Register Organization of 8086:

8086 has two types of registers:

→ **General Purpose Register:**
Can be used as 8 bit / 16 bit. Maybe used for holding data, variables and intermediate result temporarily.

→ **Special Purpose Register:**
Used as "segment registers", "pointer and index registers", or as "offset storage registers."

Types:

8086 registers are classified into following types.

→ General Data Registers
→ Segment registers
→ Pointers and index registers
→ Flag Registers.

General Data Registers:

	8	8	
AX	AH	AL	AX, BX, CX, DX are
BX	BH	BL	general purpose 16 bit
CX	CH	CL	registers.
DX	DH	DL	

AX:- Accumulator Register.

→ AX are used for arithmetic, logic and data transfer instruction. Because it generate shortest machine code.

→ The high and low bytes of data register can be accessed separately.

BX:- Base Register

→ It can also serves as address register

→ Offset storage for forming physical address. (∵ offset ye bta hai address memory sy kitna dour hai).

CX:- Counter Register

→ Used as counter in string and loop instruction.

→ Program loop constructions are facilitated by the use of CX.

DX:- Data Register

→ Maybe used as implicit operand or destination.

→ Multiplication and division

→ I/O operations.

Segment Register:

→ 8086 use segment registers to keep track of different program segment

→ Segment register hold segment number

CS:- Code Segment

→ Used for addressing memory location in CS.

→ Hold the code segment number.

SS:- Stack Segment

→ Used for addressing stack memory which store stack data

→ Hold the stack segment number.

DS:- Data Segment

→ Points to the data segment of memory where data is stored.

→ Hold the data segment number.

ES:- Extra Segment

→ Refer to segment in memory where another data segment is in memory.

→ Hold the additional segment number.

Pointer and Index Register:

These registers normally contain the offset address of memory locations.

IP:- Instruction Pointer.

→ Store memory location of next instruction to be executed.

BP:- Base Pointer.

→ Contains offset within data segment

SP:- Stack Pointer

→ Contain offset within stack segment

SI:- Source Index

→ Used to store offset of destination in data or extra segment.

DI:- Destination Index

→ Used to store the offset of source data in data segment.

Flag Register:

It indicates the status of the microprocessor by setting individual bits called flags.

There are two types of flags:-

→ Status flags.

→ Control flags.

Status flags:-

Status flags reflect the result of an instruction executed by the processor e.g. when a subtraction operation results in a 0, a zer flag (ZF) is set to 1.

Control flags:-

Control flags enable or disable certain operations of the microprocessor e.g. If interrupt flag (IF) is set to 0, inputs from the keyboard are ignored by the processor