6.12
During the execute phase of LDAA, the data bus carries a number into the microprocessor. During the fetch phase of any instruction, the data bus carries numbers into the microprocessor.

6.31
Writing to the STAF bit in the PIOC register does nothing. In order to clear the STAF flag, the program first read the PIOC register and then read the PORTCL register.

6.37
The computer responds only to a change in the push button because the flag input responds only to transitions. The flag is programmed to respond to low-to-high transitions, so it will only respond when the push button is pushed. After the button is pushed, holding the push button does nothing so that the program will not read the thumbwheel switch again. Releasing the push button also does nothing.

6.39
The main program never again executes even a single instruction. The ISR runs repeatedly as fast as it can continuously reading the thumbwheel switch and updating the display. The push button switch has no effect.

6.40
The main program runs forever. The ISR never runs, so the display is never updated and it continues to display the value 0 as it was initialized. The push button switch has no effect.

6.42
The flag was not cleared.

6.36
Next page
** EXERCISE 6-36 **
** COPY THUMBWHEEL SWITCHES TO DISPLAYS WHEN **
** PUSHER BUTTON IS PUSHED **
** USE POLLING TECHNIQUE FOR TIMING **
** TWO FOUR BIT THUMBWHEEL SWITCHES WIRED TO **
** ...BITS 0-7 OF PORT C **
** TWO FOUR BIT DISPLAYS WIRED TO BITS 0-7 OF PORT B **
** PUSHER BUTTON SWITCH WIRED TO STRA PIN SO IT GOES **
** ...LOW TO HIGH ON PUSH **
** **
** ** SYMBOL DEFINITIONS **
** **
** 68HC11 REGISTERS **
** FIOC EQU $1002 PARALLEL I/O CONTROL REGISTER **
** PORTC EQU $1003 I/O PORT C REGISTER **
** PORTA EQU $1004 OUTPUT PORT B REGISTER **
** PORTC EQU $1005 PORT C LATCH REGISTER **
** DDIRC EQU $1007 DATA DIRECTION REGISTER C **
** **
** ** PROGRAM SECTION **
** **
** ORG $C100 **
** **
** * INITIALIZATION **
** **
** * INITIALIZE PORT B **
** * INITIALIZE OUTPUTS TO ZEROS **
** CLR PORTB 0=LOW **
** * INITIALIZE PORT C **
** * SET UP IN1 AND OUTS **
** CLR DDIRC 0=IN, 1=OUT **
** * SET UP FIOC **
** LDAA #$02 STAP RESPOND ON LOW TO HIGH **
** STA FIOC ...TRANSITION ON STRA PIN **
** * PUSHER BUTTON PUSHER? **
** * PBTEST TST FIOC TEST STAP FLAG **
** BPL PBTEST TRICK! FLAG AT SIGN BIT **
** * COPY THUMBWHEEL SWITCHES TO DISPLAYS **
** * READ THUMBWHEEL SWITCHES AND CLEAR I/O FLAG **
** LDAA FIOC TWO INSTRUCTIONS TO CLEAR STAP **
** LDAA PORTC ...FLAG AND INPUT SWITCHES **
** * CONTROL DISPLAYS **
** STA PORTB OUTPUT TO PORT B **
** BRA PBTEST **
** END **

C100 7F 10 04 **
C103 7F 10 07 **
C106 B6 02 **
C108 B7 10 02 **
C10B 7D 10 02 **
C10E 2A FB **
C110 B6 10 02 **
C113 B6 10 03 **
C116 B7 10 04 **
C119 20 F0 **
C11B **