we already used "P" for Play and "Space Bar" for Stop.

The "X2" command is available only for Panasonic NV-8200 and NV-8170 machines.
The "SF" Slo-Fast command works for both Panasonic and Sony 1/2" machines ...
HOWEVER, the SLO-323 and SLO-303 must have their Remote Switches (near the remote connector on the back of the VTR) set to the "400" position for "SF" to operate.
(The "300" position is used for user presentations, as this enables the "video cassette IN" sensing function so the computer can determine if a cassette has been inserted.)

First, make sure the Code Read Cable is connected from the Apple's CASSette IN jack to the VTR's LINE OUT for the code channel. This is labeled Addressing Code on the longer of the two cable bundles and Cassette In on the short cable near the interface card.

Logging without Code

You can log a tape without address code on the tape. The BCD 450 system will just count the Control Track (CTL) pulses. You'll do this if you have a tape that uses both audio channels for different sound tracks on different channels. Please note that searching accuracy will be impaired, and will get worse as you make more searches.

The procedure is essentially the same as with using code, however, instead of turning on the code, you must press N to initialize the tape. This causes the tape to rewind to its very beginning and set the address counters to zero. WARNING: N also erases any -DATAFILE you had in memory.

Turn On Code Reader

(If it's off)
Turn on the "Code Reader" by pressing "A" for the "Address / System Status" menu. Press #2 for Read Code. Press "Y" to read the code. (Press "N" to turn the code reader off.) The VTR will play for a moment, read the current address and the Tape I.D. number, then it will stop. Press "0" or <R> to return to LOGGER's main menu.

Play with VTR commands of the system. Become friends with it. Press P, F, Space, R ... see the VTR shuttle about. If you Play the VTR and you want to see the computer display, press "C" for Computer video. Press "V" to return to VTR video.

SPECIAL VTR FUNCTIONS
"SF" will engage the variable speed feature of Panasonic and Sony 1/2" VTRs. (The switch on the Sony near the remote connector must be in the 400 position for this.)

"X2" engages the double speed function on Panasonic VHS machines.

On the Sony Betas, pressing either "F" or "R" keys, followed by pressing the "W" key will engage the "Betascan" feature so you can see the video picture in fast speed.

Press "R" and rewind the tape completely.

Mark "IN" Points

Press "P" to play the tape.
When you reach the beginning of Scene 1, press the "I" key to mark the "In" point of the scene. The computer will remember that frame number.

Mark "OUT" Points

At the end of the scene, press the "O" key to mark the "Out" point. NOTE that the scene number automatically increments to the next scene number each time you press the "O" key.

Note that the tape addresses of the last three scenes are displayed at the bottom of the LOGGER Main Menu. LOGGER I shows them as frame numbers. They may disappear if you access one of the sub-menus, but you can bring them back by pressing "-->" the right arrow and/or "<--" left arrow from the keyboard.

Continue this process until your scenes are fully logged.

GOTO a Scene (by Frame Number)

Press the "G" key. Another sub-menu will appear saying...

STARTING FRAME>

Type in the frame number at which you wish the scene to start. Press <R> after entering the starting frame number.

STARTING FRAME > 1800

Do the same when the program asks for

ENDING FRAME > 2533

Now, as soon as you press <R>, the system will search to the beginning frame of that scene, and play until the ending time you specified.

If you just press the <R> key for the Beginning address, the system will ask for "Scene Number." Type in the number of the desired scene and Logger will find it and play it.

If you wish to abort a scene while it's playing, just press the space bar and the VTR will stop. You will have the opportunity to continue with the scene, or return to the most recently accessed sub-menu.

Fixing Mistakes

You might be a little slow, or "late" when you press the "I" or "O" key. LOGGER lets you fix it.

LOGGER always indicates the CURRENT SCENE being logged by the ">" mark at the lower left of the screen. You may use the RIGHT ARROW (->) to increment the scene number. Use the LEFT ARROW (<-) to decrement the scene number to the scene you wish to re-log.

Now rewind or fast forward, then Play the tape to the proper In or Out point and press I or O to correct the frame number.

REMEMBER: Whenever you press the O key, Logger always increments its scene number to the next scene automatically.

BCD Model 450 * 'Logger I' *

Files

The "-Datafile" (video tape log) may be loaded or saved from from the LOGGER "D" sub-menu." Press D from the Main Menu to get there.

```
SCENE #1<== 'L' ==>

   0. RETURN TO VTR CONTROL
   1. LOAD NEW FILE
   2. SAVE THIS FILE
   3. ADD LABELS TO SCENES
 CHOICE  >
```

Logger I "D" Sub-Menu

The "D" sub-menu lets you load and save your -DATAFILEs as well as add Labels to your scenes.

Labeling Scenes

Now that your tape is in memory, let's save it onto the disk. From Logger's Main Menu press D (Display File).

```
SCENE #1<== 'L' ==>

   0. RETURN TO VTR CONTROL
   1. LOAD NEW FILE
   2. SAVE THIS FILE
   3. ADD LABELS TO SCENES
 CHOICE  >
```

Logger I "D" Sub-Menu

Press 2 for Save This File.
Give it a name, less than 30 characters long.

Again, tell the system which channels have audio and code. Remind it of the tape I.D. number and the printer slot.

Verify by pressing Y or N.

The disk will whirr and your file is saved as (name)-DATAFILE.

"save it again? (y/n)"
You may save your -DATAFILE as many times as you wish onto other formatted diskettes.
Just insert the new disk and press Y.

Conversly, when you want to, you may load a new file from the disk by choosing option
1 "Load a New File" from the D sub-menu.

Code Error Messages

If the Address Code is not written properly and/or your cables are not correct, the system will detect the condition, give you an error message, and return you to Logger's Main Menu.

ERROR # Possible Cause

1 No signal on address channel. No code, VTR address channel OUT not connected to Apple CASSette IN, Code level too low.

2 No Start Bit on Address channel. Wrong cable connections (the computer is trying to read program audio as address code.) Improperly written code (too high, to low), perhaps an unstable video source was connected to the VTR Video In during writing or reading.

4 Bad Code on Address channel. Unstable, incomplete, erratic code. Possibly low record level, dirty heads or damaged tape.

Exit Logger

Press the ESCape key. The system asks "Do you wqant to save your file? (Y/N)". If you say Y, you'll go back to the Main Menu so you can save it. If you say N, the system will run BCD's "Hello" program called BCD.

The -DATAFILE

This file is a fixed-length random access file operating under standard Apple DOS 3.3.

Total record length is 50 characters.

Each record has four fields:
1 Scene Number (same as Record Number.)
2 IN point in Frames
3 OUT point in Frames
4 Scene Label (30 characters max.)

Record # 0 is special. It contains two fields.
1 EV (Total number of records or scenes in the file.)
2 PR$ (A concatenated string comprised of

Which channel has audio.
Which channel has code.
Printer Slot #
Tape I.D. number

Pr$ is put together when you assign these parameters, and un-concatenated (taken apart) into its component parameters whenever you load a -DATAFILE.

That's Logger I in a nutshell.

Be sure to return your registration card so we can notify you of any updates.

OPSUBS 3.0 (11/13/81)

(OPerational SUBroutineS)

The subroutines contained in OPSUBS are the ones required to incorporate video tape control into YOUR programs.

This section refers to the OPSUBS 3.0 program line numbers.

If you just want to log your video tapes (and don't have any other programs that could use VTR control) OR if you purchased "The Instructor 3.0", skip this section and go on to the "Getting Started with Tape" section.

Load and List the program. Print it if you like. Our users are creative folks and like to know just how and why a program works. This section of the Manual refers to OPSUBS 3.0 which was released 11/11/81. From here on, we will refer to the line numbers of that version.

We make no comments here for lines already "REMmed."

LINE # REMARKS

2 - 3 Loads the 6502 program that counts pulses, reads and writes BCD's Absolute Address code. CAVI 3.0 is loaded just below DOS, then HIMEM is set below it to protect it.

6 - 10 Gives variable names to addresses and data values. VC for example is the address where most VTR commands are issued.

12 PI is the CAVI 400 peripheral chip initialization routine.

90 Tells the system you will have 100 scene numbers, 100 beginning addresses and 100 ending addresses.

155 See lines 9000 +

185 - 196 Not used in OPSUBS, but an easy way to find out where the system thinks the tape is NOW, and what the system thinks the VTR is doing.

400 - 490 ISSUE COMMAND to VTR. To give VTR command from your Applesoft program, define the variable CD as the command you want, then GOSUB 400.

