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Unit: 3

8086 Register :

Flag	PSW

(Register Pair : 16 bit)		
AX	AH	AL
BX	BH	BL
CX	CH	CL

General Purpose Register

CS	Cache	
SS	Stack	
DS	Data	
ES	Extra	

Segment Register

SP	-
BP	-
SI	
DI	
IP	

Pointer of Instruction

1) General Data Registers : AX, BX, CX, DX are the general purpose 16 bit registers AX indicates a 16 bit accumulator with lower bit indicated as AL and higher eight bits indicated as AH. For eight bit operations of the accumulator AL is used. The letters L and H specify lower and higher bits of a particular register. Letter X indicates complete 16 bit register. Letter X indicates complete 16 bit register. CX is also used as default counter in case of string or loop. DX is also used as offset storage for certain addresses. DX is also used as Implicit operand or distribution.

2) Segment Register : 8086 addresses a segmented memory. The complete 1 Megabyte memory is divided into 16 logical segments. Each segment contains 64 Kb of memory.

* There are four segment registers :
→ Code Segment register (CS)
→ Data Segment register (DS)
→ Stack Segment register (SS)
→ Extra Segment register (ES)

→ The code segment register is used for addressing a memory location in the code segment, of memory, where executable program is stored.

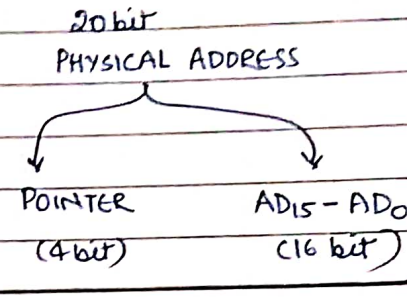
→ The data segment register points to the data segment of the memory, where data is stored.

→ Extra Segment indicates another data segment of the memory.

→ The stack segment register is used for addressing stack segment of the memory, which is used to store stack data. The CPU uses the stack for temporary storage of important data. Push and Pop instructions are used for this.

* To address any location in the memory book, the physical address is calculated from two parts :

1) Segment Address
2) Offset Address (A_{16} - A_{15})



2) Pointer and Index register : These contain the offset within a particular segment. The pointers 'IP', 'BP' and 'SP' contain offset with a code (IP) and stack (BP and SP) segments. The Index registers are used as general purpose register, as well as offset storage in certain addressing modes. SI is used to store offset of source data and DI is used to store offset of destination in data.