In the VZ200/300 the address space from 6800H-6FFFH has been
allocated to memory mapped I/O for keyboard scanning,
cassette input and output, sound and video attributes. This
area has not been fully decoded so in the case of cassette
I/O, sound and video attributes, a read or write to any
address within the range 6800H-6FFFH will work. In the case
of keyboard scanning the situation is a little more complex
because row selection is driven from the state of the
low-order address lines (see Appendix 4).

A Basic POKE to 6800H (26624 decimal) will load the data into
the output latch decoded to this address range. The bits of
this output latch are allocated as follows:-

BIT NUMBER	FUNCTION
0	One side of a push-pull drive for the output speaker (see bit 5).
1	Unused.
2	Cassette output drive line.
3	Mode [0=mode(0), 1=mode(1)]
4	Background colour.
5	Other side of push-pull drive to speaker.
6	Unused.
7	Unused.

Notice that in order to alter the contents of one bit you
need to load in all eight bits of the latch. Therefore you
need to keep track of the state of the other bits in the
latch to prevent, say, the toggling of the cassette output
bit from causing spurious output from the speaker or
switching the mode of the video. For this reason a copy of
the output latch is maintained at 783BH (30779 decimal) and
should be updated with any new pattern that you are
outputting to the latch.

Listing 12.3 is a Basic demonstration program which shows how
to switch screen modes without using the MODE( ) command:-

Listing 12.3

```
100 L=PEEK(30779)        :REM LOOK UP COPY OF LATCH
110 M=(L) OR (8)         :REM MAKE BIT 3 = 1 (MODE(1))
120 POKE 26624,M         :REM UPDATE OUTPUT LATCH
130 POKE 30779,M         :REM UPDATE COPY OF LATCH
140 FOR D=1 TO 500:NEXT D:REM DELAY TO SEE WHATS HAPPENING
150 L=PEEK(30779)        :REM LOOK UP COPY OF LATCH
160 M=(L) AND (55)       :REM MAKE BIT 3 = 0 (MODE(0))
170 POKE 26624,M         :REM UPDATE OUTPUT LATCH
180 POKE 30779,M         :REM UPDATE COPY OF LATCH
190 FOR D=1 TO 500:NEXT D:REM DELAY TO SEE
200 GOTO 100             :REM DO IT AGAIN
```

14.04 CASSETTE INPUT

Reading the cassette input line is done by PEEKing location 6800H and testing the level of bit 6. As the signal of the audio data comes in from the cassette recorder the level on bit 6 changes from one to zero. There are special software routines in the VZ200/300 ROM to decipher these ones and zeros into bytes which form the program to be loaded into memory.

Actually, it is a pretty useless exercise to use Basic to read this input line as any changes are occurring too fast for Basic to catch all the data. Machine code must be used in this area.

Connecting a computer to the outside real world is one of the more fascinating aspects of micro-computing and opens up another world of real-time data acquisition, digitizers, and control of external hardware devices. Venturers into this world require not only good knowledge in the software area but also expertise in hardware design.

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