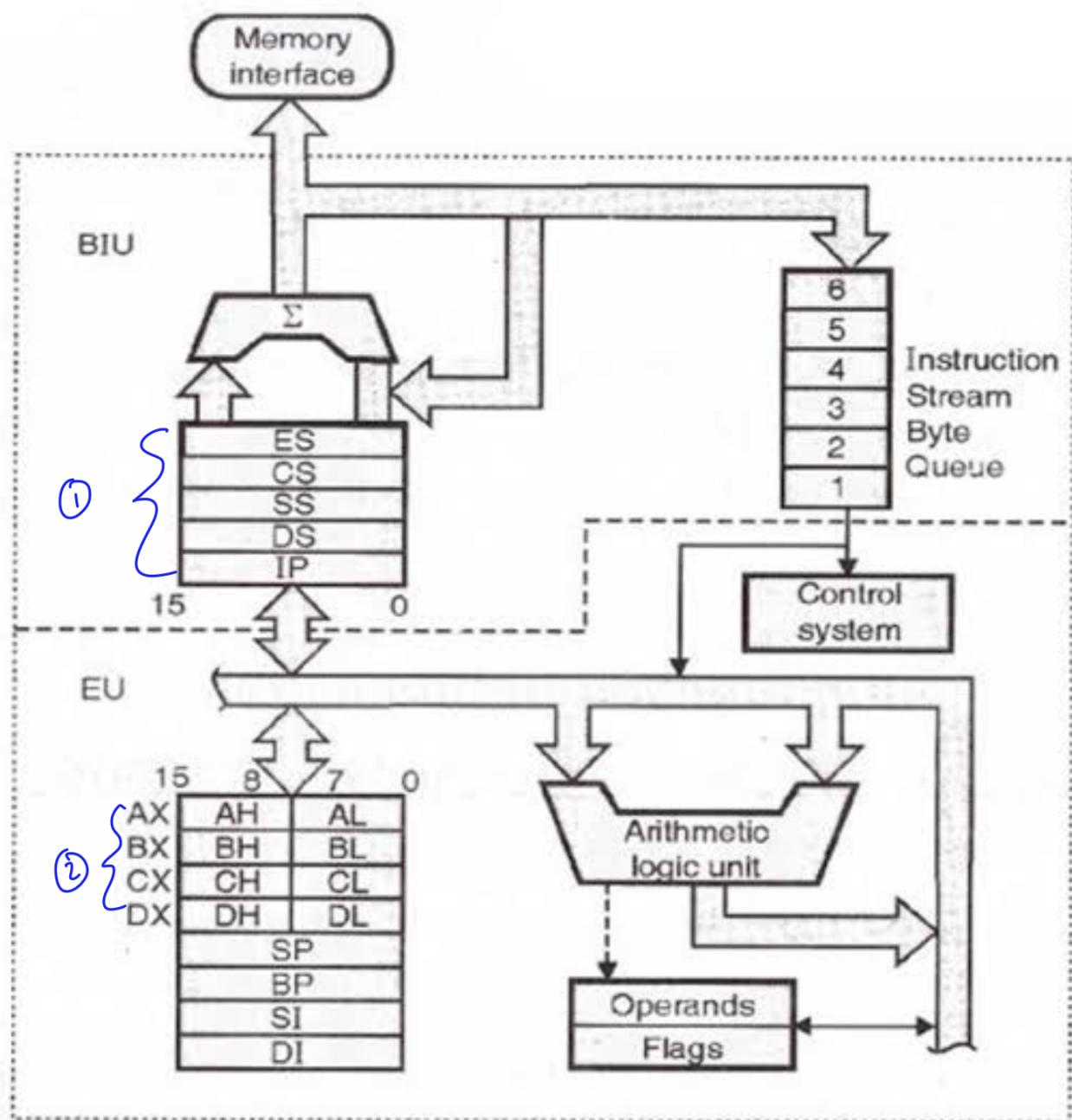




- ① Even Address Bank } Read Only Memory ← EEPROM
- ② Odd Address Bank }
- ③ RAM chips ( 32kb each) → 256 Kbits → 32 KB
- ④ 8086 Processor
- ⑤ Piezo electric crystal (Frequency generator) ] Together generate pulse
- ⑥ 8284 Clock Generator

while selecting RAM , start from 700H



8086 internal architecture

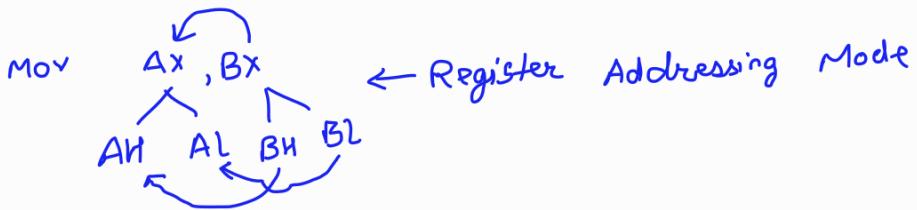
① Registers

IP - Instruction Pointer  
↳ Points to next instruction to be executed.

② General Purpose Registers:

Mov      AX, BX  
↑  
Instruction (Pneumonics)

writes from right to left.



Mov AX, 2000      By default assumes 2000H.

Moves value 2000 to AX  
Immediate Addressing Mode.

20    00  
AH    AL

→ Mov AX, [2000H] ← refers to contents of memory address 2000

Direct Addressing Mode

→ Mov AX, [BX] ← refers to contents of contents of address of BX.

Indirect Addressing Mode

① > A 0:1000  
> Mov AX,BX  
>esc  
>R

A → Assemble code

→ size of instructions depends on registers

>RAX → Accessing RAX

AX = 0000-56FF

>RBX → Accessing RBX and changing values.

BX = 0000-5648

> T 0:1000 → Execute instruction at given offset address.  
↳ Mov AX,BX ... from ①.

② > A 0:1002  
 0000:1002 MOV AX, 2000  
> RAX  
 AX 2222-0000  
> T 0:1002  
 AX = 2600 BX = 1099

③ > A 0:1005  
 MOV [2000], AX  
> T 0:1005  
> E [2000]

③ > A 0:1008  
 0:1008 MOV AX, 5678  
 0:100B MOV [2000], AX  
> T 0:1008

> T 0:100B

> E 0:2000

0000:2000 78 - AL  
 0000:2001 56 - AH

Edit Memory

↳ used here to address and view data.

OP Code → 8BC3 MOV

0:2001 → 0:2000  
 ↓      ↓  
 56      78  
 |      |  
 AH      AL

Mov instruction coding format (Find machine instruction op code manually for the executed addressing modes.)

100010 0 1  
 opcode D B

MOV [2000], AX  
 MOV AX, 200

When d=0  
 source → register  
 When d=1  
 destination → register

MOV AX, BX.  
 Decoded as

opcode dbit wbit mod neg r/m [D1]  
 / 1  
 6 bit

if both of two operands are register  
 then it can be represented in both  
 format (d=0) (d=1).

$d=0$

100010	0	1	11	000	001
op	D	W	MOD	reg	of/m
		/		dest	source
					(register)

Addressing mode

$d=1$

100010	1	1	11	011	000	,
8	B	C	MOD	8	8	

M OV AX, 2000H  
2B