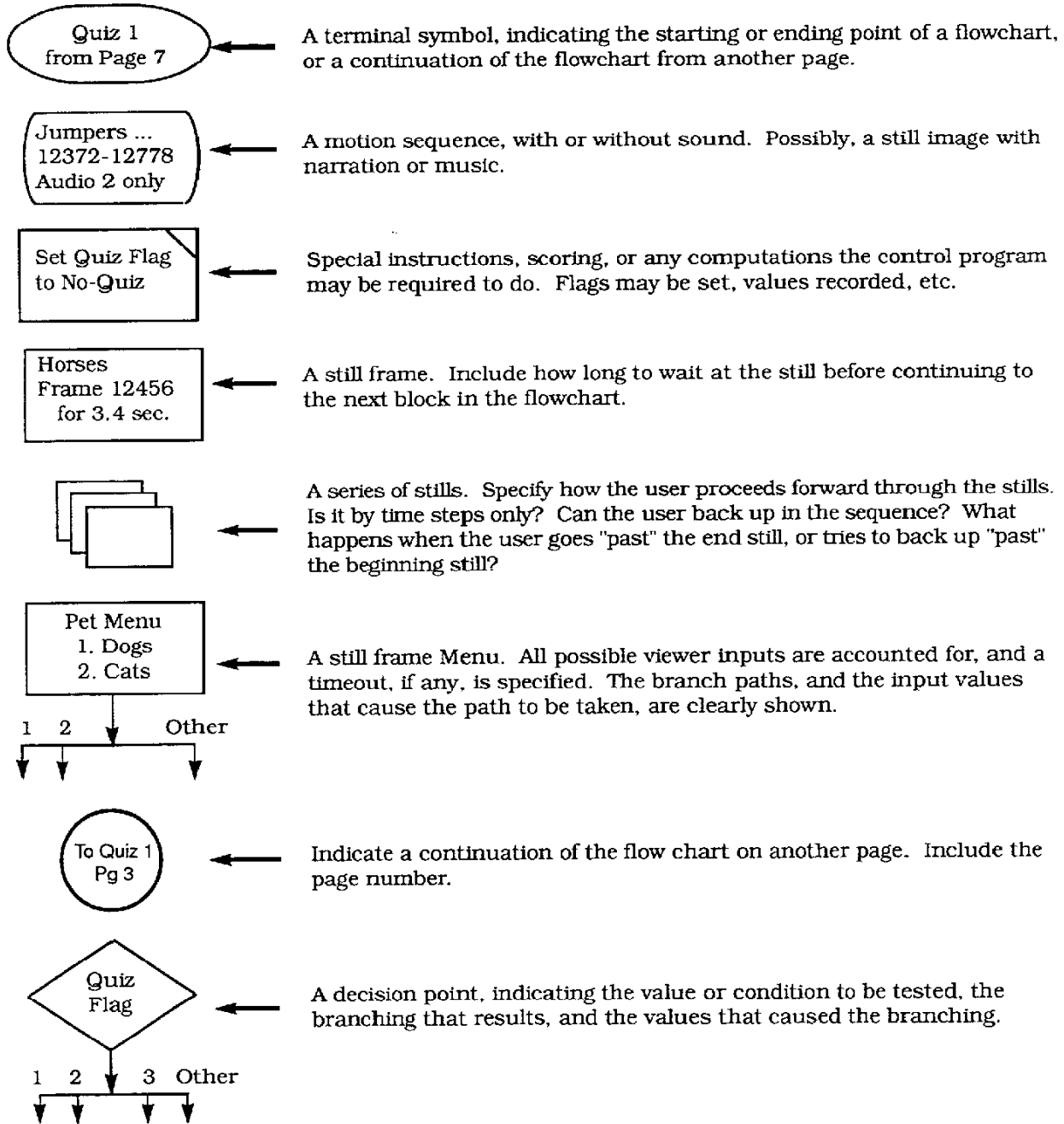# Example Flowchart Symbols

The symbols below (or similar ones) could be used in a flow chart to aid the design process and to document the interactive aspects of an Audio / Video presentation. The flowchart is a graphic representation of both the order of information presentation and of how the interactive control program responds to viewer inputs. The flowchart is the interactive "story board", which should be used to guide subsequent scripting and programming. Consistency, clarity, and completeness are more important than the symbols used. When in doubt, use text descriptions of your intentions.

