OVERVIEW & ORIENTATION

Computer system

A mechanism that performs 2 things:
1) Directs processing of information
2) Performs processing of information

Key concepts

1) Abstraction
2) Computability
3) Levels of transformation
Abstraction

* Productivity enhancer: allow us to deal with a situation focusing on the essential

* Helps us decompose complicated problems in smaller ones that can be easier to solve
Computability

* Computers are universal computational devices

* Anything that can be computed, can be computed by a computer

* All computers can do the same, given enough time and memory
Turing machine

Idea proposed by Alan Turing (1936)

Features in computation:

1) Ability to read/write on storage

2) Ability to make simple logical decisions
"Black box" model of Turing Machine (TM):

Input data → TM → Result

Operation
Universal Turing Machine (UTM)

* A machine that can simulate all Turing machines

* Provide to UTM a description of the Turing Machine to implement and input data; UTM will do the rest

* Sounds familiar? First description of what computers do!
Levels of transformations