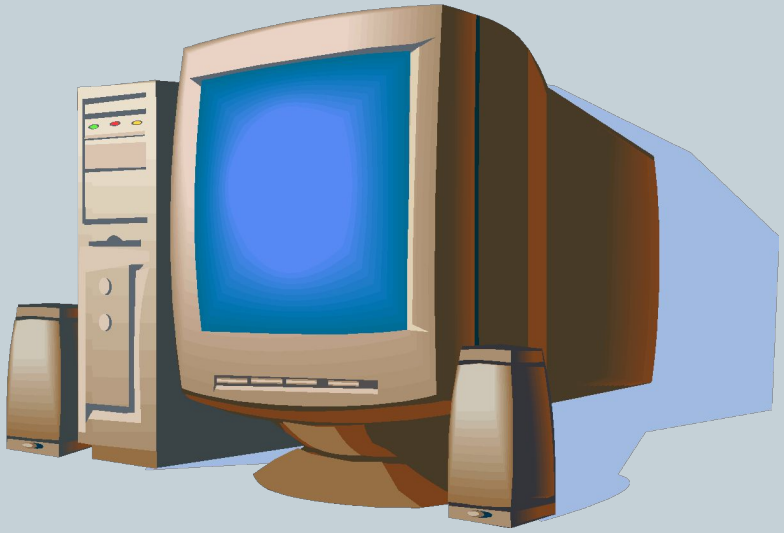
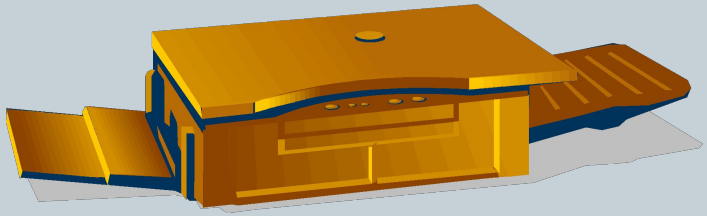
The Personal Computer

- Hardware
  - Physical components
  - Input devices
    - Keyboard, mouse, cd/dvd, diskette drive, light pen
  - Peripheral devices
    - Scanner, printer
  - Output device
    - Monitor, printer





Desktop and Mobile Computing

- Mobile computing devices
  - Long-lasting batteries to allow them to be portable
  - Notebook computers
    - Portable, light-weight computers comparable to a desktop in capability
  - Tablet PCs
    - Similar to pad/pencil
    - Write on screen with stylus (pen)
    - Handwriting recognition software

CPU/Processor

- A computer's processor is the "brain" of the computer. All calculations and operations function because of the CPU.
  - Speed is measured in Hz usually gigahertz (GHz) today. A hertz is a measure of a cycle.
    - Current CPUs range from 1.8 to 3.6GHz.

Quad Core CPU in the LGA (Land Grid Array) 775 package

What is Cache?

- Cache (pronounced cash) is high speed memory. L(Level) 1 cache is within the CPU itself. This cache is very high speed and stores instructions executed over and over.
  - Example: If you are playing a card game, the L1 cache might store the instruction to flip over a new card.
- L2 cache is a slower and larger version of L1 cache.

The Motherboard

- Contains
  - SRAM – Static Random Access Memory
    - High-speed memory referred to as **cache**
    - Used to store frequently used data for quick retrieval
  - Bus
    - Set of circuits that connect the CPU to other components
  - Data Bus/Address Bus
    - Transfers data between the CPU, memory and other hardware addresses that indicate where the data is located and where it should go
  - Control Bus
    - Carries control signals

Wrong Numbers?

- The numbers you just saw are all in fact wrong- at least when it comes to a computer.
  - Why is this? You will learn the answer soon!
  - The numbers are approximations of the actual values which are powers of two.
  - 1 MB is actually 1,024KB. 1024 is the closest a power of 2 can come to 1000.

Storage

- Data can be permanently stored on various devices.
  - Examples:
    - Hard Drive
    - Optical disc (CD/DVD)
    - Flash Drive (USB drive/jump drive)
    - Floppy Disk
  - Unlike RAM- data is not lost when power is turned off to these devices.

Hard Drive

- Works much like a record player. Has platters and an arm(called read/write head) that comes very close (but never touches) the platter and records data using magnetic impulses.

Hard drive with cover off showing a platter and the read/write arm.

Evolution of Basic

- Basic first appeared in 1964 and was designed by John George Kemeny and Thomas Eugene Kurtz at Dartmouth University.
- The current version of Visual Basic is the 9th version from Microsoft. (Visual Basic 2010)
- Microsoft first released VB in 1991. This moved the BASIC language to an event driven and **object-oriented programming** (OOP) language.

A History Lesson

- When was the first computer program written and who wrote it?
- A: Ada Lovelace- in 1842-43.
- Modern programming is said to of started in the 1940s.
- The first “modern” language was Plankalkül which was described in 1943, but not implemented until 1998. It was designed by Konrad Zuse.

OOP (Object Oriented Programming)

- The next major evolution is the move to object oriented programming or OOP.
- As defined by Wikipedia:

  Object-oriented programming (OOP) is a programming paradigm using "objects" – data structures consisting of data fields and methods together with their interactions – to design applications and computer programs.