Lecture-2
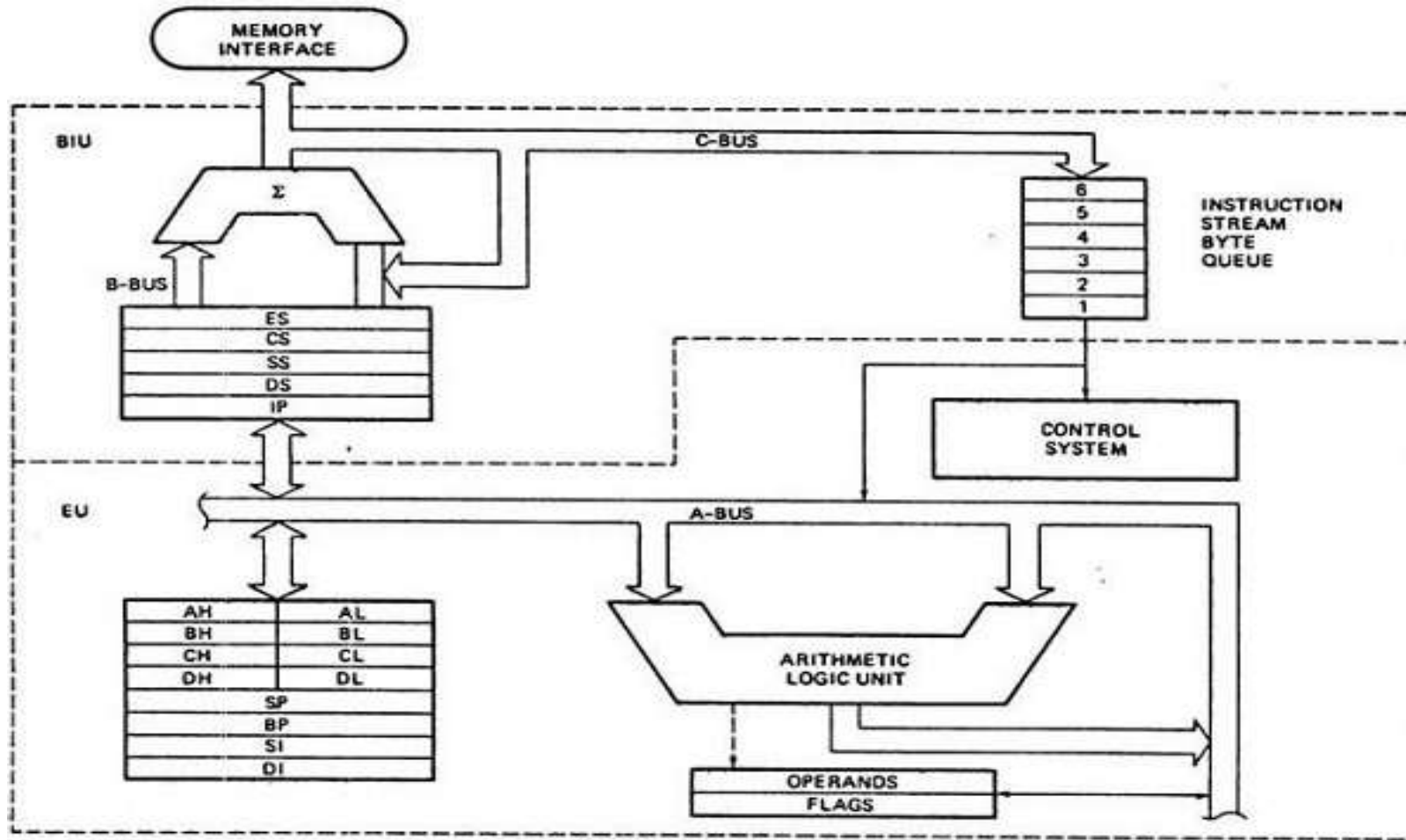
Two functional units-**EU** (Execution Unit) and **BIU** (Bus Interface Unit)

Execution Unit)

- EU gives instructions to BIU stating from where to fetch the data and then decode and execute those instructions.

- Function-to control operations on data using the instruction decoder & ALU.

- EU has no direct connection with system buses, it performs operations over data through BIU.

- ALU- handles all arithmetic and logical operations, like +, −, ×, /, OR, AND, NOT operations.

- Stack pointer register-16-bit register, holds the address from the start of the segment to the memory location, where a word was most recently stored on the stack.

- Flag Register-16-bit register that behaves like a flip-flop, i.e. it changes its status according to the result stored in the accumulator.
  - It has 9 flags and they are divided into 2 groups −
  1. Conditional Flags- represents the result of the last arithmetic or logical instruction executed.
  2. Control Flags- controls the operations of the execution unit.

FLAG REGISTER- CONDITIONAL FLAG

- **Carry flag** −indicates an overflow condition for arithmetic operations.

- **Auxiliary flag** − When an operation is performed at ALU, it results in a carry/barrow from lower nibble (i.e. D0 – D3) to upper nibble (i.e. D4 – D7), then this flag is set

- **Parity flag** − used to indicate the parity of the result

- **Zero flag** − set to 1 when the result of arithmetic or logical operation is zero else it is set to 0.

- **Sign flag** − holds the sign of the result, i.e. when the result of the operation is negative, then the sign flag is set to 1 else set to 0.

- **Overflow flag** − represents the result when the system capacity is exceeded.