

## Programming Project Checkpoint#2

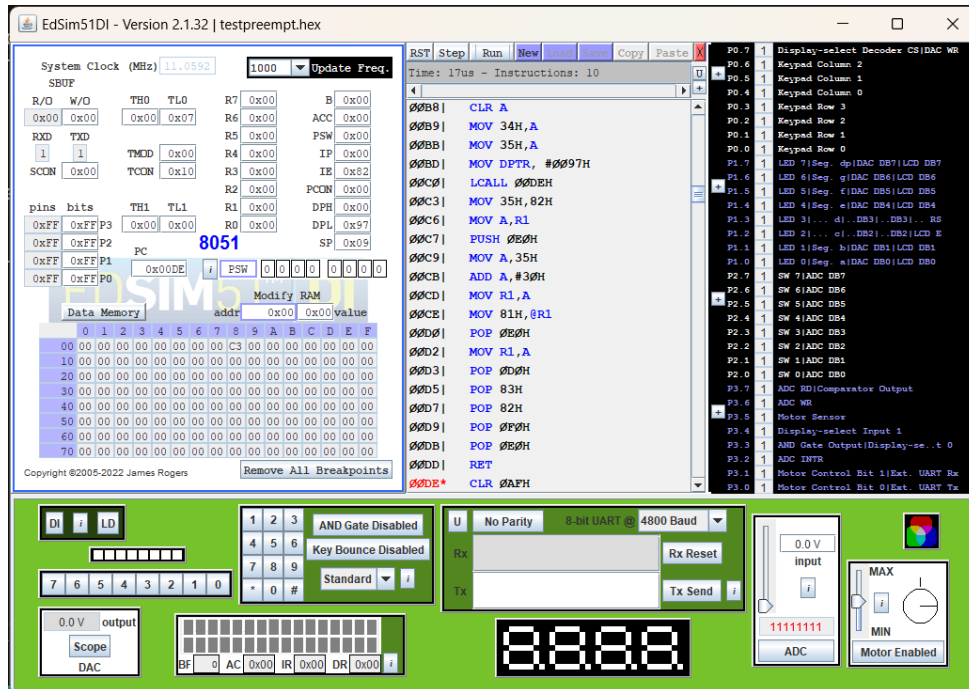
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### [1] Typescript for compilation

```
Ubuntu x + v
(sdcc) [2022-12-05 13:35:24] jojoclt@ZephyG14:~/OS-edsim/chkpnt2 (master *)
$ make clean
rm *.hex *.ihx *.lnk *.lst *.map *.mem *.rel *.rst *.sym
rm: cannot remove '*.hex': No such file or directory
rm: cannot remove '*.ihx': No such file or directory
rm: cannot remove '*.lnk': No such file or directory
rm: cannot remove '*.lst': No such file or directory
rm: cannot remove '*.map': No such file or directory
rm: cannot remove '*.mem': No such file or directory
rm: cannot remove '*.rel': No such file or directory
rm: cannot remove '*.rst': No such file or directory
rm: cannot remove '*.sym': No such file or directory
make: *** [Makefile:25: clean] Error 1
(sdcc) [2022-12-05 13:35:28] jojoclt@ZephyG14:~/OS-edsim/chkpnt2 (master *)
$ make
sdcc -c testpreempt.c
sdcc -c preemptive.c
preemptive.c:142: warning 85: in function ThreadCreate unreferenced function argument : 'fp'
sdcc -o testpreempt.hex testpreempt.rel preemptive.rel
(sdcc) [2022-12-05 13:35:29] jojoclt@ZephyG14:~/OS-edsim/chkpnt2 (master *)
$ |
```

