Computer Organization

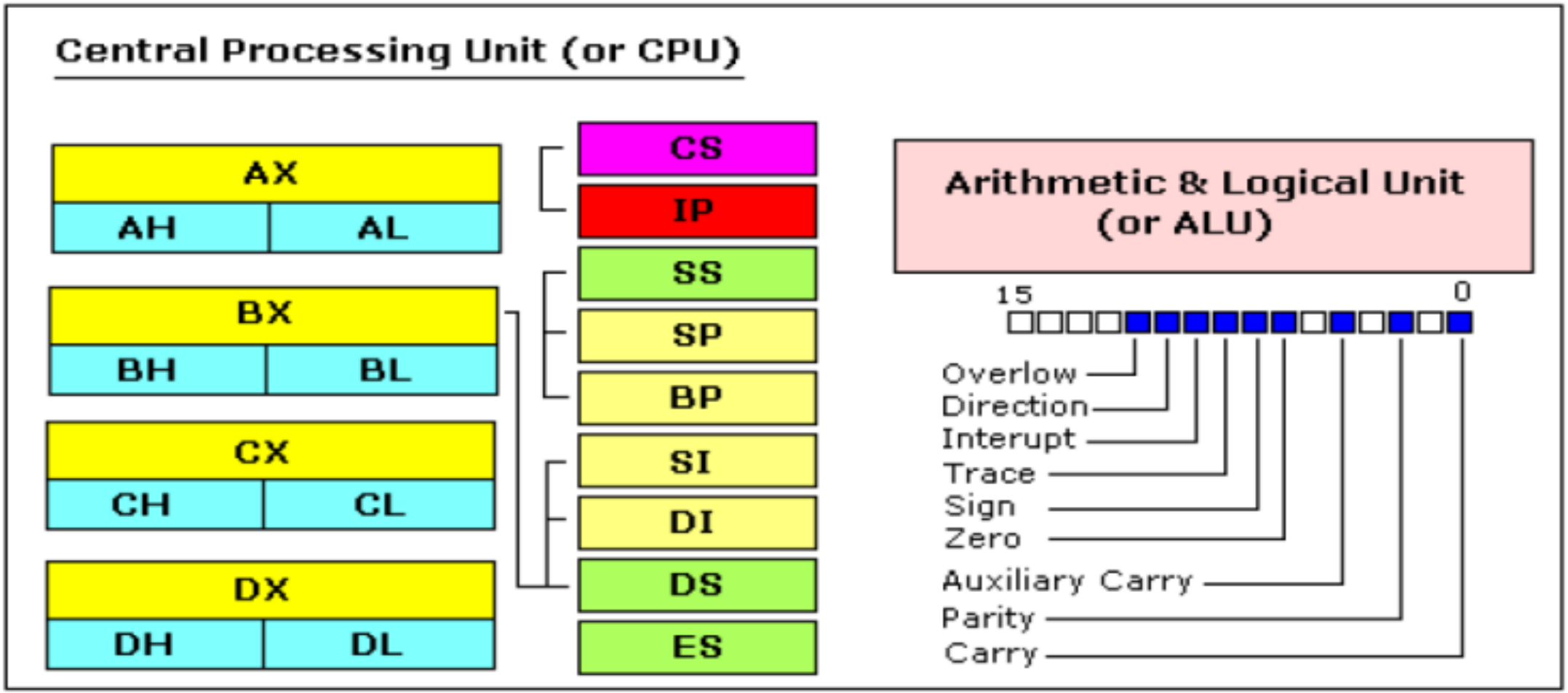
Second Class

Lab 3

Mov Instruction/ Memory Access

Dr. Samar Amil Yousif

Inside the CPU



To access memory we can use these four registers: **BX, SI, DI, BP**.
Combining these registers inside **[ ]** symbols, we can get different memory locations. These combinations are supported (addressing modes):

[BX + SI] [BX + DI] [BP + SI] [BP + DI]	[SI] [DI] d16 (variable offset only) [BX]	[BX + SI] + d8 [BX + DI] + d8 [BP + SI] + d8 [BP + DI] + d8
[SI] + d8 [DI] + d8 [BP] + d8 [BX] + d8	[BX + SI] + d16 [BX + DI] + d16 [BP + SI] + d16 [BP + DI] + d16	[SI] + d16 [DI] + d16 [BP] + d16 [BX] + d16

d8 - stays for 8 bit displacement.

d16 - stays for 16 bit displacement.

For Easy remember

There is an easy way to remember all those possible combinations using this chart:

BX	SI	+ disp
BP	DI	

Data Transfer Instructions
MOV instruction

The MOV instruction: **copies** a word or byte of data from a specified source to a specified destination.

MOV Destination, Source

MOV instruction

These types of operands are supported:

MOV REG, memory
MOV memory, REG
MOV REG, REG
MOV memory, immediate
MOV REG, immediate

REG: **AX, BX, CX, DX, AH, AL, BL, BH, CH, CL, DH, DL, DI, SI, BP, SP.**
memory: [BX]
immediate: 5, -24, 3Fh, 10001101b, etc...

MOV instruction

For segment registers only these types of **MOV** are supported:

MOV SREG, memory
MOV memory, SREG
MOV REG, SREG
MOV SREG, REG

SREG: **DS, ES, SS, and only as second operand: CS.**
REG: **AX, BX, CX, DX, AH, AL, BL, BH, CH, CL, DH, DL, DI, SI, BP, SP.**
memory: [BX]

MOV instruction

Notes:

- The source and destination **cannot** both be memory locations.
- The source and destination must both be of the same type (bytes or words).
- MOV instruction does not affect any flag.

MOV cl, 58

MOV AL, CL

MOV CX, 037AH

RET

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MOV [BX],5566H
MOV  ax, [bx]
RET
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