To STOP, your program should say "CD = ST : GOSUB 400"

Line 410 PEEKs(CS) where the previous command is stored. If you change tape directions, the program will first bring the tape to a stop to prevent CAVI from counting forward while the tape goes backward & vice versa.

NP (Normal Play) & Audio Channel Select, see lines 5900 - 6095

440 If the command isn't STop, then the command is POKEd into Command Store so CTL 3.0 can determine the direction to count.

450 Actually issues the command. Note: this has the effect of pressing and HOLDING the VTR button. This LOCKS OUT any manual control of the VTR. To release computer control, a change is required...

Retype line 450 to read POKE VC,CD : POKE VC,CL. Now, your Applesoft program must define not only CD, but also CLear. When we issue FF, RW, or ST, we use CV (Computer Video) as the CLear command.

When you POKE VC,NP.....you might POKE VC,AU (AUdio) as the clear command.

475 AD is the flag that says CODE ON. IF you're using address code, and the command is either Normal Play (NP) or TransPort (TP) (the two commands that run the VTR at normal play speed) THEN CALL RD. The 6502 subroutine RD ReaDs the address code from the tape.

Location EC (Error Code) usually contains 0. If it's not zero then the system couldn't read the code and will GOTO 900 to display an error message and END the program. THESE ARE NOT DOS or Applesoft ERROR MESSAGES!!!

500 - 600 POKE VS,XX This section is used for optional commands which use the BCD 400's second port for commands, including SF and X2. This section is NOT in OPSUBS so you'll have to type it in or copy it from lines 950 - 959 in LOGGER

900 - 910 Address Code Error Message

1000 - 1230 DECODE ADDRESS & DEFINE NORMAL PLAY <DISCUSSION>

The (Lesson Name)-DATAFILE you created using LOGGER I or LOGGER II stores the video scene addresses as FRAME NUMBERS. These frame numbers must be decoded into three 3 byte numbers each, and POKEd into memory locations for CTL 3.0 to use. The Beginning address (called B(L) in the file and just B here) is POKEd into locations BL, BM, and BH (for Low, Middle, & Hi).

SEARCH TO

1010 If L = 0 then there is no scene number, so RETURN.

1049 POKE PR,75 defines the preroll amount as 75 video frames. The tape will search to this point, play up to the Beginning point, then switch on the video and audio.

1120 POKE NC,NP defines what the VTR will do once the tape reaches the Beginning point. If you POKed NC with AU, only the audio would play.

1180 CALL DC (Direction & Command). This 6502 subroutine does the searching. It decides which way to go, then presses FF or RW.

1200 Stalls and forces Applesoft to wait until the VTR is stopped. If the value at location VS is 0 or 1 then the VTR is stopped.

1210 Applesoft PEEKs to determine the actual tape address. If the system "overshot" in Fast Forward, then CALL DC again.

1230 RETURN because the tape is now stopped before the beginning tape address.

PLAY UNTIL (until the end of the scene)

1542 See 1010

1545 Decodes the Ending address and POKEs the values into EL, EM & EH. Do this here instead of at lines 1000 - 1123 if you want to start playing at the start of one scene and finish playing at the end of a subsequent scene.

1560 CALL PU (Play Until). This plays the tape, ReaDs the code, if appropriate, and then implements the command previously stored at memory location NC. Usually this command is Normal Play.

If you want to put the VTR into the RECORD mode then do the following AFTER you call PU: POKE VS,128 (activates RECORD); POKE VS,0 (clears that command); POKE WR,255 (enables code writer); CALL W2 (starts writing new code to replace what's getting recorded over).

1675 see 1200

1680 RETURN because the VTR has stopped after playing the last designated scene.

5400 - 5670 INIT. REW. ZERO
DISCUSSION
This section loads the video tape log-DATAFILE from disk (ln.# 5475) and then looks to see if a tape is in the VTR (ln.# 5490 - 5510).

5465 IF the No Video flag has been set to 1 then there is no video for this lesson so the VTR need not be initialized.

5512 CALL VT threads & plays the tape for a couple of frames to determine if it's a Sony or a Panasonic VTR

5515 IF the video-DATAFILE indicates that code is on the tape, then AD=1. IF AD=1 then the VTR TransPorts and reads the address code to determine the current tape position as well as the Tape ID number.

5520 There must have been no code on the tape so CALL TI (Tape Init). This 6502 subroutine completely rewinds the tape and sets the current address counters (A0, A1, A2) to zero.

5670 RETURN because tape init. is complete.

5900 - 6095 LOAD LOCATION DATAFILE
DISCUSSION
Lines 5990 - 6016 read Record #0 to INPUT EV, the total number of scenes, and to INPUT PR$.

PR$ is a concatenated string which indicates:
1) A$ Which audio channel the video tape program audio is on.
2) AD$ Which audio channel the address code is on (if any).
3) VTR$ Used to be the VTR type, but now it designates the Slot # for the student's printer.
4) TN$ The Tape I.D. number as recorded in the -DATAFILE.

6018 UN-concatenates PR$ to define which channel has audio and which channel has code.

6019 IF the value of AD$ isn't 0 then the file says there is code on the tape. This tells CTL 3.0 to read. If the code is ON (regardless of the channel) variable AD is set to 1 so that ISSUE COMMAND will know to read code during the preroll period.

6020 - 6023 define NP as the sum of 2 (the VTR transport value) and the appropriate audio channel value(s).

6024 - 6094 actually load all of the -DATAFILE, displaying miscellaneous information to the user.

6200 - 6320 CLIENT PROMPT
This is just print statements to welcome you to the program. Line# 6270 makes sure the system is switched to CV (Computer Video) so you can read it. Line# 6275 resets the Keyboard Strobe so the page isn't HOMEd by accident at lines 6310 & 6315.

9000 - 10000 MASTER CONTROL
This is the easy part. Just put your own GOSUBs here, intermingled with your program. Any questions??? Call us at 405/524-7403.

Oh yes...BCD Associates, Inc. reserves the right to modify, change, and improve any and all of its hardware/software without notice. We welcome user comments improvements & suggestions. All correspondence we receive may be published in our newsletter unless you request otherwise.

Happy Interactions!!

BCD 400 System Commands and Addresses

The BCD 400 VTR control interface uses specific memory addresses and specific data bits to activate various functions of the VTR. Special hardware components allow the use of either Sony or Panasonic machines, even though the logic levels vary between brands and models.

Three important memory addresses provide control of the VTR. We call them:

VC (Video Command)
VS (Video Status)
CS (Command Status)

VC $C0CB 49355 (for slot #4)

VC is an OUTPUT from the interface to the VTR. Issue a video command by saying "POKE VC,DATA". This is the same as pressing and holding a function button on the VTR. For example:

POKE VC,ST
makes the VTR STop.

Here are the data for VTR commands used at location VC:

1 = ST	STop VTR
2 = PL	PLay VTR
4 = FF	Fast Forward VTR
8 = RW	ReWind VTR
16 = PS	PauSe VTR

VC is also the memory location which activates the built-in Video/Audio switcher. For example:

POKE VC,CV
switches the TV display to Computer Video. (The system defaults to VTR video.)

POKE VC,S1
switches on audio channel 1

Here are the data used for Video/Audio switching at location VC:

32 = CV	Computer Video
64 = S1	Audio channel 1 ON
128 = S2	Audio channel 2 ON
0 =	DEFAULT. VTR video, no sound

In actual usage, the audio channel(s) in use is assigned the variable name AU. This may be added to PL to form the command NP (Normal Play; NP = PL + AU.

These 9 data values for VC may be combined to perform multiple simultaneous VTR/Switcher commands. For example:

```
POKE VC,NP
(NP = PL + AU)
```
Play VTR with the assigned audio channel.

```
POKE VC,36
```
Fast Forward VTR and display computer video.
FF + CV = 36

Since we want to display computer video during Fast Forward, not VTR video, our programs define FF as 36 which is FF + CV.

IMPORTANT
You should "clear" a VTR command immediately after issuing it. If you don't, the effect is the same as "holding down" the button on the VTR. For example:

```
POKE VC,NP:POKE VC,AU
```

NP puts VTR into PLay with both audio channels. The data AU reconfirms the switcher selection, but does NOT continue to issue the command to the VTR.

Issuing a VC command, then clearing it, is the same as pressing and releasing the VTR button.

