Architecture of 8085

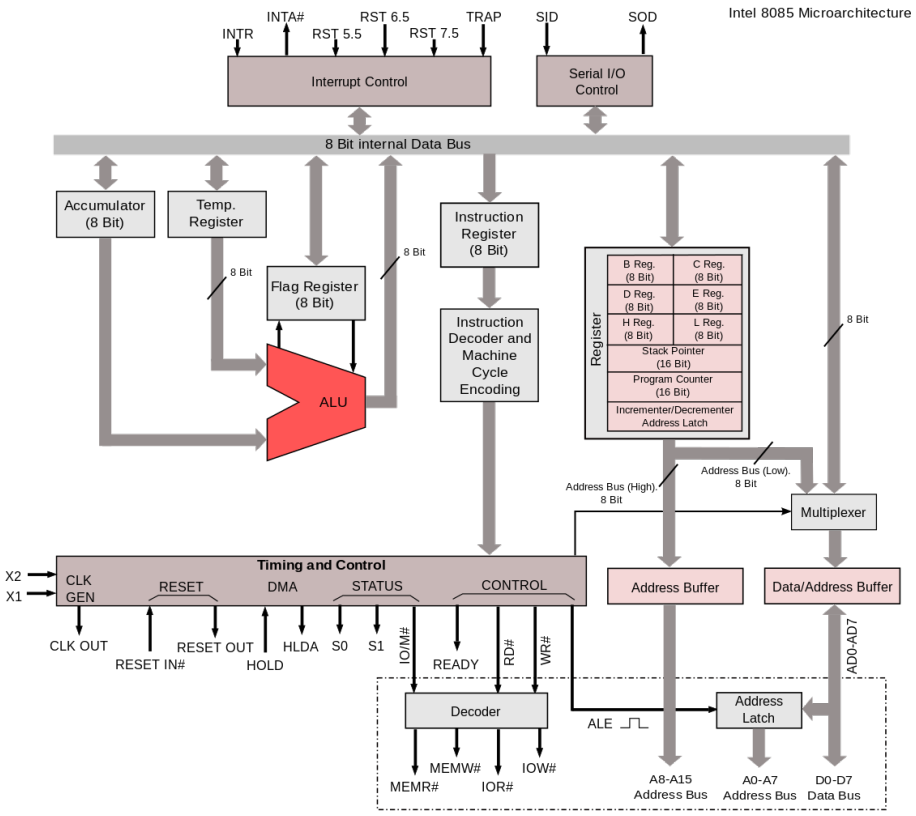

Figure 1: Architecutre of 8085

Can be divided into 5 groups:

1. Arithematic Logical unit Group:
    1. Accumulator:
        1. 8bit register
        2. General Purpose
    2. Temp Reg:
        1. not available for the user
        2. used internally by microprocessor
        3. Example are W, and Z
    3. Flag flip-flops
    4. Instruction Register
    5. ALU:
        1. Inputs are Accumulator and Temp reg
        2. It performs arithematic operations
2. Register Group
3. Interrupt Control Group:
    1. 5 interrupts are there and one acknowledgement
4. Serial I/O Control Group:
    1. SOD
    2. SID
5. Timing and Control Group:
    1. Instruction register:
        - used for internally usage
        - instruction are stored here
    2. Instruction decoder and machine cycle encoding:
        - when opcode is availabe for instruction
        - operands are not accepted
        - non programmable register
        - bit pattern is accepeted from IR
        - and sends it to Timing and Control
    3. Timing and Control:
        - Control Section
        - generates **"microsteps"** to perform the instruction
        - Clock input and sychronizing
        - communication between peripheral and 8085

Flag Register

- 8bit register
- Sign Flag, Zero Flag, Auxillary Carry Flag, Parity Flag, Carry Flag

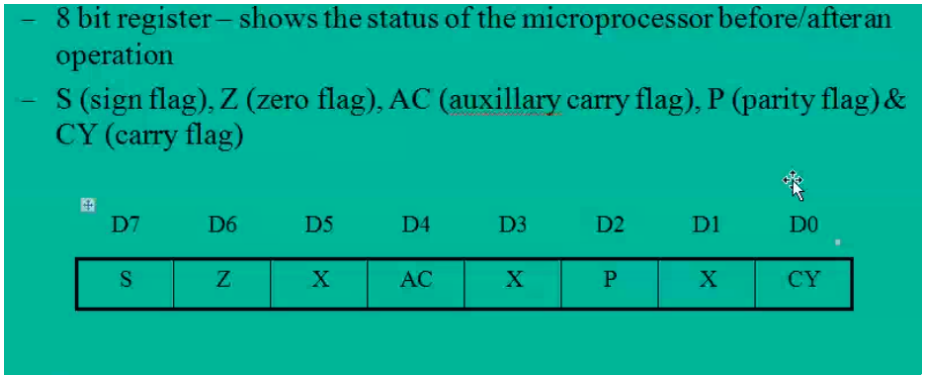

Figure 2: Flag Register

- Carry Flag:
  - used when carry is generated
  - acts as 9th bit
  - borrow bit in difference
- Auxillary Flag:
  - Carry is genereted at lower nibble, to upper nibble then this flag is set
  - used internally only
  - binary to binary conversion
  -
- Zero Flag:
  - if operation result is zero, this flag is set
- Sign Flag:
  - set if negative, reset if positive, that is for MSB bit
  - used to indicate the sign of data in accumulator
- Parity Flag:
  - used to indicate the parity of result, if the result contains even no. of "1" then the flag is set, if odd the reset

Types of register

- temp: W and z:
  - used internally
  - for calculation purposes
- General Purpose: B, C, D, E, H, L:
  - to form register pair of 16bit
  - 8bit register
  - programmable by user
- Special purpose:
  - Stack Pointer:
    - used for execution of programs
    - points to memory address to fetch next instruction
    - store the information cpu
    - works in lifo
    - 16bit address used to define starting point
    - tracks the data stored
  - Program Counter:
    - increments by one when fetching next instruction
    - at start, it set at 0
    - it is of 16bit, since 8085 contains 16 address line using which any memory location can be accessed. Hence 16bit are sufficient
  - Incremental/ Decrementer address latch:
    - used in co-ordination with above two
    - to increment and decrement infro
  - 16bit registers