2253 Lectures

# Lecture 1

Introduction to the World of Computing

* Deterministic system behaves the same way every time.
* Does exactly what we tell it to do, no more no less
* Complex system made of very simple parts

2 Recurring Themes

* Abstraction: productivity enhancer
  + You do not need to worry about the details until something goes wrong
  + Important to understand the components and how they work together. But thinking at higher levels of abstraction is more efficient.
* Hardware and software
  + Both are essential components of a computer system. One needs to understand their capabilities and limitations

Big Idea #1

* All computers are capable of computing the same things given enough time and memory
* Anything that can be computed can be computed by a computer.

Turing machine

* Mathematical model of a device that can perform any computation