Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III

Lab Number:	**8**
Student Name:	**Sanskar Kumar**
Roll No :	**35**

Title:

1. To perform Multilevel Inheritance in JAVA. Create a Person class representing name, age and address. Inherit person class to employee class with emp ID and salary factor. Inherit the Employee class to programmer class with technical skills and hike attributes. Implement valid methods to input the details from the user in the main method and display for 3 programmers.
2. To perform Hierarchical Inheritance in JAVA. Create an Employee class with attributes EmpID and EmpSalary. Also create necessary methods/constructors to accept these values from the user. Create classes permenantEmployee and TemporaryEmployee which will be derived classes of Employee. Mention hike attribute in these derived classes and calculate the total salary using generate_salary() method for respective types of employees. Objects of the derived classes should be created and salaries for the permanent and temporary employees should be calculated and displayed on the screen.

Learning Objective:

- Students will be able to perform multilevel inheritance using JAVA.
- Students will be able to perform hierarchical inheritance using JAVA

Learning Outcome:

- To understand how to use the private members using friend function and friend class.

Course Outcome:

ECL304.2	Comprehend building blocks of OOPs language, inheritance, package and interfaces.

Theory:

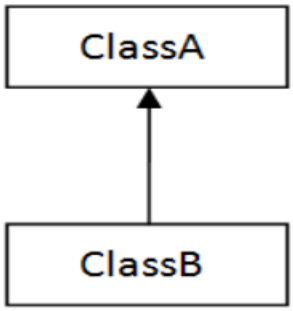
- Explain in details about various inheritance types supported in JAVA

Faculty: Ms. Deepali Kayande

Inheritance in Java is a concept that acquires the properties from one class to other classes : for example , the relationship between father and son .
In Java , a class can inherit attributes and methods from another class . The class that inherits the properties is known as the sub-class or child class . The class from which the properties are inherited is known as the superclass or the parent class.
On the basis of class, there can be three types of inheritance in java: single, multilevel and hierarchical.

Single Inheritance

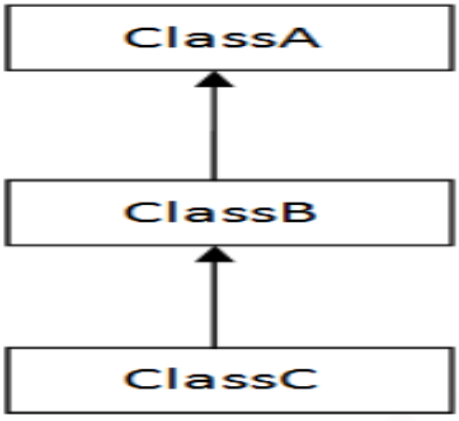
When a class inherits another class, it is known as a single inheritance.



1) Single

Multilevel Inheritance

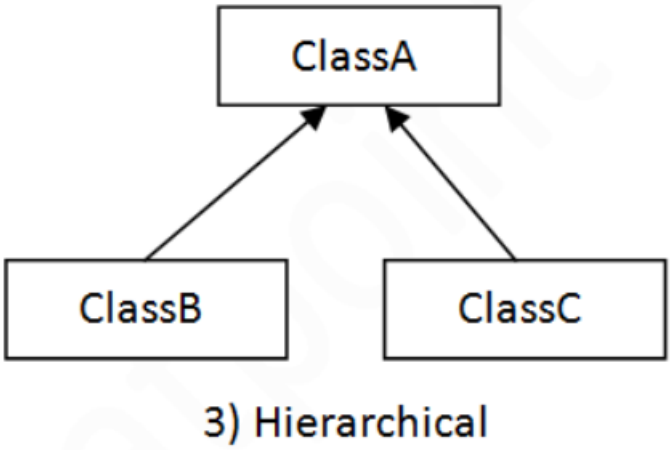
When there is a chain of inheritance, it is known as multilevel inheritance.



2) Multilevel

Hierarchical Inheritance

When two or more classes inherits a single class, it is known as hierarchical inheritance.



