| AIM: | Problems on Inheritance |
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| **Program 1** | |
| **PROBLEM STATEMENT:** | Define parent class "Employee" that has 3 private attributes String name, String id, int age.<br>Employee has constructor with 3 arguments that set value of name, id, age. It also has getter and setter methods for all 3 private attributes.<br>Class "SalariedEmployee" is a sub class of Employee and has 1 private attribute empSalary.<br>"SalariedEmployee" can be permanent or on contract and has constructor SalariedEmployee(String name, String id, int age, double empSalary) to set the values. constructor SalariedEmployee must call the superclass constructor to set name, id, age and call setter method to set the salary.<br>Employee salary is empSalary + 2000(allowance) if he is a permanent employee else Employee salary is empSalary (no allowance).<br>Accept the details of 5 employees and print details of the employee with highest salary.<br>Create class Tester with main method |
| **PROGRAM:** | import java.util.*;<br>class Employee{<br>private String name, id;<br>private int age;<br>Employee(String name, String id, int age){<br>this.name=name;<br>this.id=id;<br>this.age=age;<br>}<br>void getempl(){<br>System.out.println("The name of the employee is: "+name);<br>System.out.println("The id of the employee is: "+id);<br>System.out.println("The age of the employee is: "+age);<br>}<br>}<br>class SalariedEmployee extends Employee{<br>private double emp_sal;<br>SalariedEmployee(String name, String id, int age,double emp_sal){<br>super(name,id,age); |

