23VLS1401: Microcontroller and Computer architecture

Lecture 2 (U2)

# Data Transfer instructions and programming for Microprocessor 8085

A presentation by

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# Session objectives

- To overview various software instructions related to the process of data transfer
- To develop the programming technique in assembly language for given problem statement, store the source data, execute the program and observe the result in destination register or memory location.

# Data Transfer instructions

- MOV
- MVI

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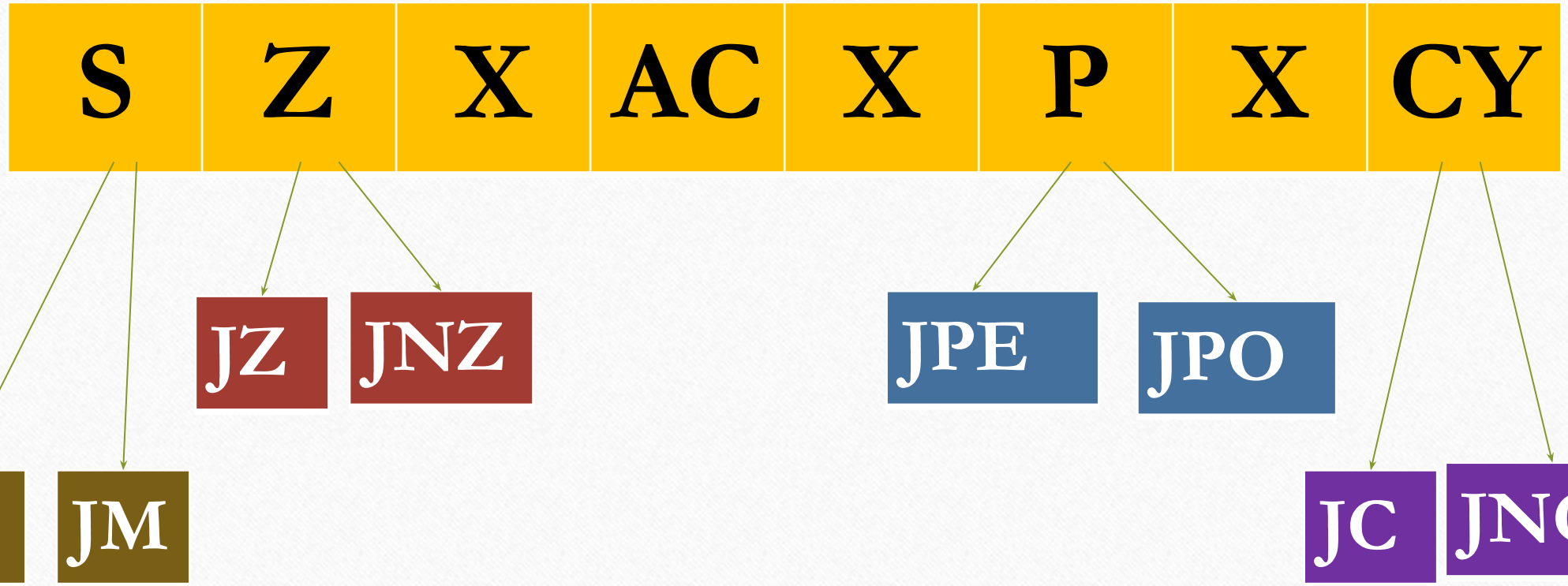
- LDA
- STA
- LDAX
- STAX
- LXI
- LHLD
- SHLD
- XCHG

# Flag register and instructions related to various flags required in decision making



# Jump Instructions

| Opcode | Operand | Meaning | Explanation | Addressing mode |
|---|---|---|---|---|
| JMP | 16 bits address /Label | Unconditional jump | Jump to the address specified in the instruction | Implicit addressing mode |
| JC | | Jump on carry | Jump to the specified address if carry flag is set | |
| JNC | | Jump on no carry | Jump to the specified address if carry flag is reset | |
| JZ | | | Jump to the specified address if Zero flag is set | |
| JNZ | | | Jump to the specified address if Zero flag is reset | |

# Programming Examples

**Problem Statement 1:** A block of 5 data bytes is stored in memory locations starting at 2501H. Write an Assembly language Program to copy the block from memory locations starting at 2601H.

```
      LXI H,2501H
      LXI D,2601H
      MVI C,05H
L1:   MOV A,M
      STAX D
      INX H
      INX D
      DCR C
      JNZ L1
      HLT
```

# Programming Examples

**Problem Statement 2:** A block of 5 data bytes is stored in memory locations starting at 2501H. Write an Assembly language Program to copy the block from memory locations starting at 2601H in reverse order.

```
      LXI H,2501H
      LXI D,2605H
      MVI C,05H
L1:   MOV A,M
      STAX D
      INX H
      DCX D
      DCR C
      JNZ L1
      HLT
```

# Programming Examples

**Problem Statement 3:** In a sugar industry, 10 viscosity readings are recorded in 16 bits in microprocessor based system in memory locations starting at 2501H. Higher order 8 bits are stored first, followed by lower order readings. Higher bytes are common for all the readings. Write a program to transfer lower order bytes only in memory locations starting at 2601H.

```
      LXI H,2501H
      LXI D,2601 H
      MVI C,05H
L1:   INX H
      MOV A,M
      STAX D
      INX H
      DCX D
      DCR C
      JNZ L1
      HLT
```

# Programming Examples

**Problem Statement 4:** 10 data bytes are stored from 2501H. WAP to shift the string by 5 positions in order to insert new data from 2501H.

```
        LXI H,250AH
        LXI D,260F H
        MVI C,05H
L1:     MOV A,M
        STAX D
        DCX H
        DCX D
        DCR C
        JNZ L1
        HLT
```


Thank
you