

- Intel Microprocessor 8086 has 2 subunits

① BUS INTERFACE UNIT - BIU

② EXECUTION UNIT - EU

⇒ Bus Execution Unit is responsible for establishing connection between unit external devices & memory via System bus.

⇒ BIU perform following task

- fetches Instruction from Memory
- reads and write data into I/O Memory

⇒ Execution Unit

- EU tells BIU from where next Instruction can be fetched
- It picks Instruction from Instruction queue
- It decodes & Execution ~~it~~
- Updates Status Flags

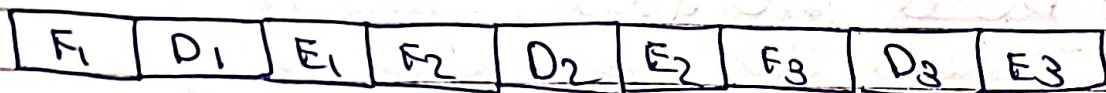
	Bus Execution Units	Execution Unit
PARTS	SEGMENT REGISTERS INSTRUCTION QUEUE INSTRUCTION POINTER	CONTROL UNIT ALU GENERAL PURPOSE UNIT

Q-1-B

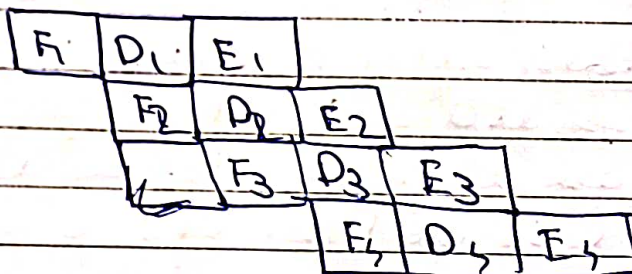
* Pipelining In 8086

- Pipelining In 80 is an Instruction Execution Technique & in which Multiple Instruction can be executed Parallely
- It is used for increasing Execution speed in the microprocessor.
- It is used for increasing Efficiency

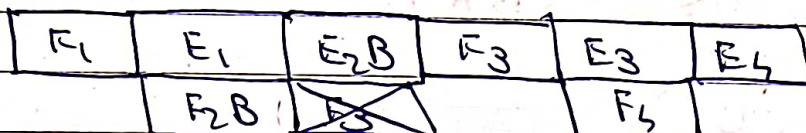
Without Pipelining



With Pipelining



- In Microprocessor 8086, In a branch Instruction execution, next fetch instruction will be discarded.



Instruction 2 is a Branch Instruction so when it was executed next instruction didn't get fetched.

Q - 2A

- ① Register Addressing
- ② Immediate Addressing
- ③ Direct Addressing
- ④ Register Indirect Addressing
- ⑤ Based Addressing
- ⑥ Indexed Addressing
- ⑦ Based Index Addressing
- ⑧ String Addressing
- ⑨ Direct I/O port Addressing
- ⑩ Indirect I/O port Addressing
- ⑪ Relative Addressing
- ⑫ Implied Addressing

The type of Addressing in which an effective Address is calculated from the sum of a base register (BX or BP), an Index Register (SI or DI) and a displacement.

Ex:-

MOV DX, [BX+SI+000AH]

(DX) \leftarrow (BX+SI+000AH)

(DX) \leftarrow (MA)

(DL) \leftarrow (MA)

(DH) \leftarrow (MA+1)

Q-S-A

CODE:

IN AL, 0C8H

IN AX, 35H

OUT 3BH, AL

OUT 2CH, AX

① IN AL, 0C8H

This instruction reads a byte from an I/O port specified by a Hexadecimal value 0C8H and stores it in AL.

② IN AX, 35H

This instruction reads a word (16-bit) from an I/O port specified by a Hexadecimal value 35H and stores it in AX.

③ OUT 3BH, AL

This instruction ~~reads~~ writes a byte the contents of AL register to an output port specified by Hexadecimal value 3BH.

④ OUT 2CH, AX

This instruction writes a ~~word~~ the contents of ~~AX~~ register to an output port specified by Hexadecimal value 2CH.