Problem Solving, Assignment 2 (CS 101, Fall 2018) Syema Ailia

Input, Processing, and Output

Chapter 2 explains the process of creating a program. A typical programmer would first begin by creating a design of the program. It is like an architect creating a blueprint before building.

Once the design is created, the programmer then moves on to writing the code. If the code contains syntax errors, the program will not compile as it cannot understand what is written. The human must speak in the language that the computer understands.

Once the syntax errors are removed, the next step is to check for logic errors. Logic errors occur when the desired output from the program was not achieved. The program cannot tell whether output is incorrect. This is why programmers create tests to make sure the output is correct.

If there are logic errors, the programmer will begin to debug the code. This means that the programmer realises that certain parts (or all) of the program must be changed. This results in modifying the design which in turn begins the entire process previously mentioned.

Usually a programmer creates a series of steps from a task that has been broken down in order to complete that task. This combination of steps is called an algorithm. Making sure that the steps are fluently written in code, it is common to write pseudocode. Pseudocode means fake code and is used to write algorithms without having to focus on syntax errors. This helps in creating a well organised design ready for building.

Flowcharting is another tool programmers use to design programs. This is like pseudocode however images depict the sequence of steps as opposed to steps written in sentences. The images used in flowcharts are ovals, parallelograms, and rectangles.

When debugging a program, a useful technique is called hand tracing. Hand tracing is a process where you imagine that you are the computer executing a program. You step through each of the programs statements, recording the result of each statement. This process helps in checking mathematical or logic errors.

As a beginning student, I should focus on the programs requirements such as the input, where carefully studying the problem and identifying the pieces of data that the program needs to read as input. Then I would need to decide what to do with that input by creating a process that modifies or uses that input in order to achieve the desired output.