Object Oriented Programming with Visual Basic .Net

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What is a Computer?

- An electronic **DIGITAL** device that can store, and process data.

- The computer accomplishes this task by using a **program**.
What is a Program?

- A plan to achieve a solution to a problem.
- A set of sequential instructions, which cause a computer to perform a particular operation or task.
Hardware vs. Software?

- **Hardware** is the actual circuitry and physical equipment of a computer system. **Hardware** is Tangible.

- **Software** is a sequence of instructions that are stored either magnetically or electronically. **Software** is non-tangible.
Components of a Computer System

- CPU (The Brain) (AKA Microprocessor)
- BUS (Central Nervous System) (Series of parallel wires, which allow various component to communicate with each other.)
- Memory (Storage) (ROM, RAM, Byte, Bit)
- Secondary (Storage) (Disks, Tapes) (Floppy, Hard disk, Flash memory, CD, DVD)
- Input Devices (Keyboard, Mouse)
- Output Devices (Display monitor, printer)
- Communication Devices
How is information represented inside the Computer?

- Binary digits or BITs (0’s and 1’s)

- Why Binary Digits?
How is information represented inside the Computer?

- Digital Computers are designed to process data in numerical form. They can store and manipulate information such as numbers, characters, images, and sound using **numbers**.

- The information inside the computer is expressed in the **binary system**.

- Binary digits (bits), are made up of **0’s and 1’s**. (e.g. 0, 1, 110, 11, 1010, and 1011 are all binary numbers).

- Binary digits are easily expressed in the computer circuitry by the **presence or absence of voltage**. For example 1 may mean 5 volts and 0 may mean 0 volts.
Digital vs. Analog?

- Analog systems have a continues range of values.
  - Vinyl records
  - Analog clocks
  - Set of real numbers

- Digital systems have a set of discrete values.
  - CD’s and DVD’s
  - Digital clocks
  - Set of integer numbers
Digital vs. Analog?

- Analog
- Digital
Digital vs. Analog?

- Analog

- Digital
Digital vs. Analog?

- Analog
- Digital
How do we represent English Characters inside the Computer?

- Characters are also represented using binary numbers.

- We use 8 bits to uniquely represent each character on the keyboard.

- The partial ASCII table (right) shows how characters are mapped into binary numbers.

- ASCII stands for (American Standard Code for Information Interchange)
What about other languages?

- UNICODE is another standard used to represent characters other than English.

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