WHY clear VTR commands?
Most remote controlled VTR's send out Video Status signals, as well as receiving Video Command signals. The BCD 400 can sense VTR status as well as issue commands. Some VTRs use the SAME WIRES for receiving commands and sending status signals. On these VTRs (Sony in particular) you MUST clear the VTR command or the BCD 400 will sense the current command, instead of the actual current VTR status.

```
VS  $C0C3  49347 (for slot #4)
```

VS (Video Status) is the memory location from which the computer reads the VTR status. For example:

```
S = PEEK(VS)
```

If S = 0 then VTR is Stopped.
If S = 1 then video cassette has not been inserted.
(All Panasonics & some Sonys.)

PEEK(VS) indicates only the status of the VTR. It does NOT indicate the status of the Video/Audio switchers.

Except for the STOP command, the value of PEEK(VS) will correspond to PL, FF, and RW.

VS COMMANDS

VS may also be used to ISSUE special VTR commands for some video machines, the Panasonic NV-8200 in particular.

POKE VS,32
engages the "X2" mode for fast play.

POKE VS,64
engages the "Slow/Fast" variable speed mode on the SONY & Panasonic 1/2" Industrial VTRs.

NOTE:
VS has the capability of OUTPUTting additional commands to the VTR. The required hardware change is a different Control Cable with different and/or additional connections. Consult BCD Associates for details and prices on custom systems.

CS $9101 37121

CS is an IMPORTANT address. CS (Command Status) stores the value of the last command issued. CTL 3.0, the 6502 machine language pulse counting routine, uses location CS to determine whether to INCREMENT or DECREMENT the pulse counters. If the value of CS does NOT equal RW + CV (value 40, $28) the pulse counters will INCREMENT.!cj

CHANGING SLOTS

You must reassign the variable addresses VC and VS found at the beginning of the following programs: OPSUBS 3.0, LOGGER I, LOGGER II and CAVOS 3.0. Modify the line which says "BLOAD CTL 3.0" to read "BLOAD CTL 3.0 SLOT X" (X indicates your desired slot number.) A selection of CTL 3.0 programs is on your "Standard 3.0" disk. You'll want to copy the proper one onto your student disks.

SLOT# =>	#1	#2	#3	#5	#6	#7
VC	49307	49323	49339	49371	49387	49403
VS	49299	49315	49331	49363	49379	49395

Please let us know of your application of the BCD 400 interface. Also, be sure to return your Warranty/Update card so we can inform you of new developments.

CTL 3.0 ROUTINES

Address $9100 Length $450 HIMEM: 37119

BCD 400 Interface in slot #4

The CTL 3.0 program is machine code for controlling the video tape recorder/player and for Absolute Addressing write/read. To copy CTL 3.0, BLOAD CTL 3.0 then BSAVE CTL 3.0, A$9100,L$450 before running.

The subroutines may be incorporated in your program for control of the VTR. CTL 3.0 is not relocatable. Consult BCD Associates, Inc. for relocated program.

There are three tape address locations used to search and play the tape. Each address is 3 bytes long referenced with variable names used in OPSUBS 3.0 LSB first.

TAPE Addresses:

A0,A1,A2 actual tape location
BL,BM,BH begining of scene
EL,EM,EH ending of scene

DATA Locations:

VC Video Command
VS Video Status
CS Command Store
NC Next Command
T0 Tape I.D.# LO Byte
T1 Tape I.D.# HI Byte

PRIPHERIAL INITIALIZATION PI Call 37694

Initialization of the interface is performed by this subroutine. Call prior to any VTR operations. All VTR functions are locked out until Initialization is compplete. On Sony VTRs, several of the function lights will be lit prior to Initialization.

TAPE ADDRESS COUNTER Interrupt vector $9122

This subroutine counts control track pulses from the VTR when tape is in motion. It is interrupt driven by hardware. The direction of the count is determined by examining Command Store (CS). Any commands given from BASIC must be preceded by storing the command at CS. This allows the routine to count in the proper direction. Ordinarly, exclude the commands of Frame Advance, X2, Slow/Fast, Stop and Pause from store at CS.

TAPE INITIALIZATION TI Call 38106

The initialization of the video tape i.e., rewinding to the begining and setting the Actual Address to 0 is preformed. This subroutine need not be called for tapes with Absolute Addressing. See Read Code.

DIRECTION & COMMAND DC Call 37756

The tape direction is determined and transport command issued by this subroutine. The "Tape Preroll Address" is calculated by the DC subroutine. We have set it to 60 frames. You may change the Preroll amount by saying "POKE 37767, F#" (where F# is the amount of preroll in frames.) The system automaticaly subtracts the preroll number from the scene's Beginning address and searches to that preroll point.

All searches start with this subroutine. Following the first call from BASIC, look for stop, VS < 2, then determine if if the last command (PEEK(CS)) was Rewind. If it wasn't, call DC again. Otherwise look for stop ,VS < 2.

The intermediate return from Direction & Command to BASIC allows insertion of user subroutines such as graphics during search and prior to looking for stop. CAUTION: DO NOT access the disk. This will cause loss of count of CTL pulses from the VTR. The next subroutine to call is Play Until.

PLAY UNTIL PU Call 37861

Play Until is called after Direction & Command and issues tape transport W/O player video. Upon reaching the Begining address the Next Command NC is issued followed by a return to BASIC.

The Next Command is normally play with player video. Next Command may be play audio with computer video or pause in which case you must "clear" the Pause command, command and clear Pause again to release the VTR.

From BASIC look for stop VS < 2. If you like you may insert your own subroutine after return from Play Until and before looking for stop. (Maybe you want to draw computer graphics while playing the VTR's audio!!)

RECORD LEVEL RL Call 38199

Record Level is called prior to Write Code subroutine. This subroutine outputs a signal to the VTR audio channel for setting record level of Absolute Addressing code prior to writing code. Set the level to 0db or maximum with audio limiter on.

WRITE CODE WI Call 38056

This subroutine writes Absolute Addressing Code on the tape. The Tape # T0,T1 must be stored and Record Level called prior to calling WI. The subroutine looks for VTR stop i.e., end of tape, then returns.

READ CODE RD Call 37402

CAVI 3.0 Routines

READ CODE RD Call 37402

Read Code is called from BASIC after giving a play command from BASIC whenever reading code is applicable. Call this routine only in normal play speed on tapes with Absolute Addressing (Variable AD = 1). This subroutine corrects the Actual Address counter then returns.
On tapes with Absolute Addressing tape initialization may be deleted and a Read Code called to update the tape counter.

Write/Read status WR Call 37120

WR is a flag location which tells the system to read, write, or ignore code. The following table tells what to POKE into location WR:

Read Code	1
Write Code	255
No Code	0

Write Code in Middle of tape W2 Call 38082

The CAVI 400 system can write new code during playback/audio dub. We use this when "The Instructor" is set up to record student performance by recording him on video tape. See the OPSUBS 3.0 listing for an example.

VTR Type Reader VT Call 37990

This subroutine determines VTR type, Sony or Panasonic. Default is Panasonic. This alters the Address Counter if VTR is Sony. Be sure to Call PI before calling VT. (Also, make sure your VTR control cable is connected or the system will "hang."

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"The Instructor"

Prompted Courseware Authoring System
Version 4.1

For use only with the BCD Model 450
Interactive Video Interface.

For Industrial Use Only

Rev.B

UPDATE NOTICE

This is "The Instructor" Version 4.1. It is the result of our efforts to implement the suggestions of hundreds of BCD users. To receive continuing updates of BCD programs, you MUST return your WARRANTY/UPDATE registration card supplied with all BCD Associates, Inc. products. BCD will provide you with free updates for one year from the date of purchase. We will notify you of subsequent updates. These may be obtained by returning your current diskette to BCD Associates, Inc. or its participating dealer along with a check in the amount specified in the notification letter.

Authorization to Copy

You may duplicate SOME, but not all, of the programs in The Instructor authoring system for distribution to your student learning stations WITHIN your organization. These programs are: BCD, CTL 4.1, CTL 3.0, PC 2.8, CAVOS 4.1, STRING MOVER and OPSUBS 3.0.
YOU MAY NOT DUPLICATE ANY OTHER PROGRAMS.

LIMITED WARRANTY

BCD Associates, Inc. warrants this device/software system (excluding cables and connectors) to be free from defects in material and workmanship for a period of ONE YEAR from date of purchase. This warranty applies only to the first retail purchaser or user of the device/software system and does not cover consequential damages of any nature. BCD Associates, Inc. shall at its discretion, repair or replace this device/software system, provided the device/software system is returned to an Authorized BCD Associates Warranty Center. These are the only remedies available. This warranty shall be void if the device/software system has been tampered with or otherwise misused or abused. No other warranties of any kind, including, but not limited to MERCHANTABILITY or FITNESS OF PURPOSE are expressed or implied.

