Digital Circuit and Logic Design

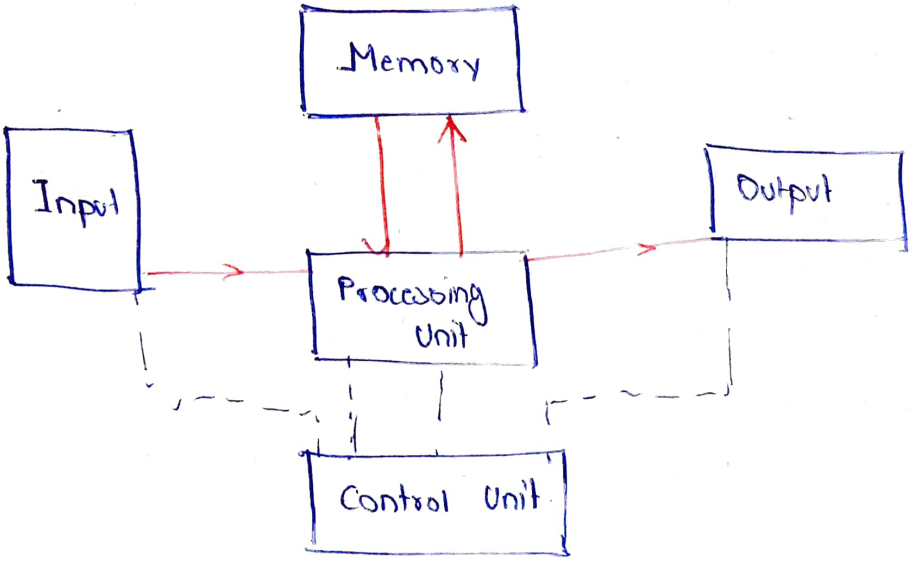
13/08/2021

- Core subject for University exam.
- Gate / NET (7-8 marks) / 5 questions
- Books 1. Digital Design – M. Morris By Pearson.
  2. Modern Digital Electronics, RP Jain.

What is a computer ?

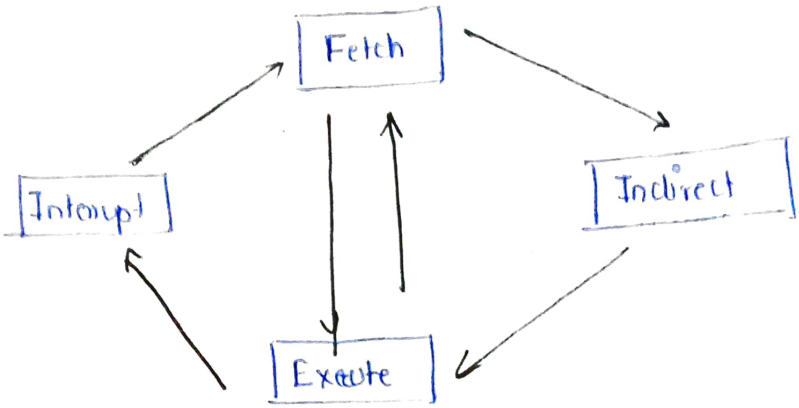
Computer is an electronic device that takes input, stores the data, processes it and provides us output.

The Block Diagram of a Computer :-



Q. How is a calculator different from a computer?

- A calculator works on the principle of circuit (electronic circuits) whereas a computer works on the principle of instruction cycle.
- A computer operates on these instructions.
  - ⇒ Fetch instruction
  - ⇒ Data Fetched
  - ⇒ ~~St Executing~~ Execute instruction
  - ⇒ Storing Data in memory.
  - ⇒ Giving Output.



Instruction Cycle.

Topics to be Studied :- (throughout Course)

I. ~~Nuber~~ Number System :
→ Basics, Conversion, Representation.

II. Binary Codes :
→ Classification, BCD, 8421, Gray Codes.
Weighted / Non-weighted Codes.

III. Boolean Algebra :
→ Basics, Logic Gates, SOP, POS, Universal Gates.

IV. Combinational Circuits :
→ Basics, Adder, Converter, MUX, DeMUX, Encoder
Decoder.

V. Sequential Circuits :
→ Basics, Latches, Flip-Flops, Counters, Registers

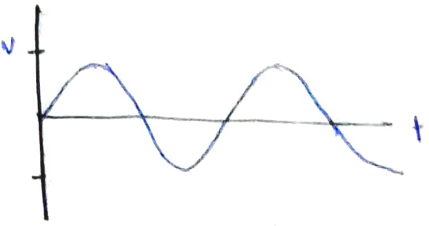
BASICS :

→ Electrical engineering is a professional engineering discipline that generally deals with the study and application of electricity, electronics and electromagnetism (Higher Voltage)

→ Electronic engineering is a branch of electrical engineering where we work on low-voltage devices such as semiconductors, transistor, ICs.

Analog System :-

- Any signal that varies continuously with time . e.g. amplifier, ECG, watch, Radio, etc.



Digital System :-

Information is represented by a finite sequence of discrete values.

e.g. Digital Watch, Calculator, thermometer, etc.