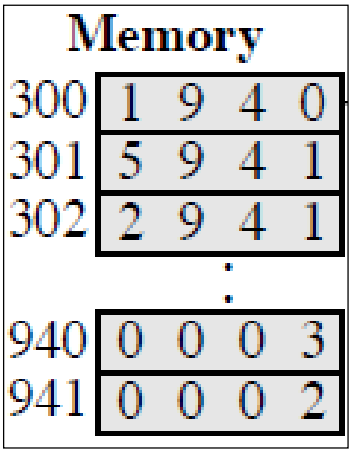
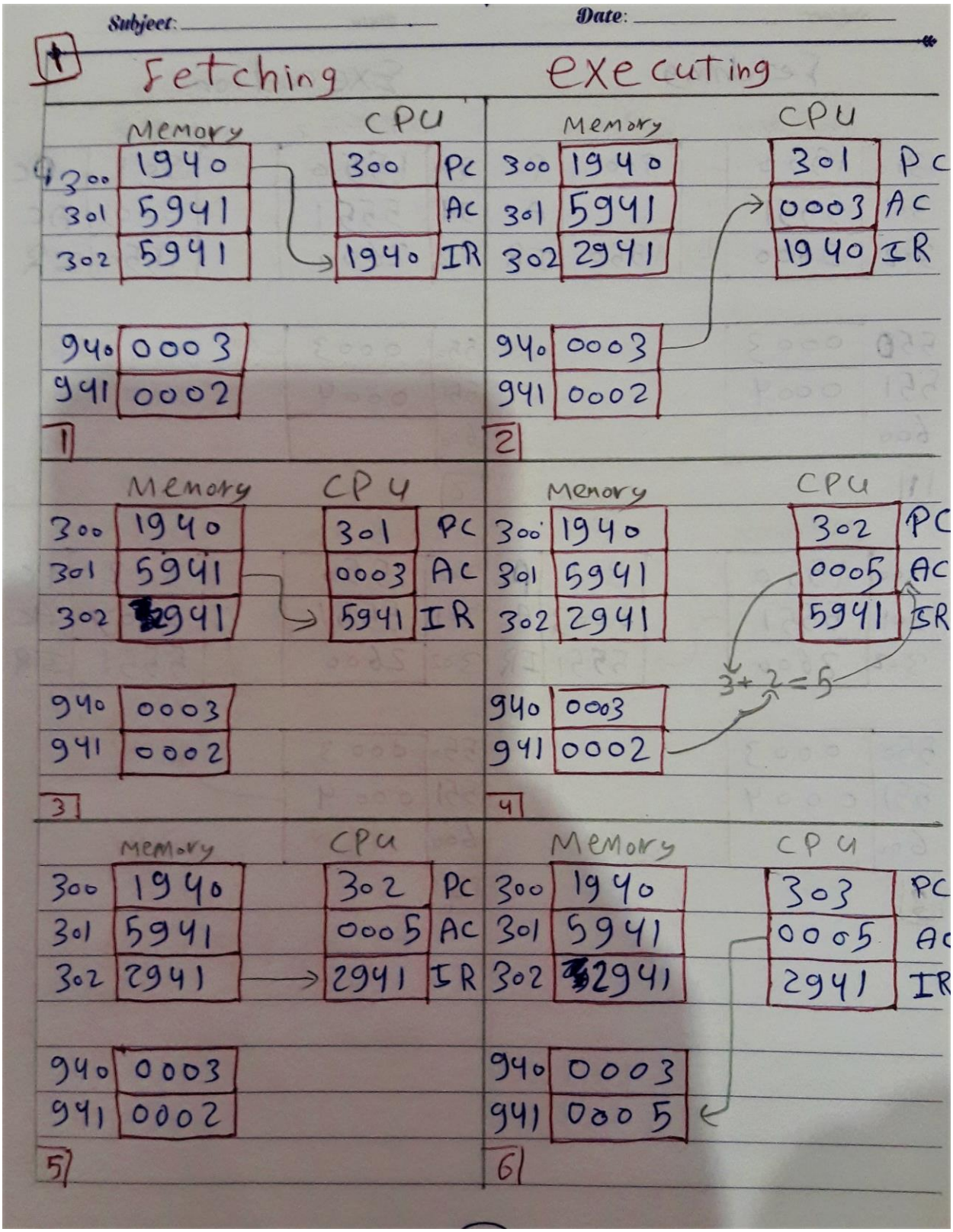
Quiz 1 20/2/2020