3) Hierarchical

Why multiple inheritance is not supported in java?

To reduce the complexity and simplify the language, multiple inheritance is not supported in java.

Algorithm:	STEP 1: Start STEP 2:Create class Person STEP 3:Define attributes and method display() and getDetails() STEP 4:Create child class Employee STEP 5:Define attriutes salary EmpID and methods display() & getDetails() STEP 6:Create another child class Programmer STEP 7:Define attributes hike, skills and methods display() & getDetails()

	STEP 8: In main class, create 3 objects for 3 programmers STEP 9:Display output STEP 10:Stop
Program:	https://github.com/SanskarKumar777/Skill-Lab-with-OOPM/commit/acb7d73f8b3ea47dcfbbf44ca0b984914f9341d8
Input Given :	Enter details for 1st programmer Enter name : Sanskar Enter address : hji Enter age : 18 Enter Employee ID : 56 Enter base salary : 53000 Enter salary hike : 0.6 Enter technical skills : Sports Enter details for 2nd programmer Enter name : pankaj Enter address : abc Enter age :

	23 Enter Employee ID : 39 Enter base salary : 67000 Enter salary hike : 9 Enter technical skills : none Enter details for 3rd programmer Enter name : vedant Enter address : xyz Enter age : 20 Enter Employee ID : 67 Enter base salary : 29000 Enter salary hike : 10 Enter technical skills : none

Output Screenshot:

```
<terminated> Programmer [Java Application] C:\Users\sansk\.p2\pool\plugins\or
Enter details for 1st programmer
Enter name :
Sanskar
Enter address :
hji
Enter age :
18
Enter Employee ID :
56
Enter base salary :
53000
Enter salary hike :
0.6
Enter technical skills :
sports
Enter details for 2nd programmer
Enter name :
pankaj
Enter address :
abc
Enter age :
23
Enter Employee ID :
39
Enter base salary :
67000
Enter salary hike :
9
Enter technical skills :
none
Enter details for 3rd programmer
Enter name :
vedant
Enter address :
xyz
Enter age :
20
```

```
Enter Employee ID :
67
Enter base salary :
29000
Enter salary hike :
10
Enter technical skills :
none

Details of 1st programmer
Name : Sanskar
Age : 18
Address : hji
Employee ID : 56
Base Salary : Rs.53000.0
Salary Hike : Rs.0.6
Total salary : Rs.53000.6
Technical skills : sports

Details of 2nd programmer
Name : pankaj
Age : 23
Address : abc
Employee ID : 39
Base Salary : Rs.67000.0
Salary Hike : Rs.9.0
Total salary : Rs.67009.0
Technical skills : none
```

```
Details of 3rd programmer
Name : vedant
Age : 20
Address : xyz
Employee ID : 67
Base Salary : Rs.29000.0
Salary Hike : Rs.10.0
Total salary : Rs.29010.0
Technical skills : none
```

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Algorithm:	STEP 1: Start STEP 2: create class employee1, define attributes and methods setdetails() STEP 3: create child classes PermanentEmp and TemperoryEmp STEP 4:define attributes and method generatesalary() in both the classes STEP 5:Create main function STEP 6:Give the user 2 choices of permanent or temporary employee STEP 7:create object in main function according to the case selected STEP 8: print the output STEP 9: Stop
Program:	https://github.com/SanskarKumar777/Skill-Lab-with-OOPM/commit/aad2ad0b556a36f8cdc90188e7a01596ec6d429f
Input given:	Enter 1 for Permanent Employee and 2 for Temporary Employee 1 Enter your ID = 56 Enter your Salary = 54000
Output Screenshot:	<terminated> employee [Java Application] C:\Users\sansk\.p2\pool\plugins\org.eclipse.justj Enter 1 for Permanent Employee and 2 for Temporary Employee 1 Enter your ID = 56 Enter your Salary = 54000 Salary of permanent employee is Rs.81000.0

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