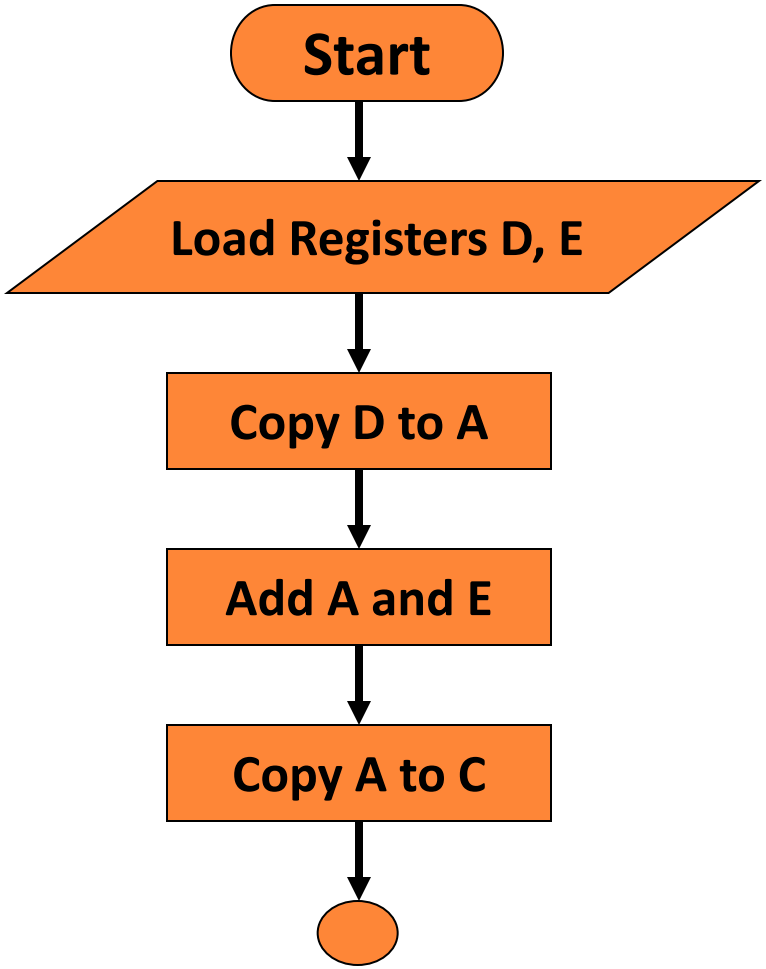
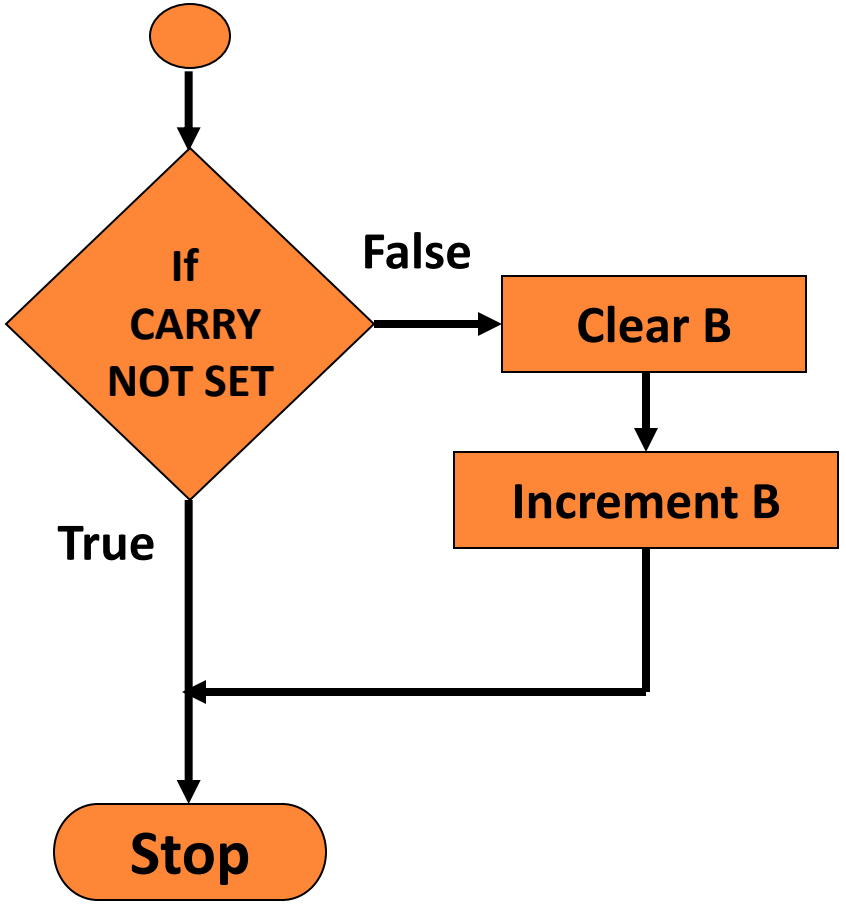
Writing an Assembly Language Program (cont.)
Lecture 6

