# Computer Organization and Architecture

* **What is a computer?**
  + Runs on set of instructions.
  + Ability to store massive amount of information.
  + Processes large amount of data in a relative short amount of time.
* **Bare essentials**
  + Take an input.
  + Produce an input.
  + Have some kind of information storage.
  + Processing of information.
  + Have way to control what it does.
* **Organization & Architecture**
  + **Organization (How it works)**
    - How is it controlled?
    - Signal design
    - Memory type
    - Physical: circuit components
    - Physics
  + **Architecture (How it’s designed)**
    - Logic and abstraction
    - Instructions set, operation codes, and data types
    - Memory access and input/output
* **History of Computers**
  + Mechanical Computers (1630-1945)
  + Vacuum Tubes (1945-1955)
  + Transistor (1955-1965)
  + Integrated circuit (1965-1980)
  + LSI (Large System Integration) & VLSI (1980 – Present)