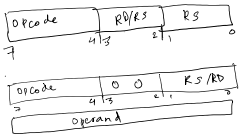
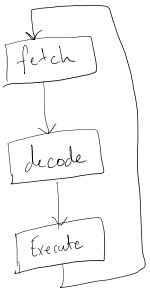
Instruction Format



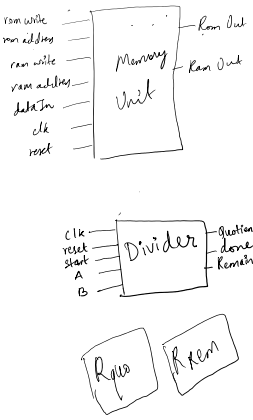
1 Byte Format

2 Byte Format.

Control Unit



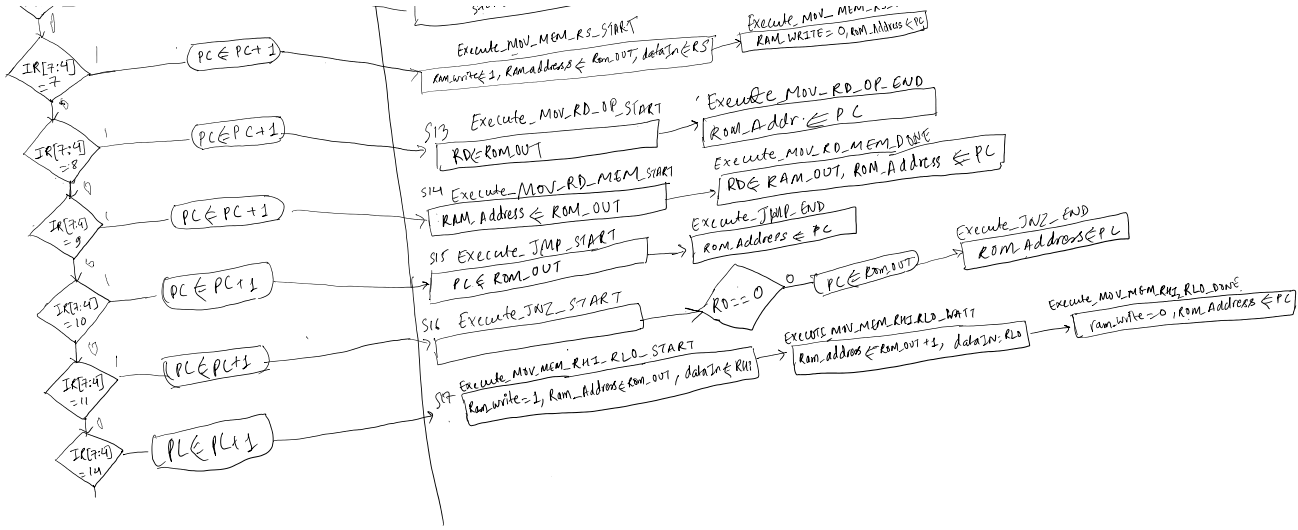
DATAPATH

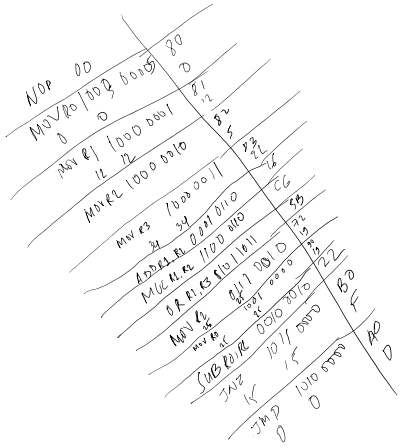


Fetch State Details

Decode State Details

Execute State Details


IR[7:4] = 7
PC ⇐ PC+1
Execute_MOV_MEM_RS_START
RAM_write ⇐ 1, RAM_address ⇐ Rom_OUT, dataIn ⇐ RS
Execute_MOV_MEM_RS_...
RAM_WRITE = 0, RAM_Address ⇐ PC
IR[7:4] = 8
PC ⇐ PC+1
S13 Execute_MOV_RD_OP_START
RD ⇐ ROM_OUT
Execute_MOV_RD_OP_END
ROM_Addr ⇐ PC
IR[7:4] = 9
PC ⇐ PC+1
S14 Execute_MOV_RD_MEM_START
RAM_Address ⇐ ROM_OUT
Execute_MOV_RD_MEM_DONE
RD ⇐ RAM_OUT, ROM_Address ⇐ PC
IR[7:4] = 10
PC ⇐ PC+1
S15 Execute_JMP_START
PC ⇐ ROM_OUT
Execute_JMP_END
ROM_Address ⇐ PC
IR[7:4] = 11
PC ⇐ PC+1
S16 Execute_JNZ_START
RO == 0
0
PC ⇐ ROM_OUT
Execute_JNZ_END
ROM_Address ⇐ PC
IR[7:4] = 14
PC ⇐ PC+1
S17 Execute_MOV_MEM_RHI_RLO_START
Ram_write = 1, Ram_Address ⇐ Rom_OUT, dataIn ⇐ RHI
Execute_MOV_MEM_RHI_RLO_WATT
Ram_address ⇐ ROM_OUT + 1, dataIN ⇐ RLO
Execute_MOV_MEM_RHI_RLO_DONE
ram_write = 0, ROM_Address ⇐ PC


NOP 00
MOV R0 1000 0000
0 0
MOV R1 1000 0001
12 12
MOV R2 1000 0010
MOV R3 1000 0011
34 34
ADD R1 R2 0001 0110
MUL R1 R2 1100 0110
OR R1 R3 1101 1011
MOV R2 0011 0010
25 25
MOV R0 0010 0010
SUB R0 R1 0010 0010
JNZ 1011 0000
15 15
JMP 1010 0000
0 0
80
0
81
12
82
5
83
22
26
C6
53
72
13
22
B0
F
A0
0