Dronacharya Group of Institutions

Make a Flowchart





Assembly Language Program

- Load registers D, E

- Copy register D to A
- Add register E to A

- Copy A to register C

- Use Conditional Jump instructions

- Clear register B
- Increment B

- Stop processing

```
        MVI D, 2H
        MVI E, 3H
        MOV A, D
        ADD E
        MOV C, A
        JNC END
        MVI B, 0H
        INR B
END:    HLT
```

Addressing Modes of 8085

- Format of a typical Assembly language instruction is given below-

[Label:] Mnemonic [Operands] [;comments]

```
        HLT
        MVI A, 20H
        MOV M, A    ;Copy A to memory location whose
                    address is stored in register pair HL
LOAD:   LDA 2050H   ;Load A with contents of memory
                    location with address 2050H
READ:   IN 07H      ;Read data from Input port with
                    address 07H
```

- The various formats of specifying operands are called addressing modes
- Addressing modes of 8085
  1. Register Addressing
  2. Immediate Addressing
  3. Memory Addressing
  4. Input/Output Addressing

1. Register Addressing

- Operands are one of the internal registers of 8085
- Examples-

```
MOV A, B
ADD C
```

2. Immediate Addressing

- Value of the operand is given in the instruction itself
- Example-

MVI A, 20H

LXI H, 2050H

ADI 30H

SUI 10H

3. Memory Addressing

- One of the operands is a memory location
- Depending on how address of memory location is specified, **memory** addressing is of two types
  - **Direct** addressing
  - **Indirect** addressing

3(A) DIRECT ADDRESSING

- 16-bit Address of the memory location is specified in the instruction directly
- Examples-

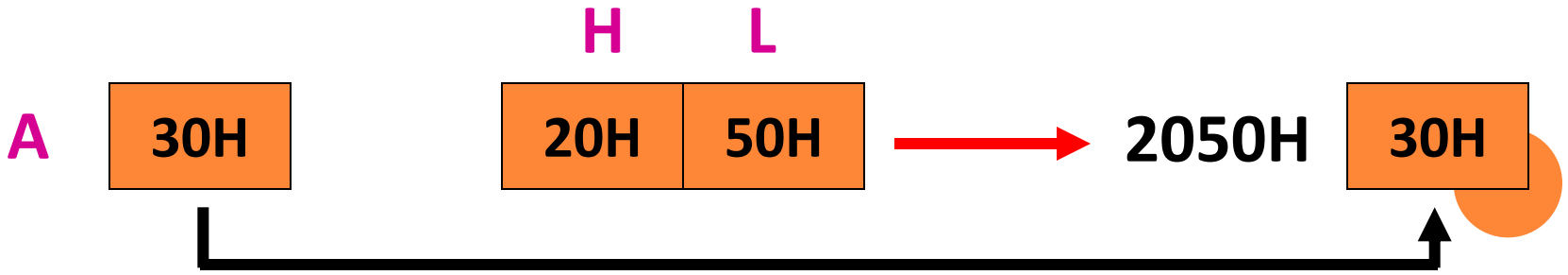
LDA **2050H** **;**load A with contents of memory location with address 2050H

STA **3050H** **;store** A with contents of memory location with address 3050H

3(B) INDIRECT ADDRESSING

- A memory pointer register is used to store the address of the memory location
- Example-

MOV M, A ;copy register A to memory location whose address is stored in register pair HL



4. Input/Output Addressing

- 8-bit address of the port is directly specified in the instruction
- Examples-

  IN 07H

  OUT 21H