Chapter 1: Introduction to programming

Checkpoint

1. Computer used by so many people because it can do many tasks
2. Five major hardware components:

Central Processing Unit (CPU), main memory, secondary storage devices, input devices, output devices.

1. CPU consists of Arithmetic and Logic Unit (ALU), and Control Unit
2. Fetch > CPU control unit fetches program’s next instruction to main memory

Decode > control unit decodes the instruction in form of number. An electrical signal is generated

Execute > the signal routed to the appropriate components of computer

1. Memory address is a unique number assigned to each section of memory
2. Main memory > to store data while operating

Secondary memory > store data for long period of time

1. Two general software: Operating System and Application Software
2. The operating system is a fundamental set of programs control the internal operation
3. Utility program is a program that perform specific task like virus scanner or data backup programs
4. Word processing program, e-mail programs, web browser > application software
5. Algorithm > well defined steps to solve problems
6. The purpose of programming language is to ease the task of programming.
7. Low level language > close to computer language / machine language

High level language > close to human readability

1. Portability is the ability of a program can run from computer to computer
2. Preprocessor > read the source file

Compiler > translate each code instruction

Linker > combines the object file with library routines

1. Source file: contains program written by programmers

Object file: machine language instructions, generated by the compiler translated from source file.

Executable file: code that ready to run on computer

1. Integrated development environment: a programming environment includes text editor, compiler, debugger, etc
2. Key word has special purpose, a programmed identifier is made by the programmer
3. Operators performs one or more commands.

Punctuation symbols marks the beginning / ending of the statement.

1. A line is only a single line

A statement is the full instruction

1. A variable called variable because it might change
2. When a new value is stored, it changed to the new value
3. Before the variable is used it must be defined first
4. Three primary activities of program: input, process, output
5. Four items should be identified when defining what a program is to do:

The program’s purpose

Information to be input

The processing to take place

Desired output.

1. Imagining what your program will look like in the display
2. To plan a program or the steps of running the program using hierarchy fashion
3. Desk-checking > programmers checking through each statement from beginning to end
4. The compiler translated each source code
5. A logical error happened when the program is running
6. Syntax error found by the compiler
7. The purpose of testing a program with sample data/input is to find logical errors
8. Procedural programming: made of procedures or function