In the Hypothetical Machine the contents of memory was as shown. And PC contents is 300. Show the contents of memory and PC , AC , IR after execute three instructions (three fetch cycle and there execute cycle)



Answer (1)


Subject:
Date:
Fetching
executing
Memory
CPU
300 1940
301 5941
302 5941
940 0003
941 0002
PC 300
AC
IR 1940
1
PC 301
AC 0003
IR 1940
302 2941
2
PC 302
AC 0005
IR 5941
3+2=5
3
PC 303
AC 0005
IR 2941
4
5
6

Show the contents of PC , AC and IR and memory after the execution of each instruction of the following program on the Hypothetical Machine:

300 LOAD 550

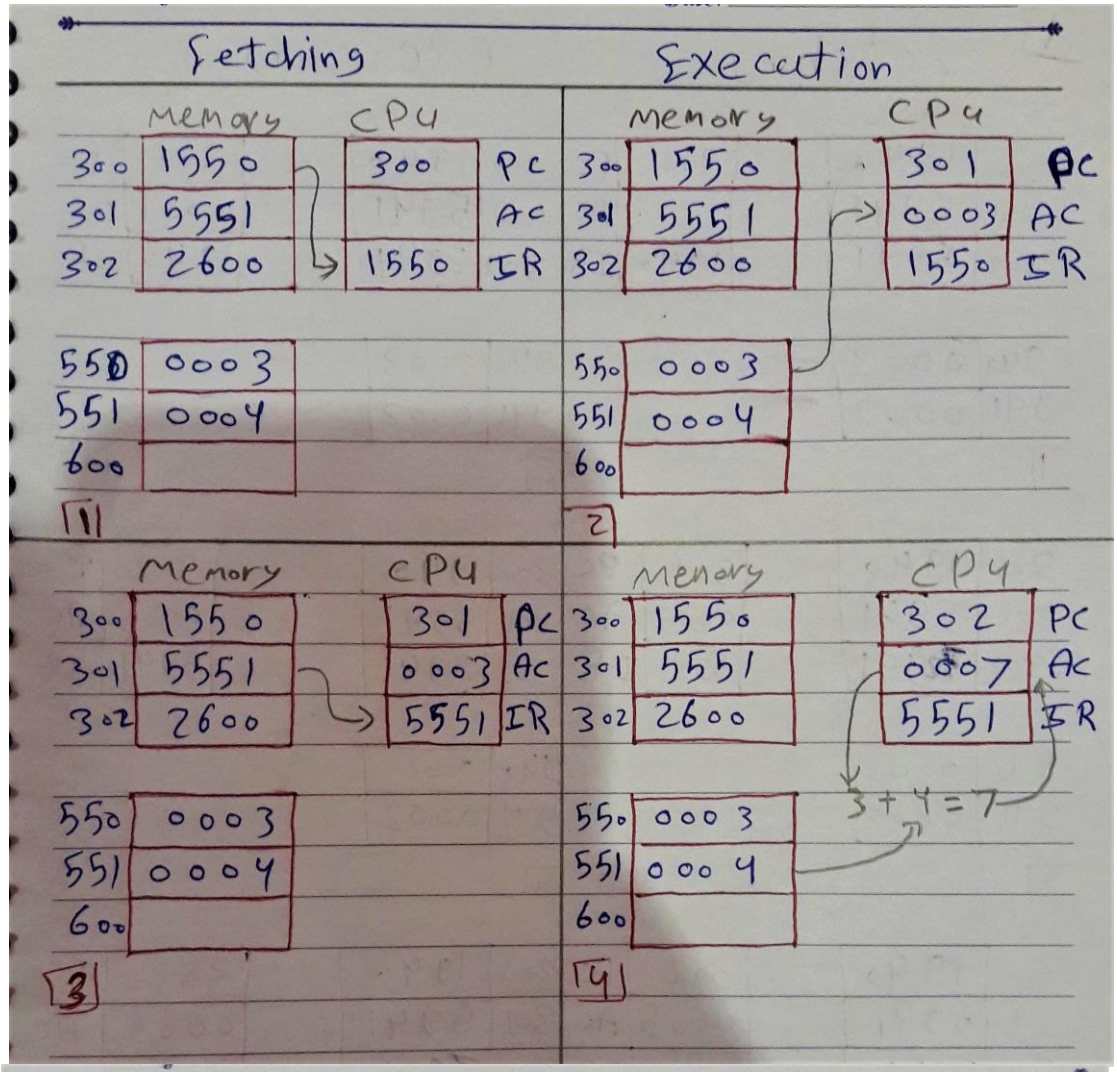
301 ADD 551

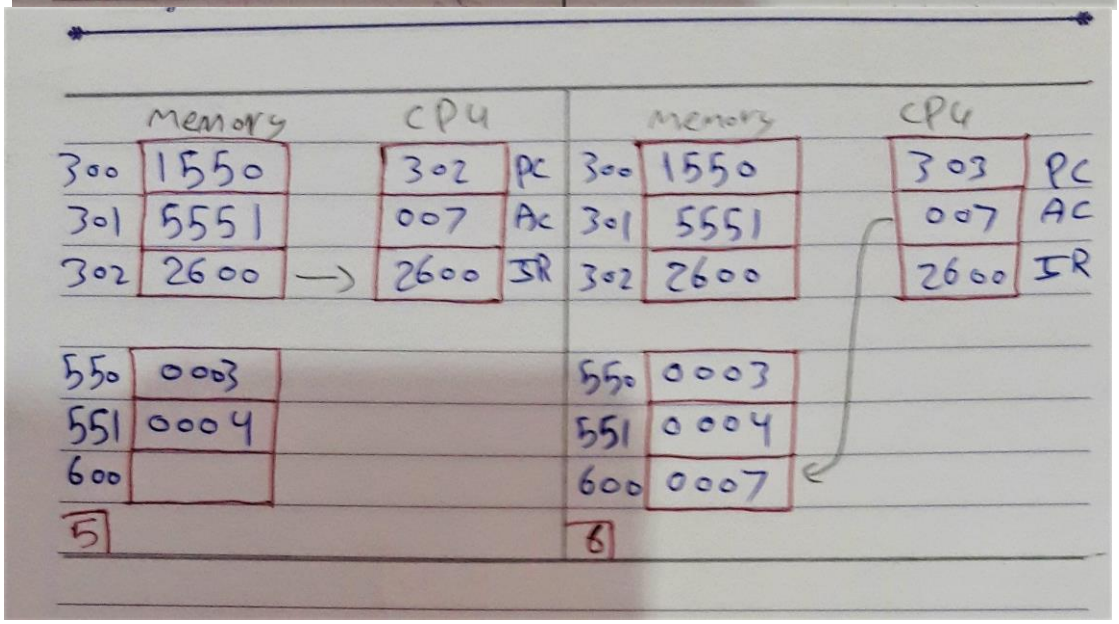
302 STORE 600

Where the contents of memory at 550 is 3 and at 551 is 4.

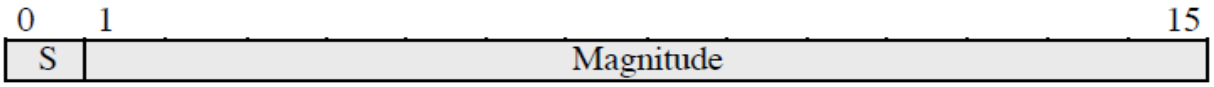
The following figure provide the main characteristics of Hypothetical Machine.

Answer (2)


Fetching
Execution
Memory
CPU
300 1550
301 5551
302 2600
550 0003
551 0004
600
PC
AC
IR
1
2
3
4
3 + 4 = 7


Memory
CPU
300 1550
301 5551
302 2600
550 0003
551 0004
600 0007
PC
AC
IR
5
6

(a) Instruction format



(b) Integer format

Program Counter (PC) = Address of instruction
Instruction Register (IR) = Instruction being executed
Accumulator (AC) = Temporary storage

(c) Internal CPU registers

0001 = Load AC from Memory
0010 = Store AC to Memory
0101 = Add to AC from Memory

(d) Partial list of opcodes

The hypothetical machine also has two I/O instructions:

0011 = load AC from I/O

0111 =store AC to I/O

In these case, the 12-bi address identifies a particular I/O device. Show the program execution for the following program:

1. Load AC from device 5.
2. Add contents of memory location 940.

3. Store AC to device 6.

Assume that the next value retrieved from device 5 is 3 and that location 940 contains a value of 2.

Answer (3)