



SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



19EC401 – MICROPROCESSORS AND MICROCONTROLLERS



8086 Addressing modes





FLAG REGISTER

- 8086 has a **16-bit** flag register
- Contains **9** active flags
- There are two types of flags in 8086
 - **Conditional** flags – **six** flags, set or reset by EU on the basis of results of some arithmetic operations
 - **Control** flags – **three** flags, used to control certain operations of the processor





FLAG REGISTER



CF	CARRY FLAG	Conditional Flags (Compatible with 8085, except OF)
PF	PARITY FLAG	
AF	AUXILIARY CARRY	
ZF	ZERO FLAG	
SF	SIGN FLAG	
OF	OVERFLOW FLAG	
TF	TRAP FLAG	Control Flags
IF	INTERRUPT FLAG	
DF	DIRECTION FLAG	





VARIOUS ADDRESSING MODES

1. Immediate Addressing Mode
2. Register Addressing Mode
3. Direct Addressing Mode
4. Register Indirect Addressing Mode
5. Index Addressing Mode
6. Based Addressing Mode
7. Based & Indexed Addressing Mode
8. Based & Indexed with displacement Addressing Mode
9. Strings Addressing Mode





IMMEDIATE ADDRESSING MODE

- The instruction will specify the name of the register which holds the data to be operated by the instruction.
- Source data is within the instruction

EX: MOV AX,10ABH





REGISTER ADDRESSING MODE

- In Register addressing mode, an 8-bit or 16-bit operands are directly specified in register

- **Ex:**

MOV AX,BLH





DIRECT ADDRESSING MODE

- Memory address is supplied with in the instruction
- Mnemonic: MOV
 AH,[1000]





REGISTER INDIRECT ADDRESSING MODE

- Memory address is supplied in an index or pointer register
- **EX:** MOV AX,[SI]





INDEXED ADDRESSING MODE

- Memory address is the sum of index register plus displacement
- `MOV AX,[SI+2]` ;





BASED ADDRESSING MODE

- Memory address is the sum of the BX or BP base register plus a displacement within instruction
- Ex: `MOV AX,[BP+2]`





BASED & INDEX ADDRESSING MODES

- Memory address is the sum of the index register & base register

Ex: MOV AX, [BX+SI]





BASED & INDEXED WITH DISPLACEMENT ADDRESSING MODE

- Memory address is the sum of an index register , base register and displacement within instruction

```
MOV AX,[BX+SI+6]    ;  
JMP [BX+DI+6] ;
```





STRINGS ADDRESSING MODE

- The memory source address is a register SI in the data segment, and the memory destination address is register DI in the extra segment
- Ex: MOVSB [ES:DI] [DS:SI]





THANK YOU

