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Coal lab.

COAL LAB

TASKS

Describe the function of each:

Accumulator Register (A, AX, EAX, RAX)
It is used for asithmetic, logic and input/output operations, often stores intermediate results.

Base Register (B, BX, EBX, RBX)
It is commonly used to hold memory addresses (base pointers) for data access.

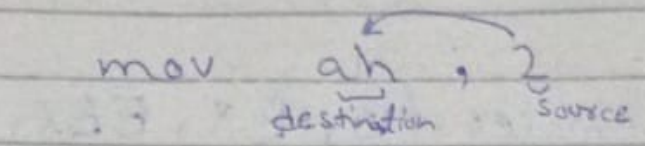
Counter Register (C, CX, ECX, RCX)
It is used as a loop counter, shift/rotate counter, and in string operations

Data Register (D, DX, EDX, RDX)
Stores data for asithmetic, Input/Output operations, and sometimes extended results.

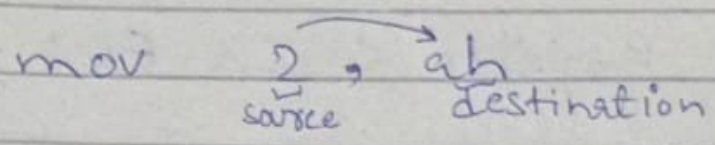
Describe the role of index registers in source and destination operations. Provide an example using SI and DI in an assemply ~~lang~~ Instruction.

Role of Index Registers:

- SI (source index)
  Points to the source data in memory (used in string and array operations.
  Example:



- DI (Destination index)
  Points to the destination in memory where data will be written.
  Example:



3. Briefly describe the functions of these bits:

- Overflow Flag (OF):
  (1) Set when signed arithmetic results exceed the representable range.
  Example:
  127 + 1 adding 127 + 1 exceeds the signed 8-bit range (-128 to +127)

- Zero Flag (ZF):
  (1) set when the result of an operation is zero.
  Example:
  5 - 5 = 0 ⟶ set (1) result.

. Carry Flag (CF):

(1) set when an unsigned operation produces a carry / borrow out of the most significant bit

Example:-

255+1 (produces carry out of the most significant bit)