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Logger II Addendum

7/1/83

Version 4 of Logger II has some additional features:

1) Selectable frames display

```
   0. RETURN TO VTR CONTROL
   1. LOAD NEW FILE
   2. SAVE THIS FILE
   3. CHANGE THIS FILE & LABEL SCENES
   4. CHANGE ALL SCENE NUMBERS UP/DOWN
   5. PRINT THIS FILE
      (PRESS 'F' FOR FRAMES)
   6. SET  VB-3 MODE (SLOT 7)
   7. SET FRAME/TIME DISPLAY
CHOICE  > 7

          1. NO DISPLAY
          2. TIME DISPLAY
          3. FRAME DISPLAY
          4. BOTH
          5.  DISPLAY 30 FRAMES/SECOND
          6.  DISPLAY 25 FRAMES/SECOND
          CHOICE >?
          CHOICE >5
```

The "D" Sub-menu

You should select your choice from the "D" sub-menu as soon as you enter Logger.

2) Operation of the Video Associates Labs VB-3 "Micro Keyer" placed in Slot #7. This is choice #6 from the "D" sub-menu. Its menu is identical to the chart in the VB-3 manual.

```
S 1                          S2
1    INVERSE                 UNUSED
2    FULL SCREEN             KEY FILL
4    HALF SAT                BKGND MAT
8    TEXT WIPE               BASE VID
16   KEY OFF                 UNUSED
32   B & W                   UNUSED
64   GEN LOCK                NOT AVAIL
128   PROC AMP               NOT AVAIL
AH   APPLE HUE               MH   MATTE HUE
ML   MATTE LUM.              MS   MATTE SAT.
ENTER -1,-1 TO QUIT
ENTER SWITCH , VALUE?S1,12
ENTER SWITCH , VALUE?S2,12
ENTER SWITCH , VALUE?-1,-1
```

The "VB-3" sub-menu

The selections of

S1,12
S2,12
-1,-1

will cause a nice blue background with white Apple letters, then return you to the "D" sub-menu. Play with this and have fun. Soon you can incorporate the VB-3 into your own video/computer programs.

(Note! You must purchase a BNC to RCA video adapter if you want to run the VB-3 video through BCD's video switcher. We anticipate full software operation of all the VB-3 features from BCD programs shortly.)

"The Instructor"
Getting Started with Tape

This program is called "Logger", and its purpose is to create a video tape log of your video scenes and to save it onto the computer disk for use by other programs. We call this tape log a "-DATAFILE."

While the BCD 400 Interactive Video system designates video segments by their starting and ending frame numbers, humans usually refer to video segments by "Scene Numbers." The -DATAFILE saves the IN and OUT points of each scene so you need to deal only with Scene Numbers.

NOTE: Most of the keyboard inputs for "The Instructor" require only a single keypress. Some, however, require you to press the <RETURN> key. In this manual, we use the designation <R> to mean <RETURN>.

1. Make your Video Program.

Please be sure that you have video recorded on the ENTIRE tape. No "snow" on the head or tail of the tape. (If your program is only 15 minutes long and you have a 30 minute tape, record ANYTHING (color bars, camera black, etc.) for the last 15 minutes.) Allow at least 5 seconds of video before the start of your first scene.

Use only one channel (the primary channel) for audio. You'll use the other "Audio Dub" channel for the Address Code after your tape is completed.

MASTERING and DUPLICATING TAPES
Many organizations produce their duplicating master tapes on 3/4" tape. Then they make release dubs on 1/2" Beta or VHS. That's what we do.

It's good practice to write your Absolute Addressing Frame Code on you duplicating master tape. That way, all your dubs will have the same code as the Master. Naturally, you may log either your Master or a Duplicate since all the frame code numbers will be the same.

For your organization, you should decide which channel the Frame Code will be on. Our system doesn't really care, but it does want to know where to look for the code and the audio. Remember, the audio channel designation is SAVED in your -DATAFILE.

As a quasi-standard, we suggest that you put audio on channel 1, and put Frame Code on channel 2.

SPECIAL NOTE about duplicating coded tapes:
Absolute Addressing will easily "dub down" one generation. That is, if you make a copy of your Duplication Master tape, you are assurred that the copy will have good, readable code on it.

WE DO NOT RECOMMEND MAKING COPIES OF COPIES! (3rd generation code)
It will probably be too "degenerated" for the computer to read it properly.

Tape care of your Duplication Master tape!

REMEMBER: the video tape log (-DATAFILE) your student uses should indicate the correct audio/code channels. Again, make sure there is no "snow" at the head of your duplicating master tapes, or a code reading error could occur.

2. BOOT "The Instructor" Master Disk

according to normal Apple proceedures. See the "Hello" program displayed. If you were a student, you'd "Press Space Bar to Proceed...", but you're an instructor, so press the ESCape key. This will load and display the <<<MAIN MENU>>>.

3. Write Address Code

FIRST ... make sure that the Code Write cable is connected from the Apple's CASSette OUT jack to the master VTR's MICrophone IN jack for your code channel. See page 1 for connecting address code write cable.

Important

Be sure to route the Code Write cable AWAY from the TV monitor. Monitors can create interference and cause improperly written code!

Use the LOGGER program. (Press #3 ("Create/Change a Tape Log") from the <<<MAIN MENU>>>.

The first thing Logger does is to ask you to insert a video cassette into your VTR, then it plays the tape for a momment ... PRESTO! The computer has figured out what type of VTR you have.

Next, Logger tries to read Address Code. If code is present at the Apple's CASSette IN jack, this process takes about a half second and the Code Reader is automatically turned on. If there is no code on the tape, or your Code Read cable is not plugged in, the computer will keep trying to read it for about 10 seconds. You'll have to use the "A Sequence" (below) to turn on the code reader.

Now you'll see the Logger Menu.

Press "A" (Address / System Status) from LOGGER's menu.

Press #1 "Select Audio & Code Channels" from the "A" sub-menu. This lets you tell the system which channel has Audio and which has Code. This also requires that you assign a Tape I.D. Number which will be recorded onto the tape along with the Address Code.

This selection asks you for the "Student's Printer Slot." That is, if the student station has a printer, which of the Apple's slots is it plugged into. This Slot # is saved in the -DATAFILE along with the other system parameters. If there is NO printer, or you don't know which slot it's in, press 0 or <R>. Otherwise, the system will "hang up" if the student tries to use an imaginary printer.

Press RETURN after entering the Tape I.D. Number. Verify your selections by pressing "Y" or "N".

(NOTE: We call this "The 'A' Sequence" and you should do it each time you run LOGGER.)

Press #3 to "Write Code". The system will completely rewind the tape and then create a test tone. Make sure that the Apple's CASS OUT jack (from the Apple) is connected to your VTR's MICrophone IN jack for the Audio DUB channel ... usually CH. 2 for 1/2" machines. (See Installation Instructions, FIG. 2)

Set the VTR's record level to 0 dB (usually just at the red part of the VU meter.) You may have to press the Audio DUB button to get the VTR's meter to move. Press the SPACE bar when the audio level is set.

Press and HOLD the "Audio Dub" button on the VTR and press the SPACE BAR on the computer to proceed. If you change your mind about the Tape I.D. # or something else, you may press the ESCape key to return to the "A" sub-menu.

The VTR should stop by itself when it reaches the end of the tape. The system will return to the "A" sub-menu. Press "0" to return to LOGGER's main menu.

Now, DISCONNECT the Code Write cable from the VTR MIC jack and the Apple's CASS OUT jack.

4. Logging a Tape (with Address Code)

Note that we use mnemonic (sound alike) VTR commands as much as posssible. "P" means Play, "F" means Fast Forward, etc. The only exceptions are "W" for Pause, since we already used "P" for Play and "Space Bar" for Stop.

The "X2" command is available only for Panasonic NV-8200 and NV-8170 machines. The "SF" Slo-Fast command works for both Panasonic and Sony 1/2" machines ... HOWEVER, the SLO-323 and SLO-303 must have their Remote Switches (near the remote connector on the back of the VTR) set to the "400" position for "SF" to operate. (The "300" position is used for student presentations, as this enables the "video cassette IN" sensing function.)

First, make sure the Code Read Cable is connected from the Apple's CASSette IN jack to the VTR's LINE OUT for the code channel.