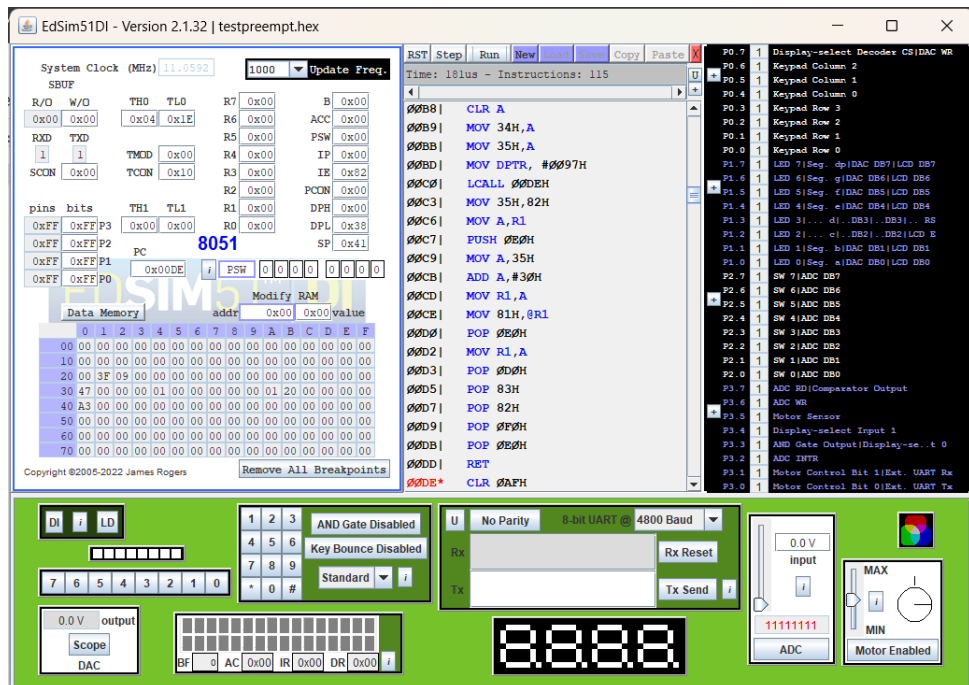
## [2] Screenshots and explanation

### Before Each ThreadCreate Call



- ThreadCreate(main)

DPTR of main is pushed to SP, resulting in the change from 0x07 to 0x09



- ThreadCreate(Producer)

Because when the ThreadCreate(main) is called, we call RESTORESTATE, resulting in SP equals 0x3F, then the return address is pushed, by 2 bytes, it changes to 0x41.

## Producer running

EdSim51DI - Version 2.1.32 | testpreempt.hex

System Clock (MHz): 11.0592 | 1000 Update Freq.

RST Step Run New Load Save Copy Paste

Executed 0x0038: MOV 3CH, #41H | Time: 9ms

Assembly:

```

0038* MOV 3CH, #41H
003B| MOV A, 3AH
003D| JZ 0FCH
003F| SETB 00H
0041| JBC 0AFH, 02H
0044| CLR 00H
0046| MOV R7, 3CH
0048| INC 3CH
004A| MOV 3BH, R7
004C| MOV A, 3CH
004E| ADD A, #0A5H
0050| JNC 03H
0052| MOV 3CH, #41H
0055| MOV A, 3AH
0057| CJNE A, #01H, 00H
005A| MOV 01H, C
005C| CLR A
005D| RLC A
005E| MOV 3AH, A
0060| MOV C, 00H
0062| MOV 0AFH, C

```

Hardware Panel:

- DI: 1, LD: 1
- AND Gate Disabled
- Key Bounce Disabled
- Standard
- U: No Parity, 8-bit UART @ 4800 Baud
- Rx: [ ] Rx Reset
- Tx: [ ] Tx Send
- 0.0V output
- Scope DAC
- 7-segment display: 8888
- 4-digit display: 0000
- ADC: 11111111
- Motor Enabled

At address 0x38 (defined in map file), Data Memory (0x3C) = 0x41 or ASCII 65 -> 'A'

## Consumer running

EdSim51DI - Version 2.1.32 | testpreempt.hex

System Clock (MHz): 11.0592 | 1000 Update Freq.

RST Step Run New Load Save Copy Paste

Executed 0x006F: SETB 8EH | Time: 374us

Assembly:

```

0066* ORL 89H, #20H
0069| MOV 8DH, #0FAH
006C| MOV 98H, #50H
006F| SETB 8EH
0071| SETB 99H
0073| MOV A, 3AH
0075| JNZ 0FCH
0077| JNB 99H, 0F0H
007A| SETB 02H
007C| JBC 0AFH, 02H
007F| CLR 02H
0081| MOV 99H, 3BH
0084| CLR 99H
0086| MOV A, 3AH
0088| CJNE A, #01H, 00H
008B| MOV 03H, C
008D| CLR A
008E| RLC A
008F| MOV 3AH, A
0091| MOV C, 02H
0093| MOV 0AFH, C

```

Hardware Panel:

- DI: 1, LD: 1
- AND Gate Disabled
- Key Bounce Disabled
- Standard
- U: No Parity, 8-bit UART @ 4800 Baud
- Rx: [ ] Rx Reset
- Tx: [ ] Tx Send
- 0.0V output
- Scope DAC
- 7-segment display: 8888
- 4-digit display: 0000
- ADC: 11111111
- Motor Enabled

0x66, address for Consumer (defined in .map file), the TMOD, TH1, SCON are initialized.

Is Timer Interrupt triggering?

Yes, when there is rollover, the time is count-up, so it calls the myTimer0Handler to switch threads.