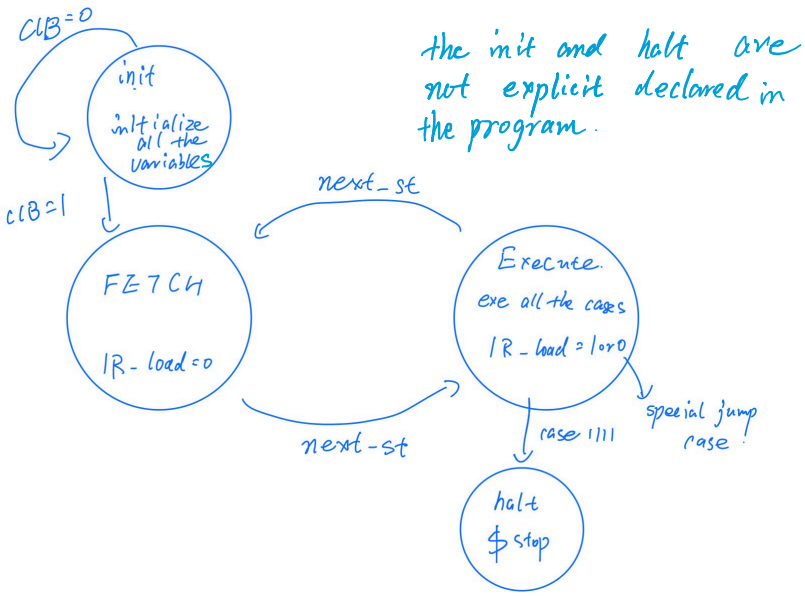
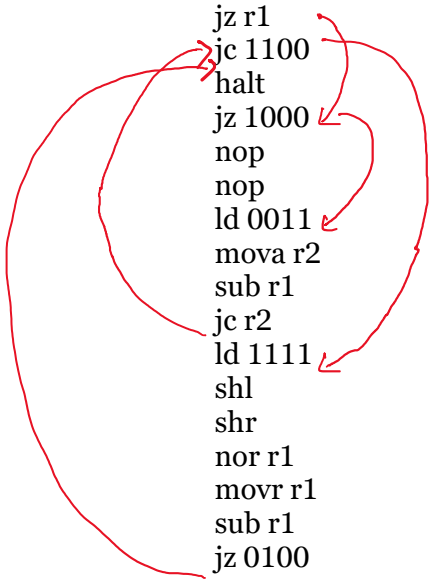
CSE664 Intro System-on-Chip Design
Project 1 part 2

