

Exercise 10

1. What is a Java Virtual Machine?

The Java Virtual Machine (JVM) interprets bytecode for a computer's processor so that it can run the functions defined in the source code. It allows for programs to be built to run on any platform without having to be rewritten or recompiled.

2. What is the compilation process?

The role of the compilation process is to convert high-level language to machine language. First the high level language is written in some file known as the source code (.java file if programming in java). It is then converted into a .class file (if using java) and compiled into a bytecode. Finally, the computer runs the output in some virtual machine (JVM if using Java).

3. Briefly define what a CPU is:

A CPU or central processing unit is the brain of the computer and does all the calculations required for a computer to run. This can be executed by either performing through the control unit or arithmetic and logic unit.

4. What is a variable in Java? Provide two examples of two variable declarations and initializations.

A variable in Java is an alternate identification for a certain value that can be changed while the program runs. It can be declared and initialized in several ways as seen below:

1. `int x;`
`x = 12;`
2. `int x = 12;`

Both will output the number 12 when running the program.

5. What is a String in Java? Provide an example.

A string is an object type that is a sequence of characters that can be created and manipulated. An example of a string would be:

1. `str1 = "hello123"`

Which would output hello123 if put into a print statement.

6. What is a Scanner?

A Scanner in Java is a class that can be called through `java.util` to get a user's input. Within the class you can create an object and use any of the methods (such as `nextline()`).

7. What is a Java Library? Provide an example.

A java library is a library of classes that someone else writes that you can access by downloading on to your computer. One example of such a library would be `Java.lang` (where you get the `math` class from).