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junior program tester

a valuable aid in writing programs

The register check is not very complicated and is a great aid to all Junior Computer owners. In order to display the contents of the accumulator and of the X- and Y-register only a few commands are needed; these are contained in the program and ensure that the contents of the accumulator and of the X- and Y-register are displayed from left to right. A few commands are also contained in the program for displaying the processor status register. Something more is required, however. In addition to the software a small hardware change is needed; figure 1 shows the circuit. Since there is insufficient space on the display for hexadecimal representation of the processor status register contents, the flag statuses are displayed bit-by-bit (there is not much point in indicating the status of the individual flags in hexadecimal notation). The program loads the contents of the processor status register into port A. An 8-bit data latch, IC1, accepts the logic states of the individual flags and displays them using drivers N1 ... N7 and LEDs D1 ... D7.

You have written your own program. Now it is merely necessary to enter the program and run it. In many cases however, the bugs are having a field day. Where does one start with debugging? The first items to check are the contents of the accumulator, the X- and Y-register and the processor status register. This is usually the quickest way of finding possible errors.

The circuit of figure 1 should be constructed on an additional board which can then be plugged into the port connector when needed. The program to be tested is provided with a BRK command at a suitable point, and the BRK vector must point to the start of the following test program:

```
85   FB        STA POINTH
86   FA        STX POINTL
84   F9        STY INH
68             PLA          Fetch processor
                            status register and
                            load it into port A

8D   80   1A   STA PAD
A9   FF        LDA # FF
8D   81   1A   STA PADD     Port A output
8D   83   1A   STA PBDD     Port B output =
                            clock signal for
                            FF1 . . . FF7

/ 20 8E   1D   JSR SCANDS
4C   XX   XX   JMP          Back to /
```

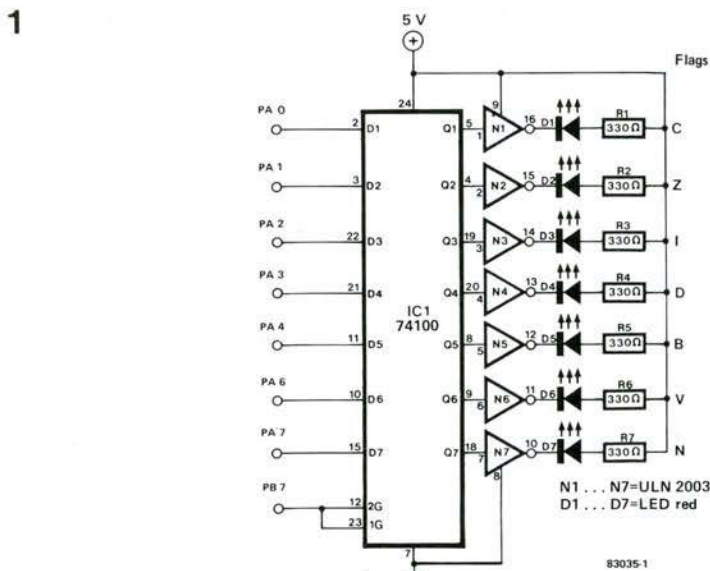The only escape from the test program is via RST.

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Figure 1. Two IC's, seven resistors and seven LEDs: the total hardware investment.

N1 . . . N7 = ULN 2003
D1 . . . D7 = LED red

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