Turn on the "Code Reader" by pressing "A" for the "Address / System Status" menu. Press #2 for Read Code. Press "Y" to read the code. (Press "N" to turn the code reader off.) The VTR will play for a moment, read the current address and the Tape I.D. number, then it will stop. Press "0" or <R> to return to LOGGER's main menu.

Play with VTR commands of the system. Become friends with it. Press P, F, Space, R ... see the VTR shuttle about. If you Play the VTR and you want to see the computer display, press "C" for Computer video. Press "V" to return to VTR video.

SPECIAL VTR FUNCTIONS

"SF" will engage the variable speed feature of Panasonic and Sony 1/2" VTRs. (The switch on the Sony near the remote connector must be in the 400 position for this.)

"X2" engages the double speed function on Panasonic VHS machines.

On the Sony Betas, pressing either "F" or "R" keys, followed by pressing the "W" key will engage the "Betascan" feature.

Press "R" and rewind the tape completely.

Press "P" to play the tape.
When you reach the beginning of Scene 1, press the "I" key to mark the "In" point of the scene. The computer will remember that frame number.

At the end of the scene, press the "O" key to mark the "Out" point. NOTE that the scene number automatically increments to the next scene number each time you press the "O" key.

Note that the tape addresses of the last three scenes are displayed at the bottom of the LOGGER menu. LOGGER II shows elapsed time as HOURS:MINUTES:SECONDS:FRAMES. They may disappear if you access one of the sub-menus, but you can bring them back by pressing "-->" the right arrow or "<--" left arrow.

Continue this process until your scenes are fully logged.

GOTO a Scene (by Scene number)

You may play any scene you have logged by pressing "G" from either Logger's main menu or from the "D" Display File sub-menu. From the main menu, the scene you want should be displayed opposite the ">" prompt. From the "D" sub-menu, the scene currently displayed with be played.

GOTO a Scene (by Tape Time)

From Logger's main menu, press "CTRL-G". This means, hold down the "CTRL" key and press the "G" key. Another sub-menu will appear saying...

STARTING TIME>

As before, type in the tape time at which you wish the scene to start. Press <R>. Remember, the program will put in the colons.

STARTING TIME> 1234218

will become

STARTING TIME> 1:23:42:18

Do the same when the program asks for

ENDING TIME >

Now, as soon as you press <R>, the system will search to the beginning frame of that scene, and play until the ending time you specified.

If you wish to abort a scene while it's playing, just press the space bar and the VTR will stop. You will have the opportunity to continue with the scene, or return to the most recently accessed sub-menu.

Fixing Mistakes

You might be a little slow, or "late" when you press the "I" or "O" key. LOGGER lets you fix it.

LOGGER always indicates the CURRENT SCENE being logged by the ">" mark at the lower left of the screen. You may use the RIGHT ARROW (->) to increment the scene number. Use the LEFT ARROW (<-) to decrement the scene number to the scene you wish to re-log.

Now rewind or fast forward, then Play the tape to the proper In or Out point and press the I or O key again.

Here's ANOTHER way to assign In and Out points to a scene ...

Press "D" for "Display File", and a sub-menu will appear.

Press #3 "Change This File & Label Scenes"

You'll see this:

```
SCENE # 1  <==,L,I,O,G,==>
IN/OUT> 00:01:20:07 / 00:03:22:10
DURATION> 00:02:02:03

LABEL # 1  THIS IS A SCENE LABEL
```

To reassign the In point, press "I" and type in your number HH:MM:SS:FF . IMPORTANT!!! Use NO COLONS(:) when you enter the numbers. LOGGER will put them in for you.

Assign or change your Out point the same way. As with LOGGER's menu, you may increment or decrement the scene number by pressing the Apple's right arrow or left arrow.

Exit this section by pressing the <RETURN> key.

Changing ALL the Tape Addresses

Let's say that you have slow reactions and you press the "I" key a half second after the beginning of every scene, but its OUT point is correct. This function allows you to change ALL of the IN and/or ALL of the OUT points of your video tape log. While you're in the "D" sub-menu, press "4".

The computer will show you the name of the current file in memory and ask if you want to give it a new name (since you're about to alter it.) If you just press <R>, the name will remain the same.

Next, Logger asks

'+' or '-' how much time (HHMMSSFF)
for starting address? --------

If your scenes are starting late you should SUBTRACT 15 frames (1/2 second) from the starting address, so type - 15. Your ending time is correct so type 0 when asked for the ending adjustment.

IMPORTANT!!! Use No Colons in between HHMMSSFF. Logger will put them there for you.

Labeling Scenes

You may, if you wish, assign a 30 character label from Logger's main menu by pressing "L" at any time. Just press "L" and type in your label. Press <R> when finished.

You may also go through the "D" Display File sub-menu to add or change a label for a scene. Press <R> when finished.

(Sometimes we like to assign all the labels to all the scenes BEFORE logging the tape. This can help you keep track of which scene is which.)

Saving a Tape Log (-DATAFILE)

When you've finished logging your video tape, press "D" Display File."
Press #2 "Save This File."
The system will ask you for a "File Name". Type it in, then press RETURN. Verify by pressing "Y" for Yes, "N" for No.
The disk will whirr and your file is saved. You may save this file several times on other disks for backup purposes.

Printing a Tape Log

From the "D" Display File sub-menu, press "5". Note that there MUST be a -DATAFILE log in the computer's memory, or the #5 option will not be displayed. The computer will ask for the slot # containing your printer card. (If you change your mind, type 0 (zero) for this prompt.) This does NOT have to be the same printer slot you designated for the -DATAFILE.

The system will print

VIDEO TAPE LOG FOR (file name)

#	IN	OUT	DURATION	LABEL
1	00:00:01:00	00:00:11:05	00:00:10:05	THIS IS A SCENE LABEL
2	00:00:11:25	00:05:15:25	00:05:04:00	THIS IS SCENE # 2

. . . . . .et cetera.

If for some reason, you like to see your INs, OUTs, and DURATIONs expressed as genuine FRAME NUMBERS instead of time, DON'T PRESS 4 !! Press "F" instead. You'll get the same format, only the style has changed.

Press "0" or <R> for Logger's Main Menu.

CODE ERROR MESSAGES

If the code is not written properly and/or your cables are not correct the CTL 3.0 program will detect the condition, give you an error message, and return you to LOGGER's main menu.

ERROR # Possible Cause

1 No Signal on Address channel. No code, VTR address channel OUT not connected to Apple Cassette IN, Code level too low.

2 No Start Bit on Address channel. Improper cable connections (the computer tries to read program audio as code.) Improperly written code (too high, too low), perhaps an unstable video source was connected to Video IN during coding or reading.

4 Bad Code on Address channel. Unstable and/or erratic code. Possibly low record level of code or damaged tape.

Exit LOGGER

Press ESCape. The system will ask "Want to save your file to disk? (Y/N)" as a reminder. If you press "Y", you'll return to LOGGER's Main Menu where you can go through the "D" sequence for "Saving a Tape Log."

If you press "N", you'll be taken back to The Instructor's <<<MAIN MENU>>> again, losing any tape log in memory that you didn't save.

See the <<<MAIN MENU>>>. Now we're ready to "Author a Course."

Getting Started ... with Lessons

"The Instructor" ... Theory and examples

"The Instructor" uses two files that you create and store on the disk:

1) -DATAFILE, the video tape log created by you with the LOGGER program. This file contains Scene numbers, and the beginning and ending frame numbers of each scene.

(It also contains the "scene labels" you assigned, but they are not used in the actual lesson. They're just for your convenience.)

2) The -LESSON file consists of computer "pages" which can display text, questions, and/or designate which video scenes are to be shown. You create these pages with the program called AQ, which is accessible from the <<<MAIN MENU>>>.

This two-file method lets you log a video tape ONCE, then create different lessons using the same -DATAFILE (under a different name.).

Each page of the lesson has a number (corresponding with its Record number on the disk).

EACH PAGE IS NUMBERED IN SEQUENTIAL ORDER AS YOU WRITE IT.

PAGES ARE DISPLAYED TO THE STUDENT ACCORDING TO THE BRANCHING

METHOD WHICH YOU DESIGNATED WHEN YOU WROTE THE LESSON.

Sample Lesson "Tutorial"

Let's forget about video for a momment and look at a sample lesson. This is strictly a CAI (Computer Assisted Instruction) lesson and does NOT use video for its presentation.