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        this.emp_sal=emp_sal;
    }
    void print_out(){
        getempl();
        System.out.print("Enter the type of employee: ");
        Scanner sc=new Scanner(System.in);
        String emp= sc.nextLine();
        if(emp.equals("permanent")||emp.equals("Permanent")){
            emp_sal+=2000;
        }
        System.out.println("The Employee salary is: "+emp_sal);
    }
}
class Testor{
    public static void main(String[] args){
        Scanner sc =new Scanner(System.in);
        SalariedEmployee[] emp1=new SalariedEmployee[3];
        for(int i=0;i<3;i++){
            System.out.print("Enter the name of Emplyoee: ");
            String name=sc.nextLine();
            System.out.print("Enter the id of Emplyoee: ");
            String id=sc.nextLine();
            System.out.print("Enter the age of Emplyoee: ");
            int age=sc.nextInt();
            System.out.print("Enter the Salary of Emplyoee: ");
            double Salary=sc.nextDouble();
            emp1[i]=new SalariedEmployee(name,id,age,Salary);
            emp1[i].print_out();
           sc.nextLine();
        }
    }
}
```

**RESULT:**

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Enter the name of Emplyoee: Srk
Enter the id of Emplyoee: 12
Enter the age of Emplyoee: 34
Enter the Salary of Emplyoee: 50000
The name of the employee is: Srk
The id of the employee is: 12
The age of the employee is: 34
Enter the type of employee: permanent
The Employee salary is: 52000.0
Enter the name of Emplyoee: Rohit
Enter the id of Emplyoee: 1243
Enter the age of Emplyoee: 34
Enter the Salary of Emplyoee: 70000
The name of the employee is: Rohit
The id of the employee is: 1243
The age of the employee is: 34
Enter the type of employee:
The Employee salary is: 70000.0
Enter the name of Emplyoee: Rahul
Enter the id of Emplyoee: 67
Enter the age of Emplyoee: 23
Enter the Salary of Emplyoee: 4000000
The name of the employee is: Rahul
The id of the employee is: 67
The age of the employee is: 23
Enter the type of employee: permanent
The Employee salary is: 4002000.0
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| Program 2 | |
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| **PROBLEM STATEMENT:** | **Mr. Abhishek Bachan is an H.R. Manager of "ABCL Technologies" At the beginning of the new year he anticipated that the company will need 30 new additional persons to fill up different vacancies in software team. He gave an advertisement in the newspaper inviting applications for filling up different vacant posts. As many as 120 applications were received. The same were scrutinized and they were given four tests. There are 4 sections and each section has 2 questions each.**<br><br>**Create class Testing that generates the marks based on his answers in test.**<br><br>**class Testing has methods takeTest. Design objective answers for following questions and conduct test and generate result whether candidate passed or failed.**<br><br>**Create subclass Recruitment that prints if the person has passed(greater than 60%) or failed the test. generateResult()**<br><br>**generates the marks percentage based on his answers in test.**<br><br>**Create class Tester with main method**<br><br>**The objective of the first test was to find out how much interest the applicant takes in his work.**<br><br>**Questions asked**<br><br>**1.What is the vision of the company?**<br><br>**2.How long will you stay in this role?**<br><br>**The objective of the second test was to find out 'specialization' of the applicant in any particular area.**<br><br>**Questions asked**<br><br>**1.What is final method in Java?**<br><br>**2.What is the latest version of Java?**<br><br>**Third test aimed at making sure whether the applicant was capable of learning through training or not.**<br><br>**Questions asked**<br><br>**1.What did you learn about Java in last job?**<br><br>**2.What do you wish to learn?**<br><br>**The purpose of the fourth test was to find out how much capability a person has to mix-up with other persons, and whether he can influence other persons and get influenced by them.**<br><br>**Questions asked** |

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| | **1.What makes a team successful?**<br>**2.Do you work faster in team or as individual?** |
| **PROGRAM:** | import java.util.*;<br>class Testing{<br>int grade=0;<br>Scanner sc=new Scanner(System.in);<br>int[] subans=new int[8];<br>int[] ans={2,1,1,2,1,2,1,1};<br>int[] ans1={1,2,2,1,2,1,2,2};<br>void takeTest(){<br><br>System.out.println("||||||||||||||||||Welcome to KBC of my sons company||||||||||||||||||||||");<br>System.out.println("Pehala Prashn) What is the vision of the company?");<br>System.out.println("[1] Paisa hi Paisa hoga babu bhaiya \t [2] Pehala option mera usoolo ke khilaaf hai");<br>System.out.print("Your answer: ");<br>subans[0]=sc.nextInt();<br>System.out.println("Doosara Prashn) How long will you stay in this role?");<br>System.out.println("[1] Till Comapny is Rich \t [2] Till I am Rich ");<br>System.out.print("Your answer: ");<br>subans[1]=sc.nextInt();<br>System.out.println("Teesara Prashn) What is final method in Java?");<br>System.out.println("[1] Constant \t [2] Second Keyword of static");<br>System.out.print("Your answer: ");<br>subans[2]=sc.nextInt();<br>System.out.println("Chautha Prashn) What is the latest version of Java?");<br>System.out.println("[1] Java 19 \t [2] Java 17");<br>System.out.print("Your answer: ");<br>subans[3]=sc.nextInt();<br>System.out.println("Paanchavaan Prashn) What did you learn about Java in last job?");<br>System.out.println("[1] To print hello world \t [2] To code a website ");<br>System.out.print("Your answer: "); |

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        subans[4]=sc.nextInt();
        System.out.println("Chhatha Prashn) What do you wish to learn?");
        System.out.println("[1] C++  \t [2] Python ");
        System.out.print("Your answer: ");
        subans[5]=sc.nextInt();
        System.out.println("Saataveen Prashn) What makes a team
successful?");
        System.out.println("[1] Team work \t [2] Leadership");
        System.out.print("Your answer: ");
        subans[6]=sc.nextInt();
        System.out.println("Aathva Prashn) Do you work faster in team or as
individual?");
        System.out.println("[1] Team \t [2] Individual");
        System.out.print("Your answer: ");
        subans[7]=sc.nextInt();
    }
}
class Recruitment extends Testing{
    void generateResult(){
        for(int i=0;i<8;i++){
            if(subans[i]==ans[i])
                grade+=10;
            else if(subans[i]==ans1[i])
                grade+=5;
        }
        double percentage=(double)grade/80*100;
        if (percentage>60)
            System.out.println("Done");
        else
            System.out.println("Not done");
    }
}
public class tester
{
    public static void main(String[] args) {
        Recruitment[] person =new Recruitment[6];
        for(int i=0;i<6;i++){
            person[i]=new Recruitment();
            person[i].takeTest();
            person[i].generateResult();
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| | }<br>}<br>} |

**RESULT:**

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||||||||||||||||||Welcome to KBC of my sons company|||||||||||||||||||||||||
Pehala Prashn) What is the vision of the company?
[1] Paisa hi Paisa hoga babu bhaiya      [2] Pehala option mera usoolo ke khilaaf hai
Your answer: 1
Doosara Prashn) How long will you stay in this role?
[1] Till Comapny is Rich     [2] Till I am Rich
Your answer: 2
Teesara Prashn) What is final method in Java?
[1] Constant     [2] Second Keyword of static
Your answer: 1
Chautha Prashn) What is the latest version of Java?
[1] Java 19      [2] Java 17
Your answer: 2
Paanchavaan Prashn) What did you learn about Java in last job?
[1] To print hello world     [2] To code a website
Your answer: 1
Chhatha Prashn) What do you wish to learn?
[1] C++      [2] Python
Your answer: 1
Saataveen Prashn) What makes a team successful?
[1] Team work    [2] Leadership
Your answer: 1
Aathva Prashn) Do you work faster in team or as individual?
[1] Team     [2] Individual
Your answer: 1
Done
```

