

Address	Memory	
200	Load to AC	Mode
201	Address = 500	
202	Next Instruction	
399	450	
400	700	
500	800	
600	900	
702	325	
800	300	

PC = Program Counter

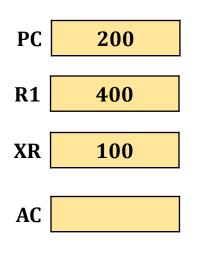
R1 = Register

XR = Index Register

AC = Accumulator

- Memory is having first instruction to load AC
- Mode will specify the addressing mode to get operand.
- Address field of instruction is 500.

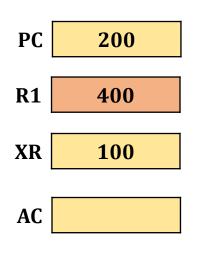
Find out the effective address of operand and operand value by considering different addressing modes.



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1. Immediate Addressing Mode

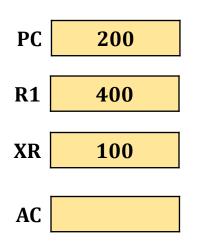
- As instruction contains immediate number 500.
- It is stored as address 201.



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'	Δ.	1: A a = b a = D /

2. Register Addressing Mode

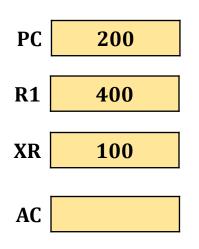
- Register R1 contains 400.
- As operand is in register so no any memory location.



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3. Register Indirect Addressing Mode

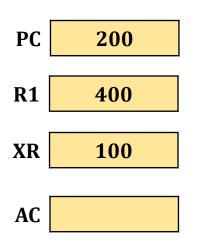
- Register R1 contains 400.
- So effective address of operand is 400.
- The data stored at 400 is 700.



Address	Memory	
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201	Address = 500	
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	Α.	1: 1 1 /

4. Direct Addressing Mode

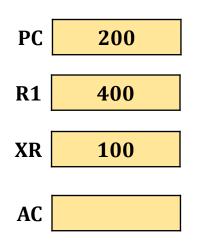
- Instruction contains the address 500.
- So effective address of operand is 500.
- The data stored at 500 is 800.



Address	Memory	
200	Load to AC	Mode
201	Address = 500	
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399	450	
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	Δ.	1: A = = b = = 1 /

5. Indirect Addressing Mode

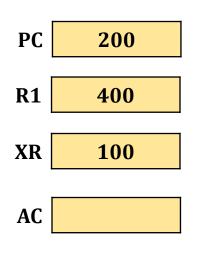
- Instruction contains the address 500.
- Address at 500 is 800.
- So effective address of operand is 800.
- The data stored at 800 is 300.



Address	Memory	
200	Load to AC	Mode
201	Address = 500	
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6. Relative Addressing Mode

- PC = 200.
- Offset = 500.
- Instruction is of 2 bytes.
- So effective address = PC + 2 + offset = 200 + 500 + 2 = 702.
- The data stored at 702 is 325.

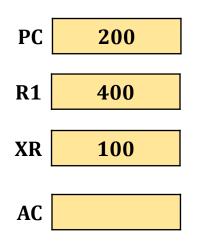


Address	Memory	
200	Load to AC	Mode
201	Address = 500	
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399	450	
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500	800	
600	900	
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7. Index Addressing Mode

- XR = 100.
- Base = 500.
- So effective address = Base + XR = 500 + 100 = 600.
- The data stored at 600 is 900.

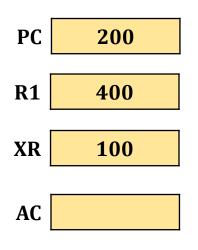
Effective Address = 600 Operand = 900

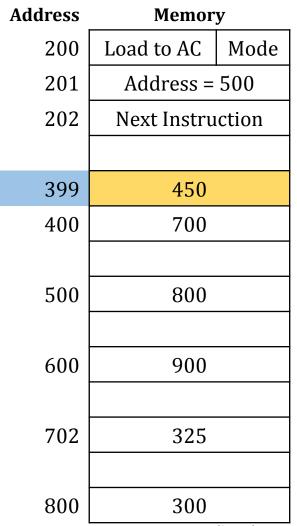


Address	Memory	
200	Load to AC	Mode
201	Address = 500	
202	Next Instruction	
399	450	
400	700	
500	800	
600	900	
702	325	
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8. Autoincrement Addressing Mode

- It is same as register indirect addressing mode except the contents of R1 are incremented after the execution.
- R1 contains 400.
- So effective address of operand is 400.
- The data stored at 400 is 700.





9. Autodecrement Addressing Mode

- It is same as register indirect addressing mode except the contents of R1 are decremented before the execution.
- R1 contains 400.
- R1 is first decremented to 399.
- So effective address of operand is 399.
- The data stored at 399 is 450.

Effective Address = 399 Operand = 450

R1 399

Addressing Mode	Effective Address	Operand
Immediate Addressing Mode	201	500
Register Addressing Mode	Nil	400
Register Indirect Addressing Mode	400	700
Direct Addressing Mode	500	800
Indirect Addressing Mode	800	300
Relative Addressing Mode	702	325
Indexed Addressing Mode	600	900
Autoincrement Addressing Mode	400	700
Autodecrement Addressing Mode	399	450