VIGNAN'S NIRULA
INSTITUTE OF TECHNOLOGY & SCIENCE FOR WOMEN
(Approved by AICTE, New Delhi & Affiliated to JNTU Kakinada)
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Department of Information Technology

Innovative Practice

Faculty Name : Dr. V. Pavani,Mrs.B.Aruna Kumari
Course Name : Java Programming
Class : II B. Tech II Semester
Academic Year : 2022-2023
Activity Name : One-Minute Summary
Title of the Topic : Object-Oriented Programming (OOP) Concepts in Java

Objective:

The objective of the One Minute Paper activity is to quickly assess students understanding of the fundamental Object-Oriented Programming (OOP) concepts in Java, such as inheritance, encapsulation, polymorphism, and abstraction.

Introduction (5-10 minutes):

- **Objective**: Provide students with a foundational understanding of OOP concepts and their implementation in Java.
- **Content to Cover**:

  Definition of OOP: Introduce the concept of Object-Oriented Programming and its importance in modern software development.

  OOP Principles: Explain the four core principles:

  - **Encapsulation**: Binding data and methods together.
  - **Inheritance**: Deriving new classes from existing ones.
  - **Polymorphism**: Using a single interface to represent different types.
  - **Abstraction**: Hiding implementation details and showing only the essential features.

  Java and OOP: Highlight how Java implements OOP through classes, objects, methods, and access modifiers.

Multiple Choice Questions (MCQs):

1.Which of the following is NOT an OOP principle?
a) Inheritance
b) Encapsulation
c) Polymorphism
d) Compilation
Answer: d) Compilation

2. In Java, which keyword is used to create a subclass?
a) extends
b) implements
c) inherits
d) override
Answer: a) extends

3.Which of the following features of OOP allows multiple methods with the same name but different parameters?
a) Inheritance
b) Polymorphism
c) Overloading
d) Encapsulation
Answer: c) Overloading

4.What does the `this` keyword in Java refer to?
a) The superclass of the current class
b) The current instance of the class
c) A static method of the class
d) The main method of the class
Answer: b) The current instance of the class

5.What is the purpose of an abstract class in Java?
a) To create objects directly
b) To define methods that must be implemented by subclasses
c) To override static methods
d) To restrict inheritance
Answer: b) To define methods that must be implemented by subclasses

True/False Questions:

1.Java supports multiple inheritance through classes.
Answer: False
2.A private method in a class can only be accessed within the same class.
Answer: True

3.Polymorphism allows a single function to operate on different types of objects.
Answer: True

4.Constructors in Java can be inherited.
Answer: False

5.Interfaces in Java can contain default methods with a body.
Answer: True

Fill-in-the-Blanks:

1.The process of restricting direct access to an object's data and providing controlled access through methods is called _____.
Answer: Encapsulation

2.The keyword _____ is used to inherit a class in Java.
Answer: extends

3.A class that cannot be instantiated is called a/an _____ class.
Answer: abstract

4.Overriding is a concept of OOP where a subclass provides a specific implementation of a method declared in its _____.
Answer: superclass

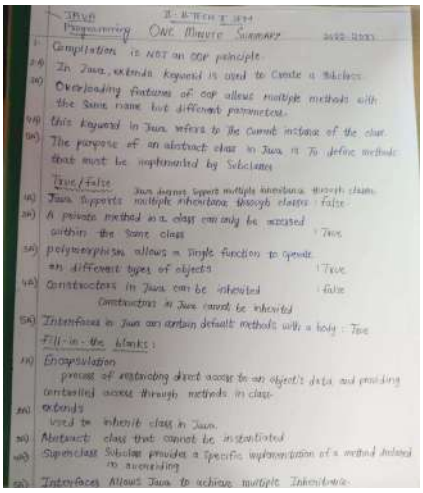
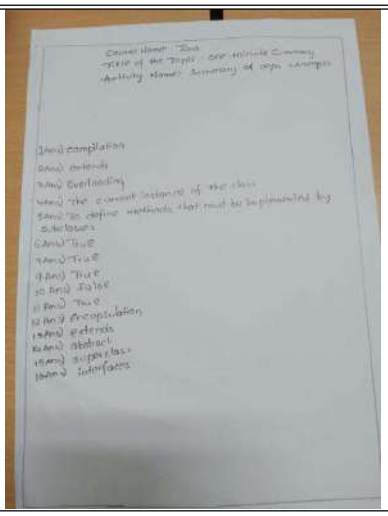
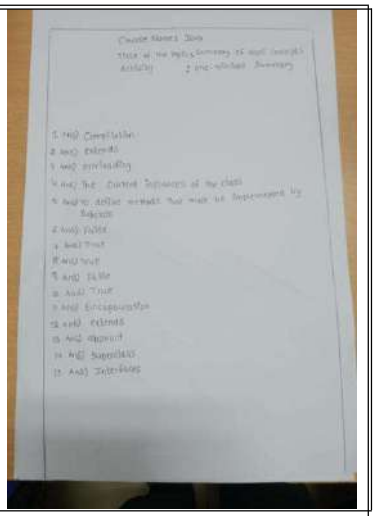
5._____ allows Java to achieve multiple inheritance.
Answer: Interfaces

Short Answer Questions:

1. **What is the difference between method overloading and method overriding in Java?**
   Answer:
   - Method overloading allows multiple methods in the same class with the same name but different parameter lists.
   - Method overriding occurs when a subclass provides a specific implementation of a method already defined in its superclass.

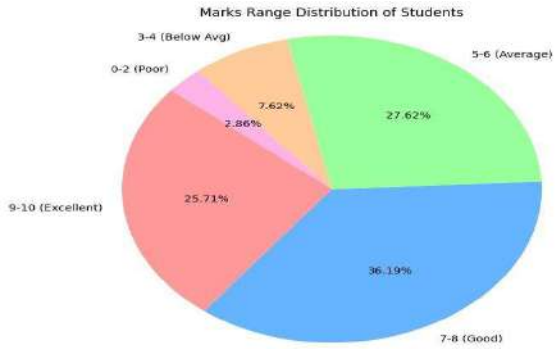
2. **Explain the concept of encapsulation with an example.**
   Answer:
   Encapsulation involves bundling data (fields) and methods into a single unit (class) and restricting direct access to the fields.

Screenshot of the practice:

Assessment analysis:

Marks Range	Number of Students	Percentage
9-10 (Excellent)	27	25.71%
7-8 (Good)	38	34.19%
5-6 (Average)	29	27.62%
3-4 (Below Avg)	8	7.62%
0-2 (Poor)	3	2.86%
Total	**101**	**100%**



Conclusion:

Object-Oriented Programming (OOP) simplifies software development by organizing code into reusable and modular components using principles like encapsulation, inheritance, polymorphism, and abstraction.

Signature of the Faculty **Head of the Department**