## Program 3

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| **PROBLEM STATEMENT:** | The cost of stock on each day is given in an array A[] of size N.<br>Day 1 price in first location, day 2 price in second location etc. Find all the days on which you buy and sell the stock any number of time so that in between those days your profit is maximum.A new transaction can only start |

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| | after previous transaction is complete. Person can hold only one share at a time.<br><br>Create class **Stock** that has name of stock and array of prices. Also it has input method that initialises the predicted price of the stock in an array of length N.<br><br>Create class **Transaction** that is sub class of Stock class. It has method findMaximumProfit method.<br><br>Example<br><br>Stock Prices: {1, 5, 2, 3, 7, 6, 4, 5}<br><br>Total profit earned is 10<br><br>Buy on day 1 and sell on day 2<br><br>Buy on day 3 and sell on day 5<br><br>Buy on day 7 and sell on day 8 |
| **PROGRAM:** | package PSOOP;<br><br>import java.util.*;<br>class stock{<br>String name;<br>int[] arr=new int[8];<br>stock(String name,int arr[])<br>{<br>this.name=name;<br>this.arr=arr;<br>}<br>}<br>class transactions extends stock{<br>public transactions (String name,int arr[]){<br>super(name,arr);<br>}<br>void findMaximumProfit(){<br>int profit=0;<br>int min=0,max=0;<br>System.out.printf("BUY ON DAY 1");<br>for(int j=1;j<arr.length-1;j++){<br>if(arr[j]>arr[j-1] && arr[j]>arr[j+1]){<br>max=j;<br>profit+=arr[max]-arr[min]; |

```
            System.out.printf(" SELL ON DAY %d \n", max+1);
          }
          if(arr[j]<arr[j-1] && arr[j]<arr[j+1]){
            min=j;
            System.out.printf("BUY ON DAY %d ", min+1);
          }
          if(j==arr.length-2 && arr[j]<arr[j+1]){ max=j+1;
            profit+=arr[max]-arr[min];
            System.out.printf(" SELL ON DAY %d\n ", max+1);
          }
        }
        System.out.println(); System.out.println("Profit: "+ profit);
    }

}
public class Stockmarket {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter stock name:");
        String name=sc.nextLine();
        int [] arr={1, 5, 2, 3, 7, 6, 4, 5};
        transactions m=new transactions(name, arr); m.findMaximumProfit();
    }
}
```

**RESULT:**

```
Enter stock name:Tata
BUY ON DAY 1 SELL ON DAY 2
BUY ON DAY 3  SELL ON DAY 5
BUY ON DAY 7  SELL ON DAY 8

Profit: 10
```

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| **CONCLUSION:** | We learned to use inheritance in problems |