St. Francis Institute of Technology, Mumbai-400 103

Department Of Information Technology

A.Y. 2023-2024

Class: SE-ITA/B, Semester: III

Subject: **Java Labs**

Experiment 4

Aim: Write a program to demonstrate java inheritance

Theory:

Aim:

i. Create a class Book and define a display method to display book information. Inherit Reference_Book and Magazine classes from Book class and override display method of Book class in Reference_Book and Magazine classes. Make necessary assumptions required.

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.

Prerequisite: Knowledge of inheriting classes in Java.

Requirements: Personal Computer (PC), Windows Operating System, JDK 1.8 and above,online java compiler/IDE.

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{}

Laboratory Exercise:

A. Procedure :

1. Write java code and save with .java extension
2. Compile program using javac filename.java
3. Run program using java filename

Post-Experiments Exercise

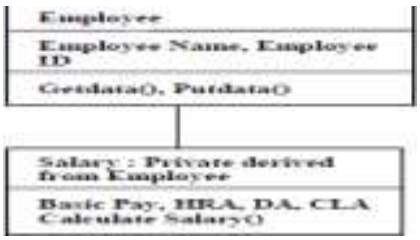
Post-Experiments Exercise

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. 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.

C. Conclusion:

1. Write what was performed in the experiment/program.

2. Mention few applications of what was studied.

D. 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.