Computers use language to perform software functions. These languages, called programming languages, use strict rules to function. Programming languages can be used to create many things from simple programs that draw a line on the screen to making complex programs for businesses. This article will be covering the concepts behind structured programming languages, in particular Java. First, I will discuss some principles of structural programming then discuss important aspects of a program.

Java and many other programming languages function using the concept of sequence. Computers take a series of instructions to perform a task. This means that instructions must be given in a sequence. If the instructions are not in the correct sequence then the task will not be performed correctly. In code, this means that you cannot perform instruction out of order. Sequence is used to make programs such as a turtle draw a shape or set of initials on a page. A programs sequence can be defined by an algorithm, a sequence of instructions that relies on order to recognise the next instruction.

The next concept is selection. A computer needs to make decisions. This is accomplished by using decision-making statements and loops. These programming statements allow the program to make decisions such as whether to exit a program or what option to choose in a menu. These statements allow the program decide if a statement is executed or an action is repeated.

In programming repetition is an important concept. Sometimes a program needs to be able to repeat an action multiple times. For this, we need a way of repeating the set of statements. A loop can be used to determine how often you want an action to occur in the program or repeat an action while a condition is true. A loop can be used to access parts of an array, a data structure that holds a collection of values. A loop can also be used to present a menu for collecting values.

The final concept of this article is modularisation, or functional decomposition. A problem can be broken down into parts. Once the problem has been broken down, code is written to deal with that problem. Modularity allows for easy control over certain parts of the program. Information can be shared between the modules of a program, allowing for communication between parts of a program. This information can be shared within an object, within a single file or between objects.

In programming languages, we need a way to store information. There are two ways of storing this information, as a variable or as a constant. A variable is used to store many types of information using a datatype, these data types can be anything from a number called an integer or a string of words, even a datatype made by the programmer. Variables are used in the place of numbers in code to allow for easy changing of values. A constant is a constant value that cannot be change by an action taken inside the code. A constant is used when a value does not need to be changed and needs to remain the same throughout the program or file.

Another important aspect of a programming language is a method or function. A method is a named block of code. A method can perform one or several functions for the program. A method can then be reused when we want to perform an action; this saves the programmer from repeatedly writing potentially complex code. A method can have its behaviour be customised to suit current needs by using parameters to feed a value into the method. The main() function is a special method. This method is the base of the program. The main method ties the functions of the program together. The main method is used as the base of the program so that all other functions can be used in it.

There are several types of structural statements in a programming language. These include if, switch, while, do-while and for. These statements control the flow and structure of a program. If and switch statements are control statements that allow for selection of a possible outcome. An if statement can be used for such things as checking if a condition is true. A switch statement can be used to determine an action based on cases. While and do-while loops check if a condition is true then perform an action. These both can be used for things such as a process that needs to run while something is true. A for loop is another kind of loop. Primarily used to access collection, a for loop takes a starting value of zero or one and increment that value once an action has been performed. A for loop is primarily used to look through an array.

Classes are used in object-oriented languages like java to define an object or data type. A class will contain a number of methods that define characteristics or actions taken by the datatype. A class can be used to define something like a high score. A high score object can have several characteristics defined in the class such as a game id, user name and a score.