

# CS & IT ENGINEERING

## Computer Organization Architecture

### Instruction and Addressing Modes

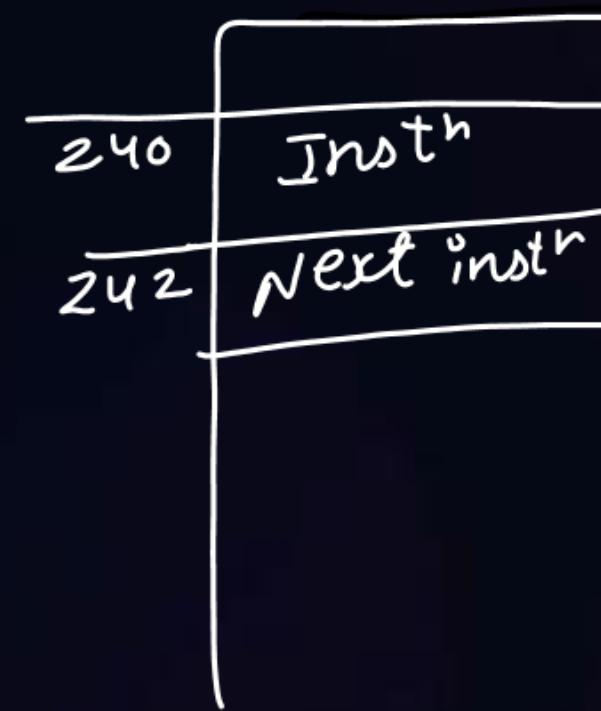
DPP 02 Discussion Notes

By- Vishvadeep Gothi sir



#Q. A relative branch mode type instruction is stored in memory starting from address 240. The branch is made to an address 140. What should be the value of relative address field of the instruction, if each instruction is stored on 2 memory locations?

Note: All numbers are in decimal



$$\text{Target} = 140 = PC + \text{offset}$$

$$140 = 242 + \text{offset}$$

$$\text{offset} = 140 - 242$$

$$= \underline{\underline{98}}$$

#Q. Consider the following:

1. ✓ Operation code
2. ✓ Source operand reference
3. ✓ Result operand reference
4. Next instruction reference

Which of the above are typical elements of machine instructions?

**A** ✓ 1, 2 and 3 only

**B** 1, 2 and 4 only

**C** 3 and 4 only

**D** 1, 2, 3 and 4

#Q. Which addressing mode helps to access table data in memory efficiently?

→ array

- A Indirect mode
- B Immediate mode
- C ✓ Auto-increment or Auto-decrement mode
- D Index mode

#Q. An addressing mode in which the location of the data is contained within the **mnemonic**, is known as?