1) BOOT the disk (or run the BCD program)
2) Press the space bar to proceed. (This runs the student "sign in" program called PC 2.8.)
3) Type in your Name, ID#, Date. The computer will tell you what DAY today is.
4) Select the lesson called "Tutorial."
5) Confirm by pressing the "Y" key.

Play with this lesson to get an idea of what your students will see.

Authoring a Lesson

BOOT "The Instructor" Master Disk according to Apple's instructions. See the ""Hello" program. If you were a Student, you'd "Press Space Bar to Proceed...", but you're an Instructor, so press ESCape to see the <<<MAIN MENU>>>.

Press #2 "Author/Change a Course". See the AQ sub-menu.
Press #1 "Create a Lesson"

You'll see a page selection menu like this:

```
PAGE#1

  (I) INFORMATION
  (Q) QUESTION
  (K) KEYWORD
  (V) VIDEO
  (A) AUDIO
  (R) RANDOM
  (M) MENU
  (G) GRAPHICS
  (T) TAPE RECORD

  CHOICE:
  (PRESS 'ESC' TO QUIT)
```

Here are some sample pages.

(I) INFORMATION

PAGE #1 INFORMATION PAGE

PLEASE TYPE IN YOUR INFORMATION. YOU
MAY USE UP TO 2 PARAGRAPHS AND 5 LINES
PER PARAGRAPH. DO NOT USE COMMAS OR
COLONS: END EACH PARAGRAPH WITH
A (RETURN).

PARAGRAPH 1

x x x x x x x x x x x x x x x x x x x
x x x x x x x x x x x x x x x x x x x x x
x x (The Xs represent your paragraph.)x

PARAGRAPH 2
x x x x x x x x x x x x x x x x x x x
x x x x x x x x x x x x x x x x x x x x x
x x(This is your second paragraph.)x x x
IS YOUR TYPING CORRECT? (Y/N)Y

NEXT VIDEO SCENE START #1
NEXT VIDEO SCENE END #4

BRANCH TO WHICH PAGE NEXT? 2

IS YOUR TYPING CORRECT? (Y/N)Y

You may type one or two paragraphs. They are single-spaced when you type them, but double spaced when the student sees them.

We typed "1" for NEXT VIDEO SCENE START because we want the VTR to start playing video scene #1 after the student has read the Information and has pressed the Space Bar to Proceed. The VTR will stop playing after it has finished scene #4.
An Information page may have only ONE possible branch. If you press <R> for this prompt, the system will default and branch to the current page # +1. (Since we're only on Page #1 now, it seems logical to go on to Page #2.)

(Q) QUESTION

PAGE# 2 QUESTION

PLEASE TYPE IN YOUR QUESTION. YOU MAY
USE UP TO 5 LINES. PLEASE PRESS THE
(RETURN) KEY WHEN FINISHED.

WHAT DAY FOLLOWS THURSDAY?

1. SATURDAY
   NEXT VIDEO SCENE START # 1
   NEXT VIDEO SCENE END # 1
   BRANCH ON THIS RESPONSE TO # 2

2. TUESDAY
   NEXT VIDEO SCENE START # 2
   NEXT VIDEO SCENE END # 2
   BRANCH ON THIS RESPONSE TO # 2

3. FRIDAY
   NEXT VIDEO SCENE START # 0
   NEXT VIDEO SCENE END # 0
   BRANCH ON THIS RESPONSE TO # 3

4. SUNDAY
   NEXT VIDEO SCENE START # 3
   NEXT VIDEO SCENE END # 3
   BEANCH ON THIS RESPONSE TO # 2

   TYPE THE NUMBERS OF THE CORRECT RESPONSES 3
   STANDARD COMPUTER REINFORCEMENT?(Y/N)Y
   SCORE THIS PAGE?(Y/N)Y

When a "Q" page is displayed, the student is asked to press a number from 1 to 4.

If you type "Y" to STANDARD REINFORCEMENT, the computer will display "That was a good answer, (student name)" if he was correct, and "That wasn't the best answer, (student name)" if the response was incorrect.

If you type "Y" to SCORE THIS PAGE, the computer would remember the page number, the student's choice, and whether or not the response was correct.

Next, the computer plays the video tape scene(s) you designated for the student's response.

Finally, the system branches to the next page you had designated.

In the example above, responses 1, 2, & 4 would show a remedial video segment, and then branch back to the same question on page #2. Response # 3 would show NO video (the segments were designated 0 or X), and then branch on to page # 3. (Page 3 could be another question, congratulations, video, or anything else.)

(K) KEYWORD

A KEYWORD page requires that your student TYPE in a word or phrase to answer the question. You write it just like the "Q" page except that we allow only 3 choices. That's because the fourth is the "default" branch in case the student doesn't type in anything that matches your "Word Templates."

WORD TEMPLATES are used to allow your student to type in misspelled words and still be graded correctly. The word templates for the "Q" page above might look like this for a "K" page :

SAT

TUE

FDY

The correct answer is FRIDAY. The student's response would be correct if her word contained the letters F, D, and Y in THAT ORDER. So, the response "FRADOY" would be "correct". Naturally, if your word template IS the EXACT word, only correct spelling will be accepted.

You must assign the fourth BRANCH as the "default" branch in case the student types an unexpected response, such as "OCTOBER".

As with the "Q" page, you may designate more than one response as correct.

RANDOM

This page type is useful in simulating "real life". When encountered during a lesson, the computer will randomly choose one of the four possible "NEXT BRANCH" pages which you entered. This is the format.

PAGE # 15 RANDOM PAGE

RANDOM BRANCH TO #3
RANDOM BRANCH TO #17
RANDOM BRANCH TO #6
RANDOM BRANCH TO #11

In the example above, each branch has a 25% chance of being taken. If you had a medical lesson which asked "What is the best treatment for this patient?", and you answered correctly, the "R" page might choose whether:

The patient recovered instantly.
The patient died.
There was no change.
Something else happened.

Random pages keep life interesting.

UTILITY PROGRAMS

"Erase Student and/or Lesson Catalog"

This option (#4) from the <<<MAIN MENU>>> runs the program called "FILE.INIT." It effectively erases the data in both the CURP file and the LS-CAT file. (Actually, it just writes Record 0 to zero so the computer thinks that the file is empty.)

Run this option when you want to change the titles in the LS-CAT file. FILE.INIT will clear the file, and you add the new titles.

Run this option when you have been experimenting with your lessons, and you want the computer to think that a new student has just begun.

Run this option when (1) you have a power failure, or (2) a student "bombs" the CAVOS 3.0 program by pressing RESET. (Otherwise, the student's name will remain in the CURP file.)

"Transfer Files"

This program reads the lesson catalog and asks you to select the files to transfer by number.

It the loads either the -LESSON, the -DATAFILE, or both, and asks you to insert another disk. Then, press the space bar and your files will be rewritten.

NOTE: The program will detect if either file is not present and let you know about it.

At present, the file transfer program doesn't transfer GRAPHICS pages. You have to type a little "computerese" to get it done.

Press the RESET key. See the "]" prompt character. (If you have an Apple II you'll see a "*", type "9DBFG then the RETURN key)

Insert the disk containing your graphics.
Type BLOAD (graphic name) ,A$4000
Insert your student disk.
Type BSAVE (graphic name) ,A$4000,L$2000
That's it. Now your graphic has been transferred.

ENDING A LESSON

To designate the LAST PAGE of a lesson, you must say that the NEXT PAGE is 0 (zero).

```
BRANCH TO WHICH PAGE NEXT? 0
```

EXIT THE PROGRAM

....by pressing the ESC key. The system will ask if you want to add the name of this lesson to the 'lesson title file' (LS-CAT). If you press "Y" then the title will be added and you will be returned to the Authoring (AQ) menu.

Creating a new Lesson Catalog (LS-CAT)

When a student "signs on", the system presents a catalog of available lessons. These come from the lesson catalog called LS-CAT. You may add to this catalog up to a maximum of 9 titles by choosing item #3 "Add Lesson to Title File".

To alter this catalog, you must choose item #4 from the <<<MAIN MENU>>>. This will erase ALL of the titles. You retype just the ones you want.

Changing a Lesson

From the Authoring (AQ) Menu, press #2 for "Change / Print a Lesson", and the system will show you the Lesson Catalog. Select your lesson, your printer slot#, and the Page # to change.

Note the prompting at the bottom of each page as it is displayed. You may change any of the items in any of the pages. Some of the simple pages like Graphics and Random require you to retype the whole page, so it helps to print out or jot down the "old" page information.

