

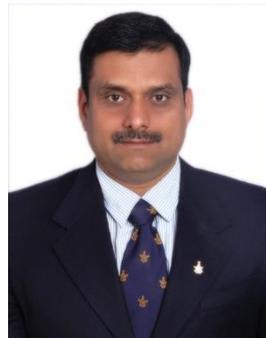


Microprocessors and Interfaces: 2021-22

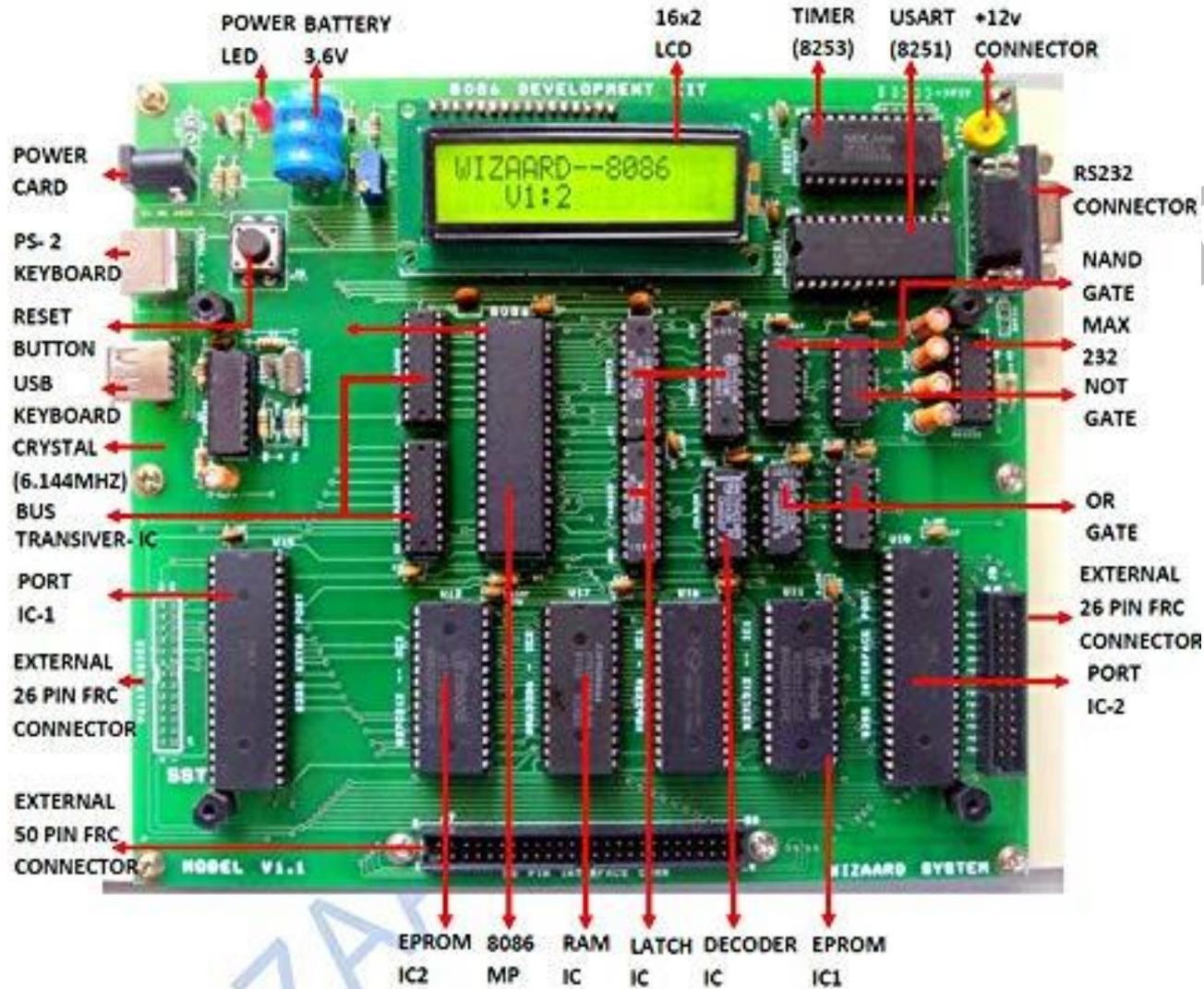
Lab 1

Introduction to 8086 Emulator

By Dr. Sanjay Vidhyadharan



Programming the 8086



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WIZARD SYSTEM

Programming the 8086

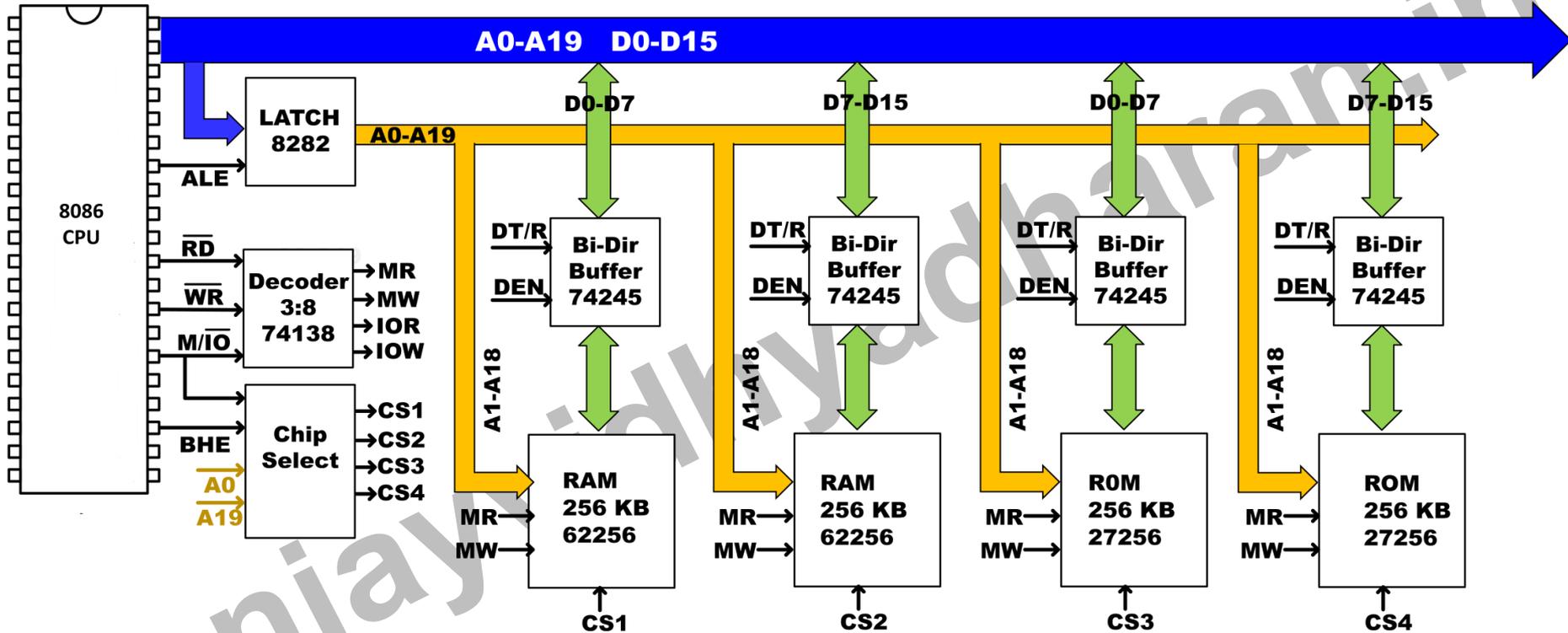
- Step 1 : Write Assembly language in text editor and save as .asm file
- Step 2: Use Compilers like MASM (Microsoft Macro Assembler) or TASM (Turbo Assembler) for Syntax Checking, Simulation and generate .obj file (Machine language)
- Step 3: Dump the .obj file to the 8086 Kit using OEM driver software.

8086 Emulator

- Used to write assembly code, check syntax and do simulation.
- Download link:
<https://sanjayvidhyadharan.in/Downloads/Microprocessors/>

