St. Francis Institute of Technology, Mumbai-400 103

Department Of Information Technology

A.Y. 2020-2021

Class: SE-ITA/B, Semester: III

Subject: **Java Labs**

Experiment-3: Java Program to implement various types of inheritance.

1. **Aim:**
   i. Write a program to implement single inheritance. Declare super class 'Employee' with emp_no and emp_name.Declare subclass 'Fitness' with height and weight. Accept and display data for five employees.

   ii. Create a Teacher class and derive Professor and Associate_Professor class from Teacher class. Define appropriate constructor for all the classes. Also define a method to display information of Teacher. Make necessary assumptions as required.

2. **Prerequisite:** Knowledge of Types of Inheritances.
3. **Requirements:** Personal Computer (PC), Windows Operating System, Net beans 8.0.
4. **Pre-Experiment**
   Exercise: Theory:

   a. Inheritance:

   It allows programmers to reuse code whenever they need. Inheritance is a fundamental mechanism for building new classes from existing ones. In Java, when an "Is-A" relationship exists between two classes we use Inheritance. The parent class is termed super class and the inherited class is the sub class. The keyword "extend" is used by the sub class to inherit the features of super class. The super keyword is similar to "this" keyword. The keyword super can be used to access any data member or methods of the parent class. Super keyword can be used at variable, method and constructor level.

   b. Syntax:
   Single Inheritance:

```
class B extends A{}
```

   Multilevel Inheritance:

```
class B extends
A{} class C
extends B{}
```

Hierarchical Inheritance:

class B extends A{} class C extends A{}

5. Laboratory Exercise:

A. Procedure

i. Open Net beans for Java.
ii. Open File and Create New Java Project.
iii. Inside the Java Project rename give name to your Java Class.
iv. Click on Finish.
v. Type the Java Code in the opened class.
vi. Save the code by pressing Ctrl+S.
vii. Run the code by pressing Shift+F6.

B. Program code with comments:

Write and execute your program code to achieve the given aim and attach it **with your own comments with neat indentation**.

6. Post-Experiments Exercise

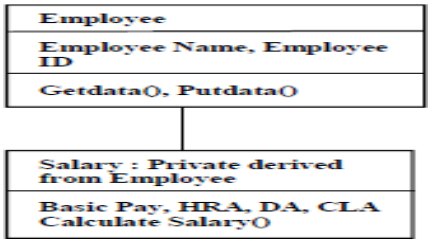
A. Extended Theory:

1. State any four points of differentiation between compile time and runtime polymorphism.
2. Explain the use of super keyword with syntax and example.

B. Results/Observations/Program output:

Present the program input/output results and comment on the same.

C. Questions/Programs:



Define classes to appropriately represent class hierarchy as shown in above figure. Use constructors for both classes and display Salary for a particular employee.

D. Conclusion:

1. Write what was performed in the experiment/program.
2. What is the significance of experiment/program?
3. Mention few applications of what was studied.

E. References

1. Balguruswamy, “Programming with java A primer”, Fifth edition, Tata McGraw Hill Publication.
2. Let Us Java-Yashwant Kanetkar.
3. Learn to Master JAVA, from Star EDU solutions , by ScriptDemics.
4. Java 8 Programming-Black Book,by-Dreamtech Publications.