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Course Code :- CSI-211

Course Title :- Object Oriented Programming

"Final Exam"

Ans to the Q No 1(a)

Polymorphism: Polymorphism refers to the ability of a variable, object or function to take on multiple forms.

Ans to the Q No 1(b)

classes and objects are here;

Objects:

(1) State: It is represented by attributes of an object

(2) Behavior: It is represented by methods of an objects

(3) Identity: It gives a unique name to an object and enables one object to interact

with other objects.

classes:

① Modifiers: A class can be public or has default access.

② class name: The name should begin with a initial letter.

③ Superclass: The name of the class's parent if any, preceded by the keyword extends.

④ Interfaces: A comma-seperated list of interfaces implemented by the class, if any preceded by the keyword implements.

⑤ Body: The class body surrounded by braces.

Ans to the Q No 1(c)

Benefits of OOP:

(1) Through inheritance, we can eliminate redundant code and extend the use of existing classes.

(2) We can build programs from the standard working modules that communicate with one another, rather than having to start writing the code from scratch.

(3) It is possible to map objects in the problem domain to those objects in the program.

(4) It is possible to have multiple objects to coexist without any interference.

(5) It is easy to partition the work

in a project based on objects.

⑥ The data-centered design approach enables us to capture more details of a model in an ~~implementable~~ implementable form.

⑦ Object Oriented systems can be easily upgraded from small to large systems.

⑧ These are main benefits of object oriented programming. We can use these in our daily life.

Ans to the Q No 2(c)

Java Applets: An applet is a Java program that can be embedded into a web page. It runs inside the web browser and works at client side.

Ans to the Q No 2(d)

Types of applications that run on Java:

① **Desktop GUI Applications**

Java provides GUI development through various means like Abstract Windowing Toolkit, Swing on Java FX. While AWT contains a number of pre-constructed components such as menu, button, list and numerous

third Party components.

② Mobile Applications:

Java Platform, Micro Edition is a cross-platform framework to build applications that run across all Java supported devices, including feature phones and smart phones.

③ Embedded systems:

Embedded systems, ranging from tiny chips to specialized computers, are components of larger electromechanical systems performing dedicated tasks.

④ Web Applications:-

Java provides support the web applications through servlets, struts or JSPs. Java also finds application in development of eCommerce web applications using open-source eCommerce platforms such as Broadleaf.

⑤ Web Servers and Application Servers:-

The Java ecosystem today contains multiple Java web servers and application servers.

⑥ Enterprise Applications:-

Java Enterprise Edition is a popular platform that provides API and runtime environment for scripting and

running enterprise software including network applications and web services.

⑦ Scientific Applications:

Java is the choice of many software developers for writing applications involving scientific calculations and mathematical operations.

Ans to the Q No-2(a)

Multithreading:

Multithreading is the ability of a program or an operating system to enable more than one user at a time without requiring multiple copies of the program running on the computer.

Advantages of multithreading:

1. Enhanced performance by decreased development time.
2. Simplified and streamlined program coding.
3. Improvised GUI responsiveness.
4. Simultaneous and parallelized occurrence of tasks.
5. Better use of cache storage by utilization of resources.
6. Decreased cost of maintenance.
7. Better use of CPU resource.

Disadvantages:

1. Complex debugging and testing processes.
2. Overhead switching of context.
3. Increased potential for deadlock occurrence

④ Increased difficulty level in writing a program.

⑤ Unpredictable results.

Ans to the Q No 2 (d)

In computing, the Java Remote Method Invocation is a Java API that performs remote method invocation, the object-oriented equivalent of remote procedure calls, with support for direct transfer of serialized Java classes and distributed garbage collection.

Difference between Stub and Skeleton:

Skeleton	Stub
① The system that provides support to an organism, internal and made up of bones and cartilage in vertebrates, external in some other animals.	① Something blunted, stunted or cut short such as stubble on a stump.
② An anthropomorphic representation of a skeleton.	② A piece of certain paper items, designed to be torn off and kept for record or identification purposes.
③ A frame that provides support to a building or other construction.	③ A page providing only minimal information and intended for later development.

④ A client helper procedure that communicates with a stub.	④ The remaining part of the docked tail of a dg.

Ans to the Q No. 3 (a)

Java A Java Servlet is a Java software component that extends the capabilities of a server. Although servlets can respond to many types of requests, they most commonly implement web containers for hosting web applications on web servers and qualify as a server-side servlet web API.

Servlet Advantage:

① Servlet provide a way to generate dynamic documents that is both easier to write and faster to run.

② Provide all the powerfull features of JAVA, such as Exception handling and Garbage Collection.

③ Servlet enables easy portability across web servers.

④ Servlet can communicate with different Servlet and Servers.

⑤ Web machines are very good to use.

Disadvantages:

① Designing in servlet is difficult and slows down the application.

② Writing complex business logic makes the application difficult to understand.

③ You need a Java Run-time Environment on the server to run servlets.

Ans to the Q No 3(b)

```
public class Main
{
    public static void main(String [] args) {
        int number = 20;
        // checking whether the number is even or odd
        if (number % 2 == 0)
            System.out.println(number + "is Even");
        else
            System.out.println(number + "is odd");
    }
}
```