CP2406

# Quiz on Chapter 1

**Question 1:**

One of the components of a computer is its *CPU.* What is a CPU and what role does it play in a computer?

* The CPU or Central Processing Unit is a computer hardware component that functions as the machine’s brain. It is in charge of executing computer programme instructions, conducting mathematical and logical operations and directing the flow in data between computer components.
* The CPU retrieves and decodes instructions from the computer’s memory, selecting which operations to conduct and in what order. It then puts these instructions into action, changing data and executing computations as needed. This procedure is extremely fast and is critical to the computer’s capacity to accomplish complicated jobs.
* In addition to processing data, the CPU is responsible for managing the computer’s resources, such as memory and input/output devices. It manages the data flow between these components and ensures that each component obtains the information it requires to executes its role.
* Overall, the CPU is the key component of a computer that cannot work, without it. It is in charge of executing instructions and managing the resources that allow the computer to function.

**Question 2:**

Explain what is meant by an "asynchronous event." Give some examples.

* An asynchronous event is one that happens outside of a program’s or system’s usual sequential flow. In other words, it is an occurrence that occurs independently, possibly at any moment, rather than in reaction to a specific request or input. Asynchronous events are frequently used in programming to increase system speed by allowing many jobs to run at the same time without interfering with the main thread of operation.
* Example: Asynchronous events includes human input, such as typing on a keyboard or clicking a mouse, which can occur at any moment and is not immediately prompted by the application

**Question 3:**

What is the difference between a "compiler" and an "interpreter"?

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| --- | --- |
| Compiler | interpreter |
| In a single run a compiler translates the whole source code | An interpret translate the whole source code line by line |
| It takes less time, making it faster than an interpreter | It takes substantially longer than the compiler, implying that it is slower. |
| It is more efficient | It is less efficient |

**Question 4:**

Explain the difference between *high-level languages* and *machine language.*

* High-level languages and machine language are two distinct approaches to encoding instruction that a computer can comprehend and execute
* High-level languages and machine learning that are intended to be simple to understand and write for humans. These languages leverage natural language syntax and offer abstractions and built-in functions to make programming easier. Python, Java and C++ are example of high-level languages.
* Machine Learning on the other hand, is the most basic programming language that a computer can directly execute. It is made up of binary code, which is made up of 1s and 0s, and it represents the instructions that a computer’s processor may carry out. Machine language is unique to the design of the computer and is difficult for human to understand and write.
* Before being executed by a computer, higher-level languages are a frequently translated into machine learning by compiler or interpreter. This translation process enables the programmer to write code that is more human-readable and efficient, without having to worry about the computer’s hardware architecture. Machine language, on the other hand, is performed directly by the hardware of the computer, making it quick and efficient yet difficult to deal with.

**Question 5:**

If you have the source code for a Java program, and you want to run that program, you will need both a *compiler* and an *interpreter.* What does the Java compiler do, and what does the Java interpreter do?

* The Java compiler converts human-readable Java source code into machine-readable bytecode. The compiler parses the source code, looks for syntax mistakes, and creates an executable bytecode file (.class) for each Java class described in the code. The compiler also does type checking throughout this process, which guarantees that the Java programme is well-typed and that any type problems are caught before the programme is executed.
* The Java Virtual Machine can run Java code that has been compiled into bytecode (JVM). The bytecode is executed by the Java interpreter, which is a component of the JVM. When you launch a Java application, the interpreter reads the bytecode instructions and executes them one at a time. The interpreter interacts with the JVM to access system resources such as memory and I/O as it executes each instruction.

**Question 6:**

What is a*subroutine?*

* A subroutine is a collection of instructions for executing a specific task that have been labelled and named. When that task comes up again, all that is required to call the subroutine by name than repeat the entire series of instructions.

**Question 7:**

Java is an object-oriented programming language. What is an *object*?

* An object is made of some data and a series of subroutines that alter the data. (An object is a sort of “Module” or self-contained entity that communicates with the rest of the world through a well defined interface. A cohesive notion or real-world thing should be represented by an object)

**Question 8:**

What is a *variable?* (There are four different ideas associated with variables in Java. Try to mention all four aspects in your answer. Hint: One of the aspects is the variable's name.)

* A variable is a name assigned to a memory region so that it may be readily referred to in a programme. The variable contains a value that must be of a specific type. The value can be adjusted while the programme is being executed.

**Question 9:**

Java is a "platform-independent language." What does this mean?

* A java programme can be compiled to a Java Bytecode programme just once. The built software may then be launched on any computer that has a Java virtual machine interpreter. Other languages must be recompiled for each platform on which they will run. The objective of Java is that it can run on a wide range of system without being recompiled.

**Question 10:**

What is the "Internet"? Give some examples of how it is used. (What kind of services does it provide?)

* The internet is a global network that connects millions of computer. Computers that are linked to the internet may interect with one another. The internet may be used for email (which allows one computer to send a message to another), file sharing (which allows users to share files between computers), and the World Wide Web (which lets a user view “pages” of information published on computers around the world).