FLOW CHARTS

Flow charts are familiar to programmers and often foreign to teachers. "The Instructor" is so flexible, however, that you could be in big trouble without Proper Prior Planning.

Whether you use 6 x 9 index cards, storyboard layout sheets, or design your own, you really should plan and visualize your lesson BEFORE you sit down to author your course.

Authoring Forms

We have included some sample forms that we use prior to writing a lesson. One is filled in and one is blank. We've even included a printout of that lesson and its -DATAFILE from the computer. These are in the back of this manual.

Use our forms, or design your own. By whatever method, you MUST plan ahead!

Preparing a "Student Disk"

The disks used by students need to have five programs on them: BCD, CTL 3.0, STRING MOVER, PC 2.8, and CAVOS 3.0.

The required files are CURP, LS-CAT, and of course, your -LESSON and -DATAFILEs. LOAD BCD into the computer memory, then INITialize a new disk using BCD as the "Hello" or Greetings program. (Disk INIT is covered in your Apple II manuals.)

The Easiest Way...

Use the program called FID which is on your "DOS 3.3 SYSTEM MASTER" diskette which came with your Apple Computer.

You must transfer to a disk which has been INITialized.

PROCEEDURE:
Put the DOS 3.3 SYSTEM MASTER disk into your disk drive.
Type CATALOG to see the available programs.
Type "BRUN FID", because FID is a machine language program.
Select option #1 "Copy Files."

The program will ask for the SLOT # of your disk controller card. Typically it is 6, but check your computer to make sure.

The program will ask for the DRIVE # of your disk drive. Typically this is DRIVE #1, but again, check to make sure.

The program will ask for FILENAME. Type "=". This means that you want to copy ALL the programs, but you can be selective.

Press "Y" when the program asks "Do you want prompting?" This way you can choose the programs and files to be copied.

Insert your MASTER disk of THE INSTRUCTOR.

When FID shows you a file name, press "Y" then <R> for the following programs and files:

CTL 3.0
STRING MOVER
PC 2.8
LS-CAT
CURP
CAVOS 3.0
(and any -LESSONs, -DATAFILEs, and GRAPHIC pages you want transferred.)

Press "N" for the rest of the program names presented to you. (There's usually no reason for a student to log video tapes or write lessons.)

For Computer People...

LOAD and *SAVE* the Applesoft programs listed above (BCD, PC 2.8, CAVOS 3.0) in the usual manner.

BLOAD CTL 3.0
BSAVE CTL 3.0, A$9100, L$450

BLOAD STRING MOVER
BSAVE STRING MOVER, A$3b0, L$28

Create the CURP and LS-CAT files by using option #4 "Erase Student Record/Catalog" from the <<<MAIN MENU>>>. Choose option #1 from the sub-menu. Insert your student disk and press space bar. The program will create the empty files. Put your lesson titles into LS-CAT using AQ 3.0, available from the <<<MAIN MENU>>> of your master disk.

Running a Lesson
(Student Presentation)

CAVOS 3.0 means Computer Assisted Video Operating System. It, along with PC 2.8, comprises the system used by the student in executing lessons, tests, etc.

REMEMBER: If you're using a Sony SLO-323, the switch near its remote connector should be set to the "300" position for student operation.

Here's what happens...

Power on, Boot the disk then press the space bar to proceed. the PC 2.8 program prompts for the student's first name, last name and I.D. number. PC 2.8 prompts for today's date., the tells you what day it is. (It's up to the student to decide if the DAY indicated by the computer is the same as today's day.) PC 2.8 reads LS-CAT and displays the available lessons. After the student selects the lesson, PC 2.8 writes the pertinent data to the CURP file, and then runs CAVOS 3.0.

First, CAVOS 3.0 reads CURP to see who the student is and what lesson is supposed to be run. System initialization begins. The system loads the (Lesson Name)-DATAFILE. The system detects if no -DATAFILE is on the disk, and proceeds to load the -LESSON.

If a -DATAFILE (video tape log) is present, its is loaded.

> If the file says there is frame code on the tape, the system will play the tape for a few seconds to read the address and Tape I.D. number. If the "-DATAFILE" says there is no code, the system rewinds the tape to its beginning and sets the Apple's frame counters to zero.

Next, CAVOS 3.0 presents a short paragraph greeting the student by name. This paragraph also says that the student may halt a video/audio presentation by pressing the space bar. Four options are presented:

1) Resume video tape from this point.
2) Resume video tape from the start of this segment.
3) Skip this video segment.
4) Quit now.

From here on, LESSON pages are presented in the branching sequence you designated when you wrote the lesson.

REMEMBER...

You wrote the LESSON pages in numerically sequential order, but they are displayed in an order appropriate to the student's responses.

If a page is a Question or Keyword, it will be asked; if Information, it will be shown; if Video or Audio, the tape will play; if Random, the computer will select the

If your student's system has a printer, the score may be printed now. CAVOS 3.0 determines the printer slot from the video tape log -DATAFILE you created with Logger II. Naturally, you may change it anytime.

The program then writes the student record...not only the percentage (# Correct answers/ # Total answers) but also the student's response to EACH QUESTION. If the student responded to a Keyword question by typing a word or phrase, that too is saved. This file is named by the student's initials, the date, the lesson name, and which attempt was made at the lesson, in case the student tried the lesson more than once.

We have made no attempt at statistical evaluation of student preformance records (CMI). Your own algorithms will be appropriate, and the file is fully accessible.

After writing the score, CAVOS 3.0 rewinds the video tape to its beginning in preparation for the next student. NOTE: It's good practice to store your tapes in a fully rewound condition. This prevents damage to the edge of the tape which contains the essential "control track."

Finally, CAVOS 3.0 re-runs the "Greeting" program which is called BCD.

CAVOS 3.0 has some special features we'd like to call your attention to.

> VTR Accuracy ... the BCD 400 System is frame accurate when using Absolute Addressing. Typically, it's accurate to within 5 frames per search when using ordinary CTL pulse counting.
>
> Look Ahead ... always trys to load additional information from the disk when the video tape is playing. That way, disk access takes up "tape time" instead of valuable "student time.
>
> RECORDability ... during presentation to the student. Let your students SHOW you what they've learned.

We'd like to hear from you. Tell us what you like and what you want. With your permission, we'll include your comments in our news letters.

Lesson Name:

Page Number	Page Type	Page Content	Video Begin	Video End	Branch to Page *	Correct Response *	Score? (Y/N)	Computer Reinf. (Y/N)

Lesson Name: SUBTRACTION

Page Number	Page Type	Page Content	Video Begin	Video End	Branch to Page #	Correct Response #	Score? (Y/N)	Computer Reinf. (Y/N)
1	I	Thanks for using the CAVI System						
		from BCD Associates. This lesson was						
		created using "The Instructor'						
		authoring system.						
		The following lesson is very very						
		elementary...but it does provide an						
		example of both the CAVI interface						
		and the options provided by 'The						
		Instructor.'	--	--	2			
2	Q	Please select the learning mode of						
		your choice.						
		1. Passive Video Instruction	1	2	3			
		2. Conventional CAI Instruction.	--	--	5			
		3. Interactive Video Instruction	1	1	4	X	N	N
		4. None ... Quit Now	--	--	0			
		(THIS IS A PARTIALLY FILLED LESSON						
		AUTHORING FORM FOR THE						
		"SUBTRACTION-LESSON".						
		THIS FORM CAN BE HELPFUL IN						
		PLANNING YOUR LESSON BRANCHING)						

SUBTRACTION-LESSON

PAGE01
 PAGE # 1 I PAGE
   THANKS FOR USING THE 'BCD 400 SYSTEM'
FOR INTERACTIVE VIDEO. THIS LESSON WAS
CREATED USING 'THE INSTRUCTOR' COURSE-
WARE AUTHORING SYSTEM.
   THE FOLLOWING LESSON IS VERY VERY
ELEMENTARY...BUT IT DOES PROVIDE AN
EXAMPLE OF BOTH THE C.A.V.I. INTERFACE
AND THE OPTIONS PROVIDED BY 'THE
INSTRUCTOR.'
    NO VTR SEGMENT .
     THIS BRANCHES TO # 2