A terminal symbol, indicating the starting or ending point of a flowchart, or a continuation of the flowchart from another page.

> Quiz 1
> from Page 7

A motion sequence, with or without sound. Possibly, a still image with narration or music.

> Jumpers ...
> 12372-12778
> Audio 2 only

Special instructions, scoring, or any computations the control program may be required to do. Flags may be set, values recorded, etc.

> Set Quiz Flag
> to No-Quiz

A still frame. Include how long to wait at the still before continuing to the next block in the flowchart.

> Horses
> Frame 12456
> for 3.4 sec.

A series of stills. Specify how the user proceeds forward through the stills. Is it by time steps only? Can the user back up in the sequence? What happens when the user goes "past" the end still, or tries to back up "past" the beginning still?

A still frame Menu. All possible viewer inputs are accounted for, and a timeout, if any, is specified. The branch paths, and the input values that cause the path to be taken, are clearly shown.

> Pet Menu
> 1. Dogs
> 2. Cats
>
> 1   2   Other

Indicate a continuation of the flow chart on another page. Include the page number.

> To Quiz 1
> Pg 3

A decision point, indicating the value or condition to be tested, the branching that results, and the values that caused the branching.

> Quiz
> Flag
>
> 1   2   3   Other

Level II Program Examples

Here are four Level II examples for use with the LD-V8000 videodisc player. They were developed to serve several purposes:

1. With a flow chart and several sentence introduction describing each program and then the program itself in the format below, these examples explain how to enter Level II programs into the memory of the LD-V8000 using the remote control unit, the RU-V6000T.

2. These are actual working examples that can be used at trade shows or in training sessions by users, if they replace the frame numbers with their own frame numbers. We have used leading zeros to keep the program addresses the same no matter what frame numbers are entered.

We are assuming these examples will be developed with CAV videodiscs. An * indicates the Play button in the RCU input sequence section.

Format describing Input of Level II Programs using RCU button presses:

Address	Argument	Command	RCU Input Sequence of button presses	Comments

NOTE: The Frame numbers used in the following examples correspond to segments on the *Pioneer LD-V8000 Demonstration Disc.*

Still Frame	frame 00210	Pioneer Logo
Segment One	frame 02113 to frame 03493	Introduction
Segment Two	frame 04450 to frame 05117	Frame Store
Segment Three	frame 05619 to frame 06570	Digital Audio
Segment Four	frame 06700 to frame 07820	Fast Search

These segments may be replaced with others for use with different CAV videodiscs.

The following examples can be expanded upon to add additional segments, etc. after the concepts illustrated in the flow charts are understood. Modifications to the programs must also take into account resulting changes to program locations. For more details about sending program code to the LD-V8000's RAM, Level II button press code entry or Level II command descriptions please refer to *LD-V8000 Level II, User's Manual, Programmer's Reference Guide*, *Pioneer Technical Publication # 114 Ver. 2.0 7/92.*

Sample Level II Program — RCU Entry

The buttons "A" through "F" and "Input" are marked on the RU-V6000T keypad, but their equivalent buttons are noted below:

Play = * : Pressing the Play Button prepares player to receive Hex input

RCU Button	Hex equivalent	RCU Button	Hex equivalent
Autostop	A	Search	D
StepRev	B	Multi-Rev	E
StepFwd	C	Multi-Fwd	F

Scan-Rev = "Input" command, in Hex mode.

Level II Programming Examples:

Example #1

A continuously repeating series of four motion segments with a five second blue squelch screen between each segment. Start up, set frame mode, audio channel 1 on, search to the first motion segment and play it, flash a 5-second blue squelch screen, search to second motion segment and play it....and so forth through four segments. After segment four and the five-second blue squelch is completed, branch back to segment 1.

Segment One is Frame 02113 to 03493; Segment Two is 04450 to 05117. Segment Three is 05619 to 06570 and Segment Four is 06700 to 07820.

