WELCOME SNACK

Instruction: Please read chapter 1 of Java, How to Program and answer all questions.

1. Answer questions 1.4 to 1.8 of the exercises in chapter 1.

2. Explain briefly, the Java compilation process in your own words.

3. Differentiate between the JDK and JRE.

4. If the computer is so smart, why do we need a compiler?

5. Do a one-page(if typed(A4- font 10), else(1 foolscap sheet)) summary of the entire chapter.

Here are more links and resources to help out:

https://www.freecodecamp.org/news/object-oriented-programming-concepts-21bb035f7260/

https://www.quora.com/How-would-you-explain-OOP-to-a-5-year-old-kid-or-a-90-year-old-grandma

https://funtechsummercamps.com/blog/explain-object-oriented-programming-to-kids/

https://www.gnu.org/philosophy/free-sw.en.html

https://www.forbes.com/sites/jacobmorgan/2014/05/13/simple-explanation-internet-things-that-anyone-can-

understand/?sh=7d56a5d01d09

https://azure.microsoft.com/en-us/overview/what-is-a-virtual-machine/

https://whatis.techtarget.com/definition/write-once-run-anywhere-WORA

https://en.wikipedia.org/wiki/Java\_virtual\_machine

https://edu.gcfglobal.org/en/computerbasics/understanding-operating-systems/1/

https://www.javatpoint.com/java-bytecode

https://m.youtube.com/watch?v=NeXQEJNWO5w&t=27s

Submit hardcopy to your priest/priestess or email softcopy as a single email to me on or before 8:30am Tuesday

March 25, 2024.

My email is snacks@semicolon.africa

Come with your questions as we will quickly deal with them when we meet and move on to chapter 2 of the chapter

1.4. (a) Input Unit.

(b)

(c) High-level Language

(d) Output Unit

(e) Memory unit and Secondary Storage Unit

(f) Arithmetic and Logic Unit (ALU)

(g) Arithmetic and Logic Unit (ALU)

(h) High-level Language

(i) Machine Language

(j) Central Processing Unit (CPU)

1.5. (a) Java

(b) Java Standard Edition, Java Enterprise Edition and Java Micro Edition

(c)

(d) Assembler

1.6. (a) Edit, Compile, Load, Verify, and Execute

(b) Integrated Development Environments (IDEs)

(c) Javac

(d) Virtual machine

(e) Class loader

(f) Bytecode verifier

1.7. 1.7. The just-in-time (JIT) compiler translates bytecodes into computer’s machine language for fast execution by the Java Virtual Machine (JVM).

1.8. Object of a watch: Drawing of the watch which explains the features of the watch as proposed in the blue-print.

Attribute: The lively features of the watch such as the colour of the watch, the style of the handle, buttons, the edges, the screen.

Class: This involves object-oriented programming that hides the features of the watch, such as the batteries, engines,the panels, from the users.

Message: By pressing the buttons, you send message to the object on the need for reset. This message is implemented as a method call, which tells the method of the object to perform task.

Inheritance: The object class of the watch is smart display for internet accessibility.

Encapsulation and information hiding: Hidden smart displays afterwards in other classes.

Interface: The continuous movement to tell minutes, seconds, hours, as well as alarms.

Modeling: The lightening of the screen for better view, AI speech enhancement, mini-camera, biometric verification.

Bahaviour:

Java compilation is the process in which java source code (java program) is converted to bytecode that is readable by machine, for execution by the Java Virtual Machine (JVM).

Java Development Kits (JDK) are tools that enables a software developer to create, compile and run java applications. While Java Runtime Environment (JRE) is a software environment that provides the necessary resources such as the Java Virtual Machine (JVM) for the interpretation and execution of byte-code.

Compilers are needed to convert high-level language to machine language which can be understood by computers for further processing. In other words, compilers are translator programs that converts instructions that looks like everyday English, that may contain commonly used mathematical notations.

SUMMARY

Java is an object-oriented programming (OOP) language that enables the creation and execution of applications with the aid of tools known as Java Development Kits (JDK), inline with the JRE. Java applications are meant to run in computers with software such as the JDK. Programmers write instructions to the computer in different languages such as the machine languages, assembly languages and high-level languages. The assembly language and high-level languages are not understood by computers. As such, there is need for intermediate translation to machine languages which is understood by computers. Computers understand binary codes as its only language (machine languages), which is a series of 0s and 1s.

Computers systems take instructions from the users and processes them sequentially through the various units (input units, output units, memory units, Central Processing Units, Arithmetic and Logic units and the Secondary storage units). Many operating systems support java programs as it enables simplicity in various operations, coupled with the existence of internet of things (IoT). It is used in vehicles, phones, watches, TV, meters, etc.

The present of microprocessors have made room for the advancement of Object-Oriented Programming (OOP) and it significantly affected the cost of computers in the market, as stated in the Moore's law. Microprocessors help provide the storage environment for software engineers to perform their activities, coupled with the Internet of Things.

Java programs follows a series of pathway in its creation, compiling and executions. Thisq includes; Edit, Compile, Load, Verify and Execute.

The execution of java programs is only possible in the presence of the Java Virtual Machine (JVM) which inline with the just-in-time (JIT) program translate source-code into a code that is understood by machines (bytecode) for execution. The Java Runtime Environment (JRE) provides the necessary resources for the process to be carried out with alteration, provided no error is detected by the bytecode verifier.

Java programs are entitled at least a class, instance variable and method(s), depending of the intensity of the application an individual maybe be dealing with.

In parallel with the early evolution of the Internet, organizations worldwide were implementing their own networks for both intraorganization and interorganization communication. Businesses rapidly realized that by using the Internet, they could improve their operations and offer new and better services to their clients. Companies started spending large amounts of money to develop and enhance their Internet presence. This generated fierce competition among communications carriers and hardware and software suppliers to meet the increased infrastructure demand. As a result, the information-carrying capacity of communications lines on the Internet has increased tremendously, while hardware costs have plummeted.