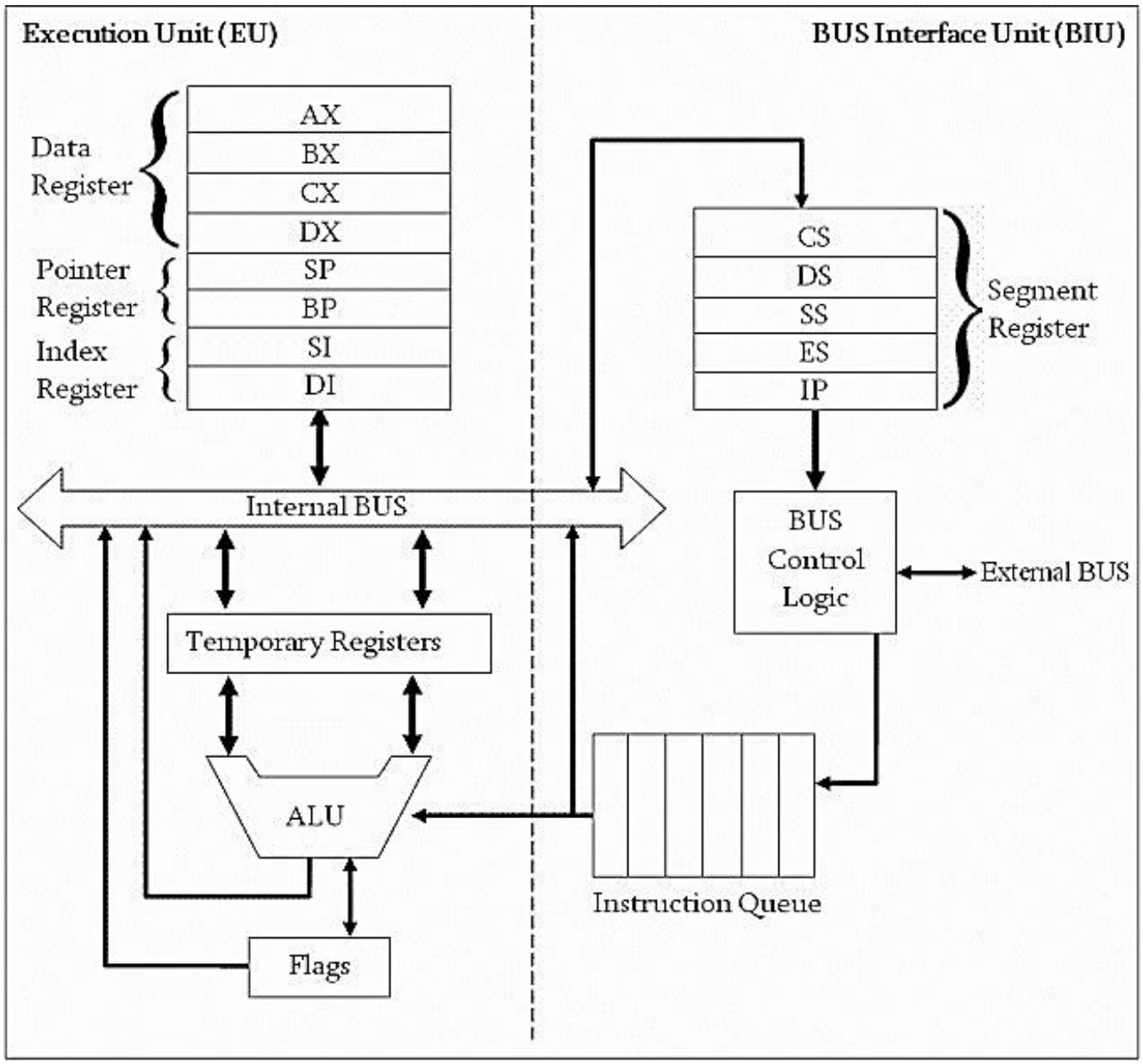
Microprocessors Lap

Lecture: 2

2023 - 2024

Inside the 8088 / 8086

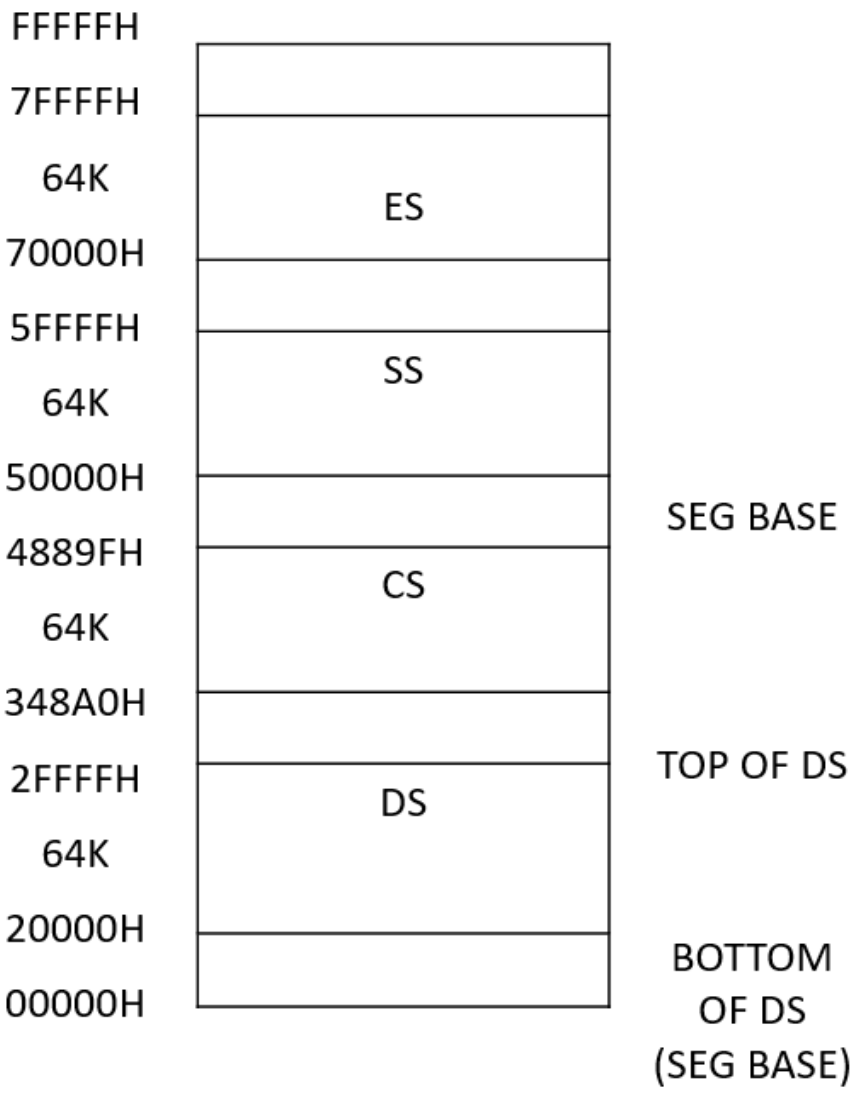


8086 Registers:

To store information temporarily.

Category	No. of bits	Register names
1. General	16	AX, BX, CX, DX
	8	AH, AL, BH, BL, CH, CL, DH, DL.
2. Pointer	16	SP (Stack Pointer) BP (Base Pointer)
3. Index	16	SI (Source Index) DI (Destination Index)
4.Segment	16	CS (Code Segment) DS (Data Segment) SS (Stack Segment) ES (Extra Segment)
5. Instruction	16	IP (Instruction Pointer)
6. Flag	16	(flag register)

Memory Segmentation :



- **Instruction Set Classification**

- Transfer Instruction :

  Move (MOV)

- Arithmetic Instruction :

  Addition (Add)
  Subtraction (Subtract)
  Multiplication (Mul)
  Division (Div) …… etc.

- Control Instruction :

  Jump
  Call
  Return …… etc.

Data Transfer : Move

MOV Destination, Source

- MOV reg , reg — reg ← reg
- MOV reg , mem — reg ← mem
- MOV mem , reg — mem ← reg
- MOV reg , imm — reg ← imm
- MOV mem , imm — mem ← imm

Move limitation:

- There is no move (mem ← mem) instruction.
- Both operand must be in the same size.
- There is no instruction to put immediate value directly to segment register. We have to use accumulator (AX) to accomplish this operation.
- To put immediate value directly to memory, we have to specify its size. (Byte/Word)
- To move value between registers, their size must be the same.

- **Example :**

  Write a program to transfer 1234H into Reg. AX and 5678 into Reg. BX then transfer the value of Reg. BL into Reg. AH and the value of Reg. AH in Reg. DL?

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- MOV     AX , 0000H
- MOV     DS , AX

- MOV     AX , 1234h
- MOV     BX , 5678h
- MOV     AH , BL
- MOV     DL , AH

- HLT
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