Flow Chart of Example #1
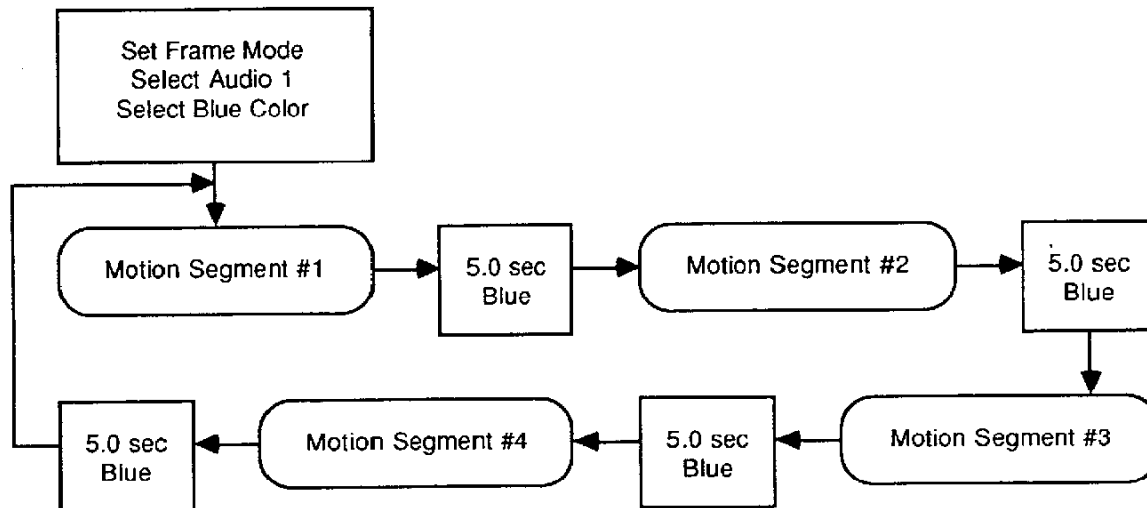
Sample Level II Program — RCU Entry

Example #1 (cont.)

Since the commands used here are fairly "simple" commands, this program is fairly easy to understand, even without reading the **LD-V8000 Level II User's Manual/Programmer's Reference Guide.** Here is the program in a format as it might be made by a programmer for a compiler:

```
              SFM                              ; Set Frame Mode
        1 Audio 1      0 Audio2               ; Use Audio 1 only
        1 SBC                                  ; Force Blue Color Background

Loop:   2113 Search    Von    3493 Autostop   Voff   50 Wait   ; Segment #1
        4450 Search    Von    5117 Autostop   Voff   50 Wait   ; Segment #2
        5619 Search    Von    6570 Autostop   Voff   50 Wait   ; Segment #3
        6700 Search    Von    7820 Autostop   Voff   50 Wait   ; Segment #4
              Loop Branch
```

Example #1 in "RCU entry" format:

Address	Arg.	Command	RCU Input	Comments
0		SFM	*, 8, E	Set Frame Mode
1	1	Audio1	1, Audio1	Turn on Audio 1
3	0	Audio2	0, Audio2	Turn off Audio 2
5	1	SBC	1, *, 8, 8	Select Blue Color
7	000		000	Filler
10	02113	Search	02113 Search	Start Segment #1
16		VON	*, 1, B	Turn video On
17	03493	Autostop	03493 Autostop	Play to the segment end
23		VOFF	*, 1, C	Turn on Blue Screen
24	00050	Wait	00050 Stop	Wait for 5.0 seconds
30	04450	Search	04450 Search	Start Segment #2
36		VON	*, 1, B	Turn video On
37	05117	Autostop	05117 Autostop	Play to the segment end
43		VOFF	*, 1, C	Turn on Blue Screen
44	00050	Wait	00050 Stop	Wait for 5.0 seconds
50	05619	Search	05619 Search	Start Segment #3
56		VON	*, 1, B	Turn video On
57	06570	Autostop	06570 Autostop	Play to the segment end
63		VOFF	*, 1, C	Turn on Blue Screen
64	00050	Wait	00050 Stop	Wait for 5.0 seconds
70	06700	Search	06700 Search	Start Segment #4
76		VON	*, 1, B	Turn video On
77	07820	Autostop	07820 Autostop	Play to the segment end
83		VOFF	*, 1, C	Turn on Blue Screen
84	00050	Wait	00050 Stop	Wait for 5.0 seconds
90	10	Branch	10 Branch	Loop to Segment #1

Sample Level II Program — RCU Entry

Example #2

Three selectable motion segments. Start up, set frame mode, audio channel 1 on, hold a still frame until RCU button 1, 2 or 3 is pressed to select one of three motion segments. At the end of each selected segment, branch back to introductory still frame. Introductory still frame is at Frame 00210. Segment One is 4450 to 05117; Segment Two is 05619 to 06570 and Segment Three is 06700 to 07820.

