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Code - OSI-211

Answer to the Question - No - 1 . (a)

(a) Ans: polymorphism: In Object-Oriented programming, polymorphism (From the greek meaning "having Multiple forms") is the Characteristic of Being Able to Assign a Different Meaning or Usage to Somethings in Different Contexts - Specifically, to Allow an Entity Such As a variable A function or, an Object to have More than One form. There are ~~Several~~ Different Kind Of polymorphism.

→ → Andrew Cooke's "An Introduction to programming Language" Mentions polymorphism.

→ → peter Muller's "An Introduction to Object-Oriented programming Using C++" Also Discusses polymorphism.

— x —

⑥ Ans: Class in java:

Class are a Blueprint Or a set of Instructions to Build a specific type of Object-Oriented programming which revolve Around the real-life Entities. Class in java Determines how an Object will behave and what the Object will Contain.

⇒ Syntax Of class in java:

```
class <class_name> {  
    field;  
    method;  
}
```

Object in java: Object is an instance of a class. An Object in OOPS is Nothing but a self-contained Component which consists of Methods and properties to Make a particular type of Data Useful. for Example Color name, table, Dog, barking. When you send a message to an Object, you are asking the Object to invoke or Execute one of its methods as Defined in the class. From a programming point of view, an Object in OOPS can include a Data Structure, a variable, or a function. It has a Memory location allocated. Java Objects are Designed as class hierarchies.

⇒ Object Syntax in java:

class Name Reference variable = new class Name ();

© Ans: Benefit Of Object Oriented programming:

- ⇒ OOP Models Complex things as reproducible, simple Structures.
- ⇒ Reusable, OOP Objects can be used across programs.
- ⇒ Allows for class-specific behavior through polymorphism.
- ⇒ Easier to debug, classes often contain all applicable information to them.
- ⇒ Secure, protects information through Encapsulation.
- ⇒ Abstraction: by using classes, you are able to generalize your Object types. Simplifying your program.
- ⇒ Inheritance Because a class can inherit Attributes And Behavior from another class. you are able to reuse more code.
- ⇒ polymorphism: One class can be used to create many Objects all from the same flexible piece of code.
- ⇒ Encapsulation: in OOP bundle code in to a single unit where you can determine the scope of each piece of data.

Q. (d) Ans: JAVA RMI: Remote method invocation (RMI) allow

a Java Object to invoke method on a Object running on another Machine. RMI provide remote Communication between java program. RMI is used for Building Distributed Application.

⇒ Stub And Skeleton Between Difference:

Stub	Skeleton
1. A Connection is established using Remote virtual machine.	1. All the parameters are read for the remote method
2. It then transmit the parameters to the Remote virtual machine. This is also known as Marshals.	2. The method is invoked on the remote Object.
3. After the send step, it then waits for the Output.	3. It then writes and transmits the parameter for the result. This is also known as mark marshals
4. Now it read the value or Exception which is come as an output.	4. In RMI, a skeleton is an object that is used as a gateway for the server-side.
5. At last, it returns the value to the client.	All the incoming request are sent through it. when a server invokes the method on the skeleton object following thing are performed internally.

Answer to the question No-2 (a)

(a) Ans: Java Applets: Applet is special type of program that is Embedded in the webpage to generate the Dynamic Content. It Runs inside the Browser and works at client side.

→ It work at client so less response time.

→ Secured

→ It can be executed by Browser running under many platforms, including Linux, Windows, Mac, OS, Etc.

(b) Answer: Applications that run on java:

- ① Desktop GUI Application.
- ② Mobile Application.
- ③ Enterprise Application.
- ④ Scientific Application.
- ⑤ Web-based Application.
- ⑥ Embedded Systems.
- ⑦ Big Data Technologies.
- ⑧ Distributed Application.
- ⑨ cloud-based Application
- ⑩ Software tools.
- ⑪ Gaming Application.

⇒ ⇒ Desktop GUI Application: Desktop Application can be easily developed using Java. We use APIs like AWT, Swing, Java FX to build the Application.

⇒ ⇒ Mobile Application: A mobile Application is an Application created for mobile phones and tablets. In today's era, the majority of phones and smart devices have Android OS and Android development is not possible without Java.

⇒ Enterprise Application Java: An Enterprise Application is a large software system which operates in a corporate environment to satisfy the needs of an organization, rather than of individual users.

⇒ ⇒ Scientific Application: A scientific Application is an Application that affects real-world activities using mathematics. Java supports the development of scientific Applications because of its powerful features.

⇒ ⇒ web-Based Application: A web Application is a client

Server program that is delivered on the Internet through a browser interface. Java supports the development of web-Application with the help of Servlets, Struts JSP/JSE.

⇒ ⇒ Embedded Systems: An Embedded system also known

As an integrated system is a combination of many small computing units that assemble together to perform dedicated function for the larger system.

⇒ ⇒ Big Data technologies: The term big Data is Define

As extremely large and complex data set that may analyzed.

to extract patterns, trends, trends, and useful information. It is one of the most popular topics

in the world of the latest technology.

© Ans: Multi Multithreading: In Java, Multithreading

refers to a process of executing two or more threads simultaneously for maximum utilization of the CPU. A thread in Java is a lightweight process requesting fewer resources to create and share process resource.

⇒ Advantage of a multithreaded:

→ Improved performance and concurrency for certain applications. Performance and concurrency can be improved by using multithreading and multicontexting together. In other applications, performance can be unaffected or even degraded by using multithreading together. How performance is affected depends on your application.

→ Simplified coding of remote procedure call/conversation.

→ Reduced number of required servers.

⇒⇒ Dis Advantage of multithreading:

→ Difficulty of writing code.

→ Difficulty of debugging.

→ Difficulty of testing.

→ Difficulty of prototyping existing.

→ Difficulty of managing concurrency.

Answer to the question No-3

Q) Ans:

Java Servlets: Servlets technology is robust and scalable because of Java language. Before Servlet, CGI (Common Gateway Interface) Scripting Language was common as a server-side programming language. However, there were many disadvantages to this technology. We have discussed these disadvantages below. There are many interfaces and classes in the Servlet API such as Servlet, Generic Servlet, ~~HTTP Servlet~~ Servlet, ServletRequest, ServletResponse etc.

Disadvantages of Servlet:

- 1. If the number of clients increases, it takes more time for sending the response.
- 2. For each request, it starts a process, and the web server is limited to start process.
- 3. It uses platform dependent language, C, C++, perl.

Advantages of Servlet:

- ① Better performance: Because it creates a thread for each, not process.
- ② portability: Because it uses Java language.
- ③ Robust: JVM manages Servlets, so we don't need to worry about their memory leak, garbage collection, etc.
- ④ Secure: Because it uses Java language.

(b) Answer: Program:

```
import java.util.Scanner;  
public class Evenodd {  
    public static void main (String [] args) {  
        Scanner reader = new Scanner (System.in);  
        System.out.print ("Enter a number");  
        int num = reader.nextInt();  
        if (num % 2 == 0)  
            System.out.println (num + " is even");  
        else System.out.println (num + " is odd");  
    }  
}
```

Output

Enter a number : 12
12 is even.