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MICROPROCESSOR

* How µp works?

↳ Instructions and data are stored in memory, µp fetch instructions from memory using address and data bus, decodes the instruction and executes it.

↳ While executing instructions, register array inside the µp is used for storing temp. data, alu (arithmetic and logic unit) is executing the operation (performing computation).

* Programming of µp :-

↳ Each µp has its own set of instructions based on its design.

↳ To communicate with µp, we need to give instructions in binary lang. (machine lang.)

↳ Because lang. of Os and ls is difficult to write and debug, manufacturers have devised English-like words to represent the binary instructions.

↳ Programmers can write programs in english-like lang. known as Assembly lang. → machine dependent

* 8085 will have its own assembly lang. instructions

Assembly — ADD

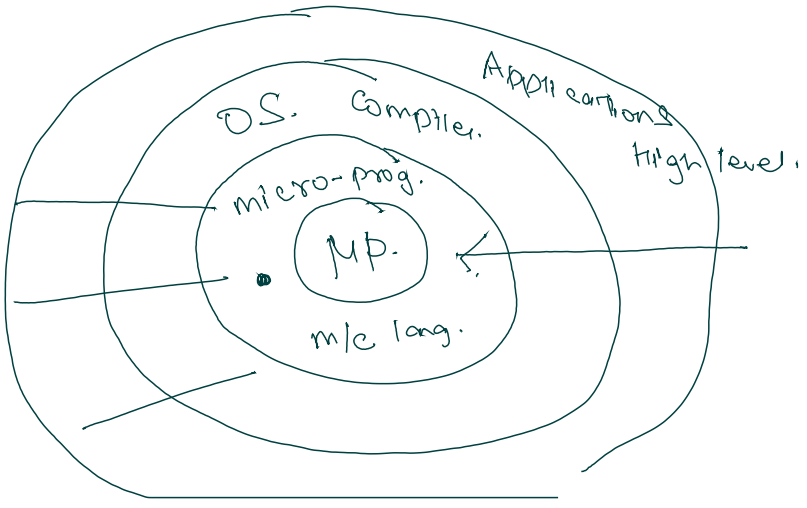
Machine code — 0110 1100

ASSEMBLER

↓

S/w that converts Assembly code to m/c code

MICRO-PROGRAMMING.



AD

INSTRUCTION : is a binary pattern (combination of 0s and 1s) which is entered or stored in memory to command μp to perform specific function.

8085 Instructions

* Word- length of 8085 μp is 8 bits.

* How many combinations can be obtained using 8-bits?.

2^n where n = no. of bits.

$= 2^8 = 256$

↳ Based on this point, 8085 μp can understand 256 different combination of 8-bits word.

↳ Now to, depending on 8085 μp hardware (architecture), all or some of the combinations out of 256 will be used as instruction.

↳ 8085 µp 246 bit patterns are having meaning

↳ However, 74 instructions are formed using this 246 bit pattern.

Opcode ← ADD

→ instruction is only to Addition.

Operand ← data

Registers
memory
I/O device.

8-bit.

ALU
↓
size 8-bit.

Adder. → 8 bit.

0110 1010
opcode operand.

X not necessary.

CMA
↳ 1101 1010
opcodes.