**A**

Immediate addressing mode

**B**

✓ Implied addressing mode

**C**

Register addressing mode

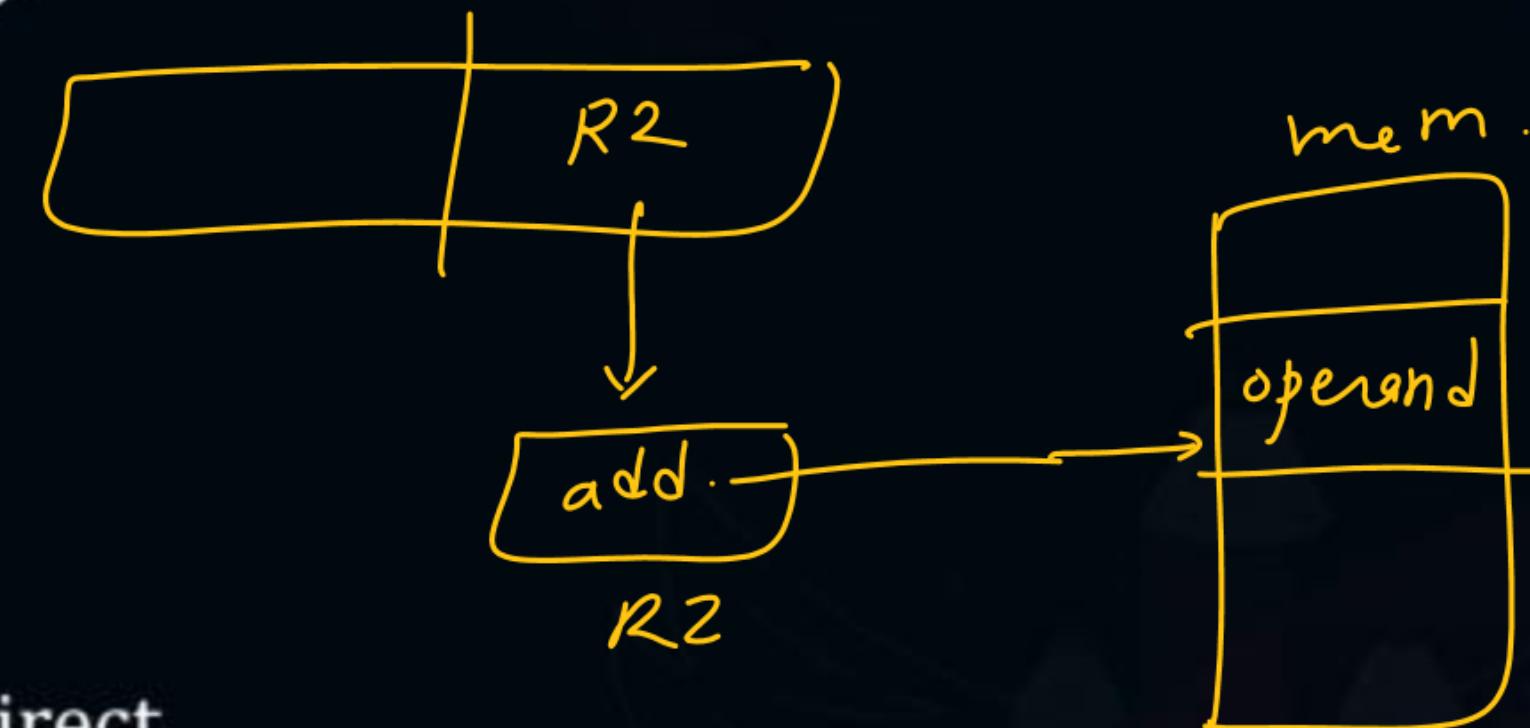
**D**

Direct addressing mode

#Q. The addressing modes used for source operand in the following instructions are respectively?

Reg.  
mode  
(destinatn)  
 $R1 \leftarrow \#5$   
 $R1 \leftarrow M[5000]$   
 $R1 \leftarrow M[R2]$

- A** Implied, direct, register
- B** Implied, direct, register indirect
- C** ✓ Immediate, direct, register indirect
- D** Immediate, direct, register



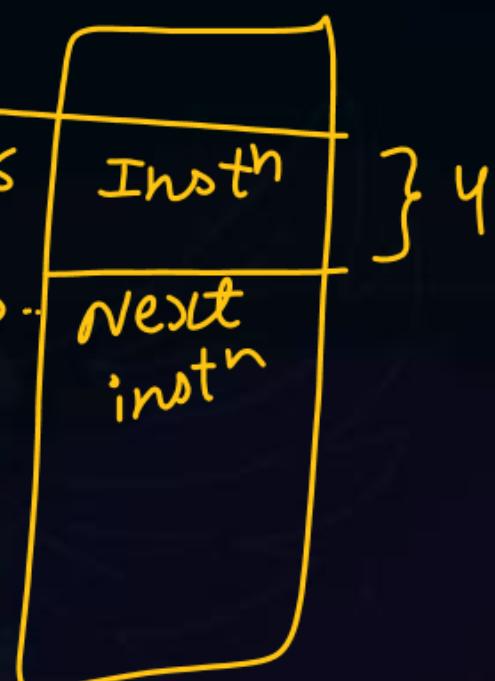
Ans = 556

#Q. Consider a PC-relative mode type branch instruction which takes branch on address 720 in memory. The instruction has offset value 160. What is the starting address of this instruction in memory, if each instruction is stored in memory on 4 locations?