Flow Chart of Example #2
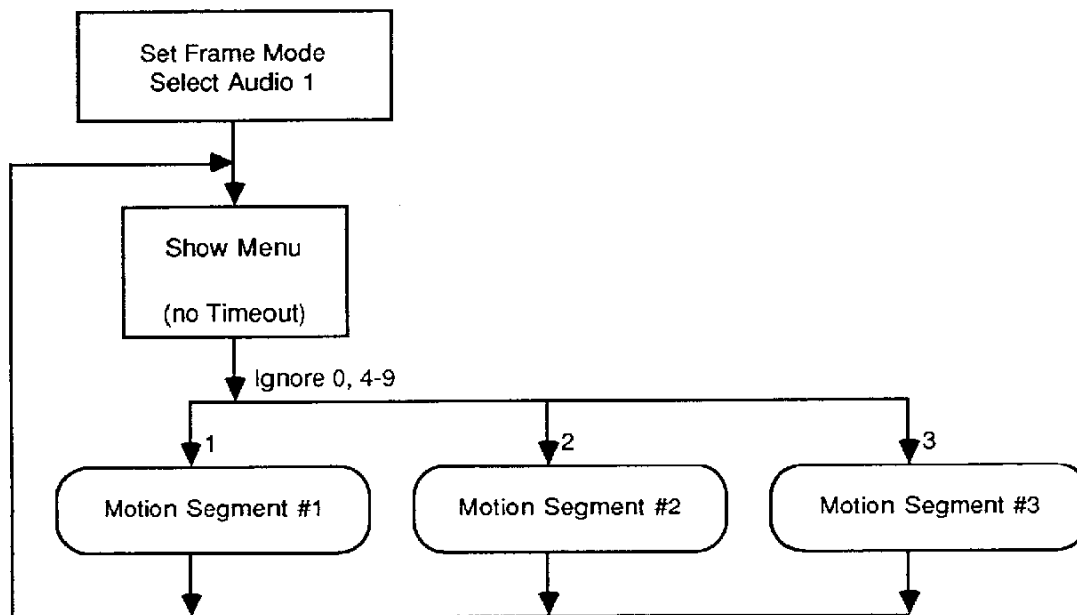
It is necessary to understand the format of the INPUT command to be able to follow this program. The other commands used here are fairly "simple" commands, so this program is fairly easy to understand. Here is the program in a format as it might be made by a programmer for a compiler:

```
            SFM                      ; Set Frame Mode
            1 Aud1       0 Aud2      ; Use Audio 1 only

Menu:    2113 Search
Ignore:     4 Input      Ignore Branch        ; Key 0, ignore it

         4450 Search   5117 Autostop   Menu Branch      ; Key 1, Segment #1
         5619 Search   6570 Autostop   Menu Branch      ; Key 2, Segment #2
         6700 Search   7820 Autostop   Menu Branch      ; Key 3, Segment #3

                       Ignore Branch        ; Keys 4-9, ignore
```

Sample Level II Program — RCU Entry

Example #2 in "RCU entry" format:

Address	Arg.	Command	RCU Input	Comments
0		SFM	*, 8, E	Set Frame Mode
1	1	Audio1	1, Audio1	Turn on Audio 1
3	0	Audio2	0, Audio2	Turn off Audio 2
5	02113	Search	02113 Search	Show Menu Frame
11	0004	Input	0004 Input	Wait for Input
16	011	Branch	011 Branch	Key 0: Ignore it
20	04450	Search	04450 Search	Key 1: Start Segment #1
26	05117	Autostop	05117 Autostop	Play to the segment end
32	05	Branch	05 Branch	Return to the Menu
35	05619	Search	05619 Search	Key 2: Start Segment #2
41	06570	Autostop	06570 Autostop	Play to the segment end
47	05	Branch	05 Branch	Return to the Menu
50	06700	Search	06700 Search	Key 3: Start Segment #3
56	07820	Autostop	07820 Autostop	Play to the segment end
62	05	Branch	05 Branch	Return to the Menu
65	11	Branch	11 Branch	Ignore buttons 4-9