1. FSM of controller

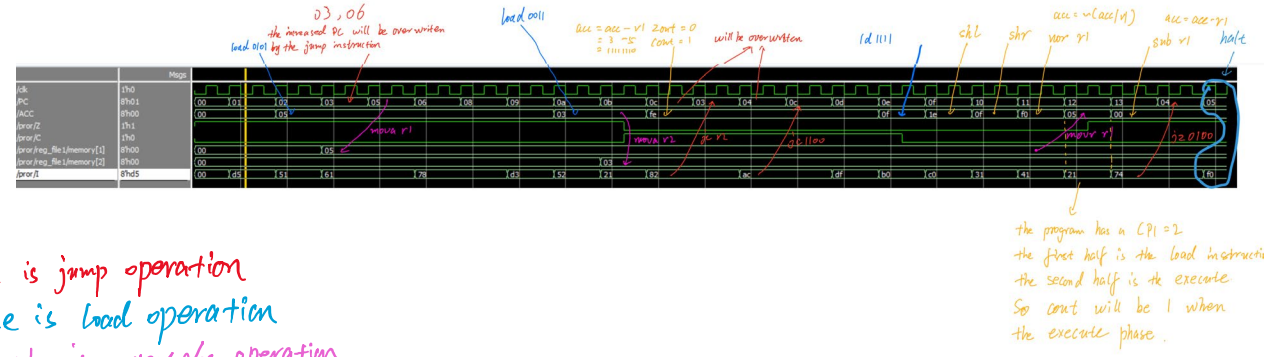


2. Assembly code



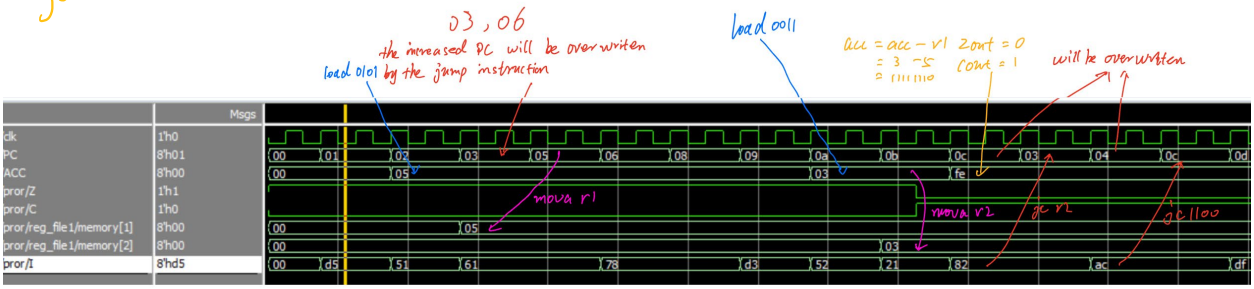
ld 0101	d5
mova r1	51
jz r1	61
jc 1100	AC
halt	f0
jz 1000	78
nop	00
nop	00
ld 0011	d3
mova r2	52
sub r1	21
jc r2	82
ld 1111	df
shl	b0
shr	c0
nor r1	31
movr r1	41
sub r1	21
jz 0100	74
nop	00

3. Waveform



red is jump operation
blue is load operation
purple is mova/r operation
yellow is ALU operation

Figure 1 The whole waveform



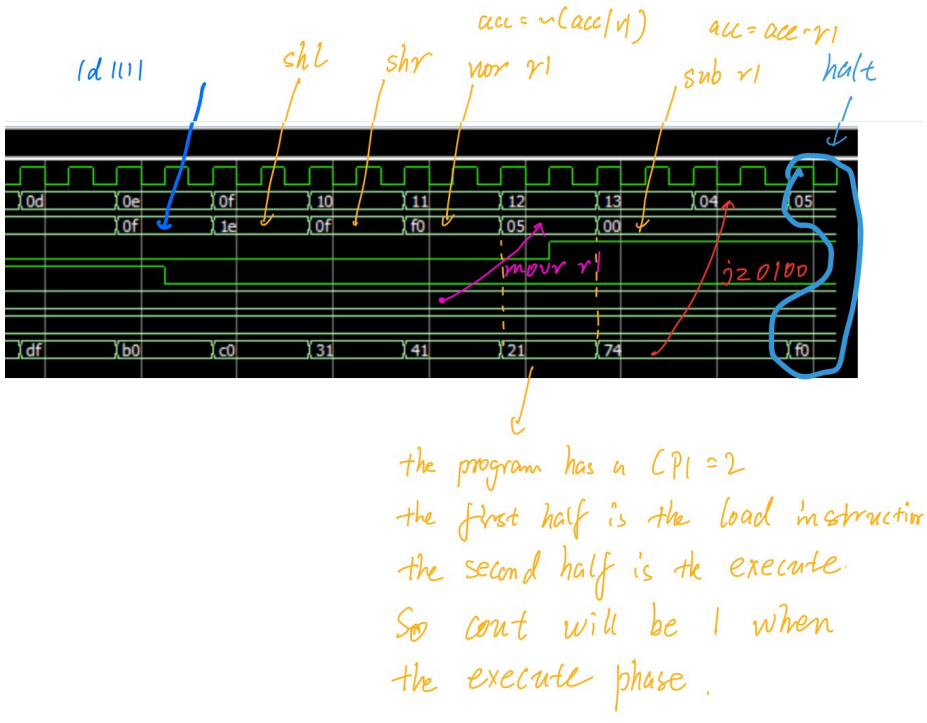


Figure 2&3 Same waveform but cropped for better view

4. PC issue
    a. The start of the PC is different from the sample program.
    b. The program counter will increase by 1 even if jump happens, but PC will later be overwritten by the jump target PC. So, this won't affect how the program works but will make the PC different from the sample program.

Both of the issue won't affect how the program works but will make expected ACC and expected PC different from the sample program.