Note: All numbers are in decimal

$$\begin{aligned} \text{Target } (\text{EA}) &= 720 \\ \text{offset} &= 160 \end{aligned}$$

$$\begin{aligned} 720 &= \text{PC value} + 160 \\ \text{PC} &= 720 - 160 \\ &= 560 \end{aligned}$$



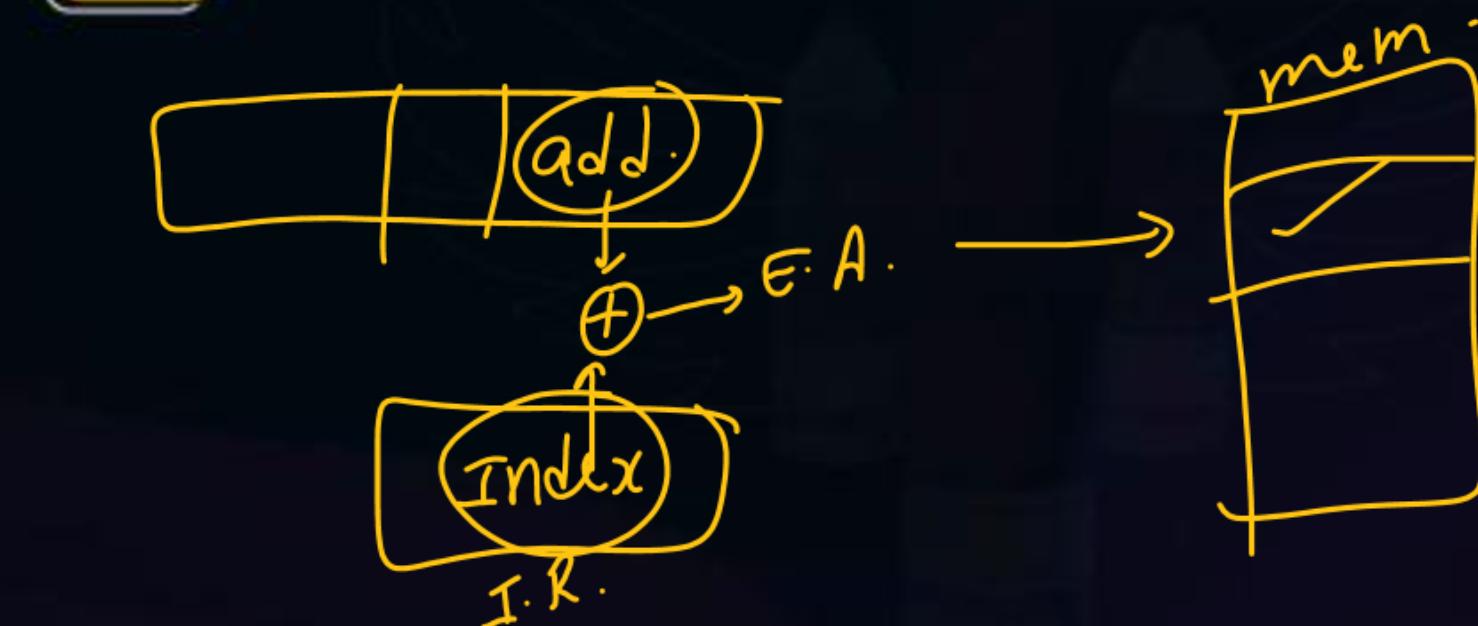
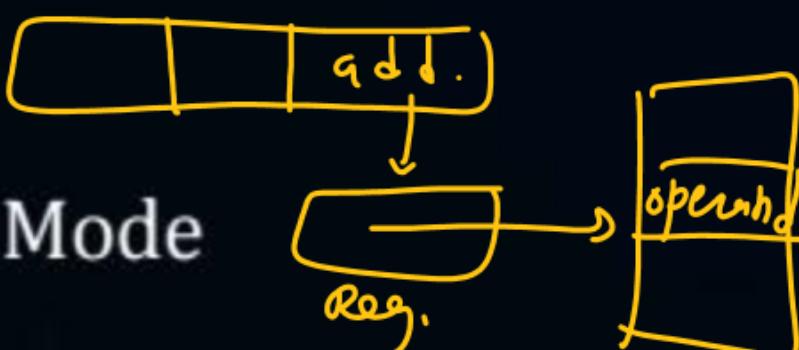
#Q. Consider the system in which in fetch cycle complete instruction is fetched. Which of the following addressing modes do(es) not require memory access for operand after fetch cycle?

A Register Mode

B Register Indirect Mode

C Indirect Mode

D Indexed Mode





THANK - YOU