Section 10: Interrupts

The ENABLE feature gives XYBASIC the ability to handle interrupts and thus allows concurrent processing; you can continually check for the occurrence of an event while running a program.

ENABLE

Sometimes you may want to monitor or control external devices continuously while simultaneously executing a program. XYBASIC lets you use the ENABLE command to implement interrupts which do so. ENABLE uses the same syntax as the WAIT command, described in Section 9 above. Its operation is similar to WAIT, except that XYBASIC does not suspend processing until the condition you specify is fulfilled. Instead, the condition is checked before executing each program command (although no checking occurs before direct mode commands are executed). If it is not fulfilled, the program command is executed. If it is fulfilled, program execution is interrupted and the subroutine located at the line number specified in the ENABLE is executed instead. When the routine RETURNs, the interrupted program is resumed.

For example, suppose you wish to perform some computations and simultaneously print data on a lineprinter as fast as possible. If bit 0 of output port 6 becomes 1 when your printer is ready to receive more data, you can use ENABLE as in the following program fragment.

```
NEW
10 ENABLE 100, 6, 1, &11111110
20 GOTO 200
100 'SUBROUTINE TO SEND NEXT DATA TO PRINTER
...
190 RETURN
200 'MAIN PROGRAM
...
```

Here the main program is executed until bit 0 of port 6 becomes 1. Then the program is interrupted, and the subroutine at line 100 sends data to the printer. The RETURN of line 190 causes the main program to be resumed where it was interrupted.

Whenever an interrupt occurs, it is suspended (that is, its condition is not checked) until the return from the specified routine; this prevents the interrupt from interrupting itself. You must be careful not to RETURN from an interrupt routine unless your program has either DISABLEd the interrupt (as explained below) or done something to make the ENABLE condition false. Otherwise the interrupt will occur again immediately after the RETURN, and only the interrupt routine will be executed. Interrupts remain active during WAIT but not during TIME and DELAY.

You may not ENABLE more than eight interrupts at once; if you try to ENABLE more than eight, an EN (ENABLE) error will occur. The order of ENABLEing determines the priority of the interrupts; the conditions are tested in the order of the ENABLE commands. ENABLE is legal only in program mode; an ID (Illegal Direct) error will occur if you use it in direct mode.