 *DEPARTMENT OF INFORMATION TECHNOLOGY*

Experiment No.10

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| Experiment No | 10 | |
| Experiment Title | .A) Write a program to demonstrate Single Inheritance in java.  B) Write a program to demonstrate Hierarchical Inheritance in java | |
| Resources / Apparatus Required | Java SE(JDK)8u102 ,  gedit text editor | PC |
| Objectives | The objective of this experiment is to learn programs based on different types of “Inheritance” in java. | |
| Theory | Inheritance in Java **Inheritance in java** is a mechanism in which one object acquires all the properties and behaviors of parent object.  The idea behind inheritance in java is that you can create new classes that are built upon existing classes. When you inherit from an existing class, you can reuse methods and fields of parent class, and you can add new methods and fields also.  Inheritance represents the **IS-A relationship**, also known as parent-child relationship. Why use inheritance in java  * For Method Overriding (so runtime polymorphism can be achieved). * For Code Reusability.  Syntax of Java Inheritance  1. **class** Subclass-name **extends** Superclass-name 2. { 3. //methods and fields 4. }   The **extends keyword** indicates that you are making a new class that derives from an existing class.  In the terminology of Java, a class that is inherited is called a super class. The new class is called a subclass.  **Types of inheritance in java**  On the basis of class, there can be three types of inheritance in java: single, multilevel and hierarchical.  In java programming, multiple and hybrid inheritance is supported through interface only types of inheritance in javaMultiple inheritance is not supported in java through class.   When a class extends multiple classes i.e. known as multiple inheritance. For Example:  multiple inheritance in java | |
| Program & output | A)  import java.util.\*;  class Emp  {  private double sal;  private String name;  public void setdata(double sal, String name)  {  this.sal=sal;  this.name=name;  }  public double getsal()  {  return sal;  }  public String getname()  {  return name;  }  }  class Manager extends Emp  {  private double bonus;  public void setbonus(double bonus)  {  this.bonus=bonus;  }  public double income()  {  double sum=getsal()+bonus;  return sum;  }  }  class UseManager  {  public static void main(String args[])  {  Manager M=new Manager();  M.setdata(500000.0,"Tom");  M.setbonus(50000);  System.out.println("Name of manager is "+M.getname());  System.out.println("total income of manager is "+M.income());  }  }  C:\Users\Mahesh\Desktop\oopm exp 7,9,10,11 outputs\exp 10 output1.png  B)  import java.util.\*;  class Staff  {  protected String name;  protected int code;  }  class Teacher extends Staff  {  private String subject;  private int experience;  public void read()  {  Scanner sc=new Scanner(System.in);  System.out.println("Enter name,code,subject,experience of the teacher");  name=sc.nextLine();  code=sc.nextInt();  subject=sc.next();  experience=sc.nextInt();  }  public void display()  {  System.out.println("Teacher details\n name:"+name+"\n code:"+code+"\n subject:"+subject+"\n experience:"+experience);  }  }  class Officer extends Staff  {  private String dept;  private int grade;  public void read()  {  Scanner sc=new Scanner(System.in);  System.out.println("enter name,code,department and grade of the officer");  name=sc.nextLine();  code=sc.nextInt();  dept=sc.next();  grade=sc.nextInt();  }  public void display()  {  System.out.println("officer details\n name:"+name+"\n code:"+code+"\n department:"+dept+"\n grade:"+grade);  }  }  class Typist extends Staff  {  protected int speed,experience;  }  class Regular extends Typist  {  private float sal;  public void read()  {  Scanner sc=new Scanner(System.in);  System.out.println("Enter name,code,speed,experience,salary");  name=sc.nextLine();  code=sc.nextInt();  speed=sc.nextInt();  experience=sc.nextInt();  sal=sc.nextFloat();  }  public void display()  {  System.out.println("Regular Typist details\n name:"+name+"\n code:"+code+"\n speed:"+speed+"\n experience:"+experience+"\n sal:"+sal);  }  }  class Casual extends Typist  {  private float dailywages;  public void read()  {  Scanner sc=new Scanner(System.in);  System.out.println("enter name,code,speed,experience and dailywage");  name=sc.nextLine();  code=sc.nextInt();  speed=sc.nextInt();  experience=sc.nextInt();  dailywages=sc.nextFloat();  }  public void display()  {  System.out.println("Casual Typist details\n name:"+name+"\n code:"+code+"\n speed:"+speed+"\n experience:"+experience+"\n dailywage:"+dailywages);  }  }  class Demo  {  public static void main(String args[])  {  Scanner sc=new Scanner(System.in);  int ch;  do  {  System.out.println("enter choice\n 1.Teacher\n 2.officer\n 3.regular typist\n 4.casual typist");  ch=sc.nextInt();  switch(ch)  {  case 1:  Teacher t=new Teacher();  t.read();  t.display();  break;  case 2:  Officer o=new Officer();  o.read();  o.display();  break;  case 3:  Regular r=new Regular();  r.read();  r.display();  break;  case 4:  Casual c=new Casual();  c.read();  c.display();  break;  default:  System.out.println("invalid choice");  }  }  while(ch<5);  }  }  C:\Users\Mahesh\Desktop\oopm exp 7,9,10,11 outputs\exp 10 muli 2.png  C:\Users\Mahesh\Desktop\oopm exp 7,9,10,11 outputs\EXP 10 MULTI 3.png    C:\Users\Mahesh\Desktop\oopm exp 7,9,10,11 outputs\EXP 10 multi 4.png      C:\Users\Mahesh\Desktop\oopm exp 7,9,10,11 outputs\EXP 10 multi 5.png | |
| Conclusion | Thus, we have learnt programs based on “ Inheritance “ concept in java. | |