Fundamentals of Java

Assignment Questions

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1. **What is Programming language ?**

   Ans :

- **A programming language is a formal language designed to communicate instructions to a computer. It is used to write computer programs, which are sets of instructions that tell a computer how to perform specific tasks or solve particular problems.**

- **Programming languages provide a way for humans to write code that can be understood and executed by computers. They have syntax and rules that dictate the structure and format of the code. Programmers use programming languages to write algorithms, define data structures, manipulate data, and create software applications.**

- **There are numerous programming languages available, each with its own syntax, features, and purposes. Some popular programming languages include Python, Java, C++, JavaScript, Ruby, and many more.**

2. **Why do we need a programming language ?**

   Ans :

- **Communication with computers: Programming languages provide a way for humans to communicate instructions to computers. Computers understand low-level machine language, which consists of binary code (0s and 1s).**

  Programming languages offer a higher-level and more human-readable abstraction that makes it easier for programmers to express their ideas and logic.

- **Software development: Programming languages are the foundation of software development. They allow programmers to write code that defines algorithms, manipulates data, and implements various functionalities. By using programming languages, developers can create applications, websites, games, operating systems, and more.**

3. What are the features of Java ?

Ans :

- **Platform Independence: One of the most significant features of Java is its platform independence. Java programs can run on any platform that has a Java Virtual Machine (JVM) installed, without needing to be recompiled. This is achieved through the "write once, run anywhere" principle (WORA), making Java suitable for developing cross-platform applications.**
- **Object-Oriented Programming (OOP): Java is designed as an object-oriented language, emphasizing the use of objects to represent data and behavior. It supports key OOP concepts such as encapsulation, inheritance, and polymorphism, allowing for modular and reusable code. OOP enables developers to create well-organized and maintainable applications.**
- **Portability: Java's platform independence contributes to its portability. Java code can be written once and run on various operating systems and hardware platforms, eliminating the need for platform-specific modifications. This makes Java applications easily deployable and accessible across different environments.**

4. What is an Object ?

Ans :

- **An object combines data (known as attributes or properties) and behavior (known as methods or functions) into a single entity. The data represents the state of the object, while the methods define the operations or actions that the object can perform.**
- **The object is the instance of class.**
- **The object is the real world entity.**

5. What is a class ?

Ans :

- **A class encapsulates data (known as attributes or properties) and behavior (known as methods or functions) into a single unit. The data represents the state of the objects created from the class, while the methods define the operations or actions that the objects can perform.**
- **The class is the collection of the objects.**

6. Explain about the main() method in Java ?

Ans :

- **In Java, the “main()” method is a special method that serves as the entry point for a Java program. It is the starting point of execution when the program is run, and it is mandatory in every Java application.**
- **The main() method has the following signature :**

```
public static void main(String [ ] args)
{
   System.out.println (“Hello all”)
}
```

- **Public : It is an access modifier that allows the ‘main( )’ method to be accessible from outside the class.**
- **Static : It is a keyword that indicates the ‘main( )’ method belongs to the class itself and can be called without creating an instance of the class.**
- **Void : It is the return type of the ‘main( )’ method, indicating that it does not return any value.**
- **Main : It is the name of the method. The Java runtime looks for this specific method signature to start the execution of the program.**
- **String [ ] args: It is the parameter passed to the main() method. It allows you to accept command-line arguments when running the program. The arguments are passed as an array of strings.**