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8086 Block Diagram



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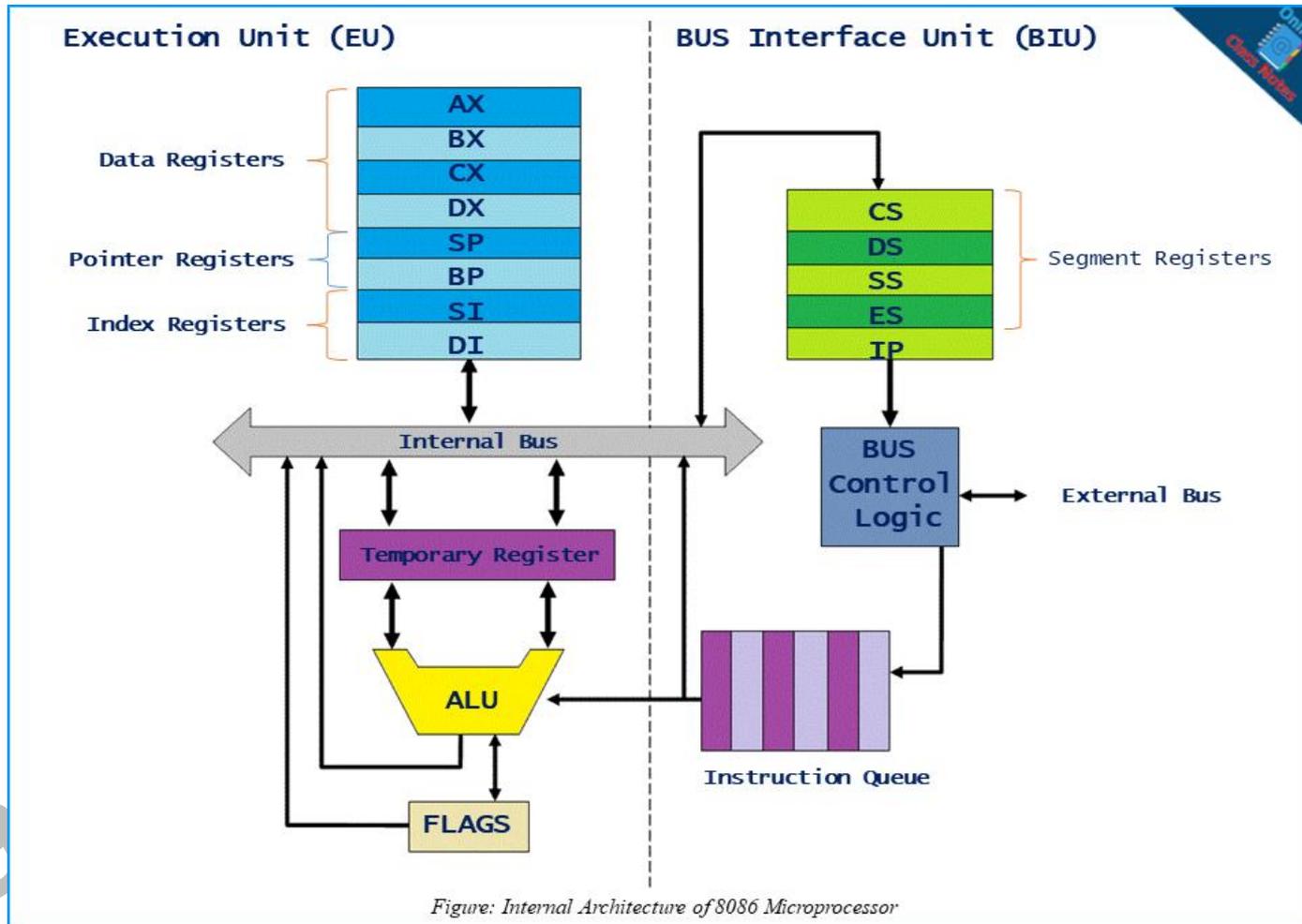


Figure: Internal Architecture of 8086 Microprocessor

Sample Emulator Program

```
Orig 100  
MOV CX,0000H  
MOV AX,1234H  
MOV BX, 1000H  
ADD AX,BX  
HLT  
ret
```

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Lab-1 Tasks

PROGRAM -1 (Using Registers and Immediate Data (Result is with carry))

MOV AL, 0F0H ; Load the value to 0F0H

MOV BL, 10H ;Load the value to 10H

ADD AL,BL ; Addition of above two numbers generates carry and carry flag is set CY=1,AL=00H

PROGRAM -2 (Using Registers and Immediate Data (Result is without carry))

MOV AL, 01H ; Load the value to 01H

MOV BL, 02H ;Load the value to 02H

ADD AL,BL ; Addition of above two numbers generates carry and carry flag is set CY=0,AL=03H

Lab-1 Tasks

PROGRAM -3 (Using Registers and Immediate Data)

MOV AL, 01H ; Load the value to 01H

ADD AL,02H ; Addition of AL and immediate data 02 gives result as
CY=0,AL=03H

PROGRAM -4 (Using Registers and Memory)

MOV AL, 01H ; Load the value to 01H

ADD AL,02H ; Addition of AL and immediate data 02 gives result as
CY=0,AL=03H

MOV [1234H],AL ; Physical Address=DS * 10 + 1234H . If DS=0700H then PA =
08234H

PROGRAM -5 (To demonstrate the ADC Instruction)

MOV AL, 0F0H ; Load the value to 0F0H

MOV BL, 10H ;Load the value to 10H

ADD AL,BL ; Addition of above two numbers generates carry and carry flag is set
CY=1,AL=00H

ADC AL,20H ; ADC adds carry flag, contents of AL and 20H.Result=21H (If ADD
instruction is used result will be 20H)

Thankyou

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