PAGE02
PAGE # 2 Q PAGE
 PLEASE SELECT THE LEARNING MODE OF YOUR
 CHOICE.
1. PASSIVE VIDEO INSTRUCTION
    NEXT VIDEO SCENES 1 TO 2
    THIS RESPONSE BRANCHES TO 3
2. CONVENTIONAL COMPUTER ASSISTED
       INSTRUCTION
    NO VTR SEGMENTS
    THIS RESPONSE BRANCHES TO 5
3. INTERACTIVE VIDEO INSTRUCTION
    NEXT VIDEO SCENES 1 TO 1
    THIS RESPONSE BRANCHES TO 4
4. NONE...QUIT NOW.
    NO VTR SEGMENTS
    THIS RESPONSE BRANCHES TO 0
       END OF LESSON
CORRECT ANSWER IS # 3

PAGE03
 PAGE # 3 I PAGE
   THANKS FOR VIEWING THESE SEGMENTS OF
PASSIVE VIDEO. I GAVE YOU THE PROBLEM -
THEN THE ANSWER. YOU DIDN'T EVEN HAVE
TO GUESS AT THE ANSWER. THERE IS A
BETTER WAY TO TEACH!
   IF YOU'D LIKE TO SELECT ANOTHER MODE
OF LEARNING...JUST PRESS THE KEY OF YOUR
CHOICE WHEN THE MENU RETURNS.
    NO VTR SEGMENT .
     THIS BRANCHES TO # 2

```
PAGE04
PAGE # 4 D PAGE
 HOW MANY APPLES WERE LEFT ?
1. ONE (1)
     NEXT VIDEO SCENES 2 TO 2
     THIS RESPONSE BRANCHES TO 6
2. TWO (2)
     NO VTR SEGMENTS
     THIS RESPONSE BRANCHES TO 7
3. THREE (3)
     NEXT VIDEO SCENES 3 TO 3
     THIS RESPONSE BRANCHES TO 4
4. FOUR APPLES (4)
     NO VTR SEGMENTS
     THIS RESPONSE BRANCHES TO 8
CORRECT ANSWER IS # 1
STANDARD COMPUTER REINFORCEMENT
SCORE THIS PAGE


PAGE05
PAGE # 5 Q PAGE
 IF YOU HAD FOUR APPLES AND YOU GAVE ONE
TO GWENDOLYN .. ONE TO MAURICE ... AND
ONE TO MAXWELL ... HOW MANY WOULD YOU
HAVE LEFT?
1. FOUR (4)
     NO VTR SEGMENTS
     THIS RESPONSE BRANCHES TO 9
2. THREE (3)
     NO VTR SEGMENTS
     THIS RESPONSE BRANCHES TO 10
3. TWO (2)
     NO VTR SEGMENTS
     THIS RESPONSE BRANCHES TO 11
4. ONE (1) (HINT ... TRY THIS ONE!)
     NO VTR SEGMENTS
     THIS RESPONSE BRANCHES TO 12
CORRECT ANSWER IS # 4
STANDARD COMPUTER REINFORCEMENT
SCORE THIS PAGE


PAGE06
 PAGE # 6  I PAGE
   .         GOOD JOB !!!

YOU ARE OBVIOUSLY A MATHEMATICIAN !
   THANKS FOR USING ''THE INSTRUCTOR''
WITH THE 'BCD MODEL 400' VIDEO TAPE
CONTROL INTERFACE.
       HAPPY INTERACTIONS!
     NO VTR SEGMENT .
      THIS BRANCHES TO # 0
```

```
PAGE07
 PAGE # 7   I PAGE
    NOPE...THERE ARE NOT TWO APPLES.

    I'LL SHOW YOU THE PROBLEM AGAIN SO
YOU CAN MAKE ANOTHER GUESS.
     NEXT VTR SEGMENTS 1 TO 1
      THIS BRANCHES TO # 4
```

```
PAGE08
 PAGE # 8   I PAGE
    ABSOLUTELY NOT...DUMMY.  WE STARTED
OUT WITH FOUR APPLES.  HOW COULD YOU BE
SO STUPID.
    I'LL SHOW YOU THE PROBLEM AGAIN SO
YOU CAN KEEP ON TRYING.  YOU PROBABLY
CAN'T EVEN SPEL !
     NEXT VTR SEGMENTS 1 TO 1
      THIS BRANCHES TO # 4
```

```
PAGE09
 PAGE # 9   I PAGE
    NOT EXACTLY.  IF YOU GAVE ONE APPLE
TO EACH OF YOUR THREE FRIENDS ...
YOU WOULD HAVE FEWER APPLES LEFT.
TRY AGAIN.    YOU CAN DO IT!
    X
     NO VTR SEGMENT .
      THIS BRANCHES TO # 5
```

```
PAGE10
 PAGE # 10   I PAGE
    THREE IS THE NUMBER OF APPLES YOU
GAVE AWAY ... NOT THE NUMBER YOU HAVE
LEFT!
            TRY IT AGAIN.
    X
     NO VTR SEGMENT .
      THIS BRANCHES TO # 5
```

PAGE11
 PAGE # 11 I PAGE
   YOU'RE VERY CLOSE TO HAVING THE RIGHT
ANSWER ... BUT IN MATHMATICS ...
JUST BEING CLOSE ISN'T GOOD ENOUGH.
        PLEASE GUESS AGAIN.
    X
     NO VTR SEGMENT .
      THIS BRANCHES TO # 5

PAGE12
 PAGE # 12 I PAGE
   MARVELOUS!
                    4 - 3 = 1
   (THAT'S HOW TO WRITE IT.)
NOW GO BACK AND MAKE A CHOICE FOR
ANOTHER TYPE OF LEARNING.
WHY DON'T YOU TRY 'INTERACTIVE VIDEO'
FOR A NEW EXPERIENCE?
     NO VTR SEGMENT .
      THIS BRANCHES TO # 2

VIDEO TAPE LOG FOR SUBTRACTION

SCENE#	IN	OUT	DURATION	LABEL
1	00:01:02:00	00:01:25:03	00:00:23:03	HOW MANY IS 4 - 3 APPLES?
2	00:01:26:26	00:01:32:17	00:00:05:21	EXCELLENT! ONE APPLE LEFT!
3	00:01:34:20	00:01:44:22	00:00:10:02	NO...THIS IS THREE APPLES.
4				

VIDEO TAPE LOG FOR SUBTRACTION

SCENE#	IN	OUT	DURATION	LABEL
1	1860	2553	693	HOW MANY IS 4 - 3 APPLES?
2	2606	2777	171	EXCELLENT! ONE APPLE LEFT!
3	2840	3142	302	NO...THIS IS THREE APPLES.
4	0	0	0	

12 October 1982

Update Notice

"The Instructor 3.1"

"The Instructor" Version 3.1 is the most recent and (hopefully) bug-free yet. Thanks to all who have written with suggestions. We applied most of them to this version.

Two new features are available which are not mentioned in your manual: a new Keyword format and "Gosubs".

1) Keyword page now places the student's input cursor at the beginning of the dashes which you left when you wrote that page. For example ...

```
The day that follows Thursday is called --------.

Please type your response.  Remember I'm looking for Keywords.
```

The system will place the cursor at the FIRST DASH in your question. For neatness, you should leave enough dashes for the best answer, but you MAY insert more dashes than are necessary (if you want to give your student a hard time!)

If you don't leave ANY dashes in the question, the system will print ANSWER: at the bottom of the page as before.

2) GOSUBS. This is at the request of many users who wanted flexability without redundancy.

Imagine you're on page 50 of a mathmatics lesson, discussing algebra. The student makes a mistake in multiplication, so you want to send him/her back to page 5 to review multiplication. That section ends at page 10.

Your present system makes you

A) March the student all the way back up to page 50, or...

B) Duplicate pages 5 - 10 up near page 50, just so you don't have the problem above. This works, but it means redundant typing for the lesson designer, more hassles, fewer BCD systems bought!

We have implemented GOSUBS for the Q, K and M Pages. Returns are from I,V, & A pages.

In the above example, a GOSUB is indicated during Authoring this way...

(on page 50)
BRANCH TO 5050

(on page 10)
BRANCH TO 11R

(Page 11 is where it would normally go if a GOSUB were not in effect.)

When the statement on page 50 is encountered, the system "GOes to the SUBroutine starting at page 5. (It 'knows' that when it encounters the suffix "R", it will "Return" to the page number following the "G" delimiter.)

It will proceed in it's conventional "path dependent" manner until it encounters a page branch # with the suffix "R". Then it "Returns" to the page # following the "G".

"G" separates the "Immediate" jump from the "Return" jump.

Naturally, if a GOSUB is not in effect, the "Return" command will be ignored.

Please staple this page into your manual and discontinue using previous versions of "The Instructor." You'll like this one better.