A computer system is a collection of hardware (physical components) and software (programs).

- **Computer Hardware**
  - See file: “Basic Makeup of a Computer System”

- **Software**
  - operating system -
    - a set of programs that allow you to interface with the hardware.
    - responsible for processing user requests or user programs
    - e.g. MS/DOS, UNIX
  - applications programs - e.g. spreadsheets, word processors, data base management systems

**Algorithm**

- A step by step ordered procedure that solves a problem in a finite number of precise steps
- Examples:
  - top-down design (hierarchy chart)
    - start with the overall task, then break down into progressively smaller tasks
    - divide and conquer
  - natural language (English-like statements)
  - flowchart - a diagram that shows the logical flow of a program
  - pseudocode - a cross between natural language and a programming language
    - control structures (decisions, loops)
    - style: indentation
  - programming languages
    - machine language: binary (1's and 0's), bits
    - low level language: Assembly Language
      - closer to the numeric machine language of the computer than to natural language
      - disadvantages:
        - machine dependent
        - not close enough to natural language to be easily learned and understood
        - require technical background (understanding of computer architecture)
    - high level languages
      - BASIC - met the need for simplicity; often used in an interactive environment
      - FORTRAN - designed in the late 1950s to meet the needs of the scientific and engineering communities
      - COBOL - designed for business applications
      - Pascal - introduced the concept of structured programming & special data types; a teaching language
      - C - a structured language developed at Bell Laboratories that allows low-level programming while using a high-level style language
      - C++ - a spin off of the C language also developed at Bell Labs that offers object-oriented features not found in C; portable
      - Java - object-oriented language developed at Sun Microsystems used to develop programs that run over the internet in a Web browser
      - Visual Basic - a software development environment by Microsoft that allows programmers to create Windows-based applications
language processors:
- assembler - software that translates assembly language programs to machine language instructions to be executed (later) on a computer
- interpreter - software that translates one statement at a time of a program into machine language and executes the statement immediately before going on to process the next statement
- compiler - software that translates a program written in a high-level language into binary machine language instructions so that the program can be executed (later) on a computer.