Week 2 Key Knowledge Points Summary

System Basics

Introduction

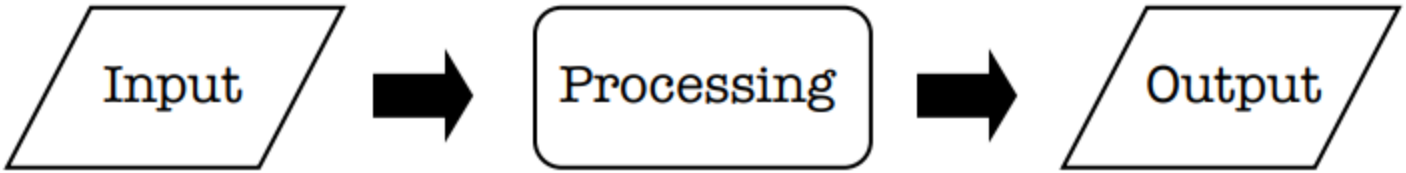
- Binary representation
  - How information on a computer is represented?
  - How many bits are in a byte?
  - What is ASCII code?
  - How many bytes are needed to represent an 8-bit ASCII character?
  - What is the difference between integers and floating-point numbers?
  - How many bytes are needed to store a 64-bit number?
- Memory
  - What information is stored in memory?
  - How is memory organized?

Processor internals

- Processor internals
  - What is a logic gate?
  - What is an instruction?
  - What steps are included in a instruction cycle?
  - Why does a processor need to decode an instruction?
- Logic units
  - What sort of logic units does a processor usually contain?
- Registers
  - What is an address register used for?

Hardware components

- A computer processes information according to a set of instructions



- Processing
  - What computer component is used for processing?
- Input and output
  - What sort of computer components are used for delivering input and output?
- Specialist hardware
  - What is a co-processor?

Operating system

- What is operating system used for?

Typical desktop system

- Core components
  - What are the three main core components in a computer?
  - What component is used to host the core components in a computer?
  - What is the difference between internal and external expansion?
  - Why are CPUs mounted in a socket?
  - What is used to connect a graphic card and a motherboard?
  - What components can be either internal or external expansion peripherals?
- System architecture
  - How are motherboards guaranteed to fit in computer cases?
  - What is a chipset used for?

System design

- Legacy
  - What is northbridge used for?
  - What is southbridge used for?
- Modern
  - What are the main changes in modern system design?
  - What is a front-side bus?
    - The link between the CPU and northbridge?
- Actual systems designs
  - Topology: bus vs point-to-point
  - Data transfer: parallel vs serial
  - Interface connection: hot vs cold vs warm swappable