Programs for Module 2

1. XYZ shopping mall wants to distribute lucky coupon for its customers. Each lucky coupon has some prize amount. The mall executive wants to pick 100 order numbers randomly. The order number lies between 1000 and 9999. Design a java application which helps the executive to determine the winners of lucky coupon. The customer is winner if order number is palindrome and if it belongs to those 100 randomly picked one.

Program
```java
import java.util.Random;
public class Array {
    public static void main(String args[]) {
    int min = 1000;
    int max = 9999;
    int ordernum[] =  new int[100];
    Random r = new Random();
    for(int i =0; i<100;i++)
    {
    ordernum[i] = r.nextInt((max - min) + 1) + min;
    }
    for(int i=0; i < ordernum.length; i++)
    {
    int number = ordernum[i];
    int reversedNumber = 0;
    int temp=0;
    while(number > 0)
    {
       temp = number % 10;
       number = number / 10;
       reversedNumber = reversedNumber * 10 + temp;
    }
    if(ordernum[i] == reversedNumber)
    System.out.println("The customer with order number"+" "+ordernum[i]+" "+ "won the lucky
coupon");

    }
    }
}
```
Output
The customer with order number 4224 won the lucky coupon
The customer with order number 8888 won the lucky coupon

2. Mr Ram has gathered the requirements of sports accessories for Team A and Team B as shown below. The cost of sports accessories are given as below. Design a java application to find the total cost of accessories for Team A and Team B separately

Teams	Balls	Bats	Gloves
Team -A	12	45	15
Team -B	15	38	17

Equipment Name	Cost
Balls	9$
Bats	80$
Gloves	60$

Program

```java
import java.util.Scanner;
public class Lab3
{
public static void main(String args[])
{
int itemlist[][] = new int[2][3];
int totalcost[]= new int[2];
int cost[] = {9,80,60};
Scanner s = new Scanner(System.in);
for(int i=0;i<2;i++)
{
System.out.println("Enter the quantity of balls, bats and gloves for Team" + (i+1));
for(int j=0;j<3;j++)
{
itemlist[i][j]= s.nextInt();
}
}
for(int i=0;i<2;i++)
{
for(int j=0;j<3;j++)
{
totalcost[i]=totalcost[i]+ itemlist[i][j]*cost[j];
}
}
System.out.println("The total bill for Team A and Team B is as follows");
System.out.println("For Team A " + totalcost[0]);
System.out.println("For Team B " + totalcost[1]);
}
}
```

Output
Enter the quantity of balls, bats and gloves for Team1
2 3 4
Enter the quantity of balls, bats and gloves for Team2
1 2 4
The total bill for Team A and Team B is as follows
For Team A 498
For Team B 4609

3. Mr John is working as data entry operator in company XYZ. He wants to gather the information about the new employees joining the organization. Design a java application to read and display the information about n employees.

Program

```java
import java.util.Scanner;
class Employee
{
  int id,age;
  String name;
  long salary;
void getData()
{
 Scanner sc = new Scanner(System.in);
 System.out.println("Enter Employee Id : ");
 id = sc.nextInt();
 System.out.println("Enter Employee Name : ");
 name = sc.next();
 System.out.print("Enter Employee Age : ");
 age = sc.nextInt();
 System.out.print("Enter Employee Salary : ");
 salary = sc.nextLong();
}
void putData()
{
System.out.println(id + "\t\t" +name + "\t\t" +age + "\t\t"+salary);
}
}
public class EmployeeObj
{
public static void main(String args[])
{
  int n;
  Scanner s =  new Scanner(System.in);
  System.out.println("Enter the number of employees");
  n=s.nextInt();
  Employee[] Emp = new Employee[n];
  int i;
```

```
 for(i=0;i<n;i++)
 Emp[i] = new Employee();  // Allocating memory to each object
 for(i=0;i<n;i++)
 {
  System.out.println("Enter details of Employee " + (i+1));
  Emp[i].getData();
 }
 System.out.println("Details of Employees\n");
 for(i=0;i<n;i++)
 Emp[i].putData();
}
}
```

Output

Enter the number of employees
2
Enter details of Employee 1
Enter Employee Id :
111
Enter Employee Name :
ram
Enter Employee Age : 33
Enter Employee Salary : 45000
Enter details of Employee 2
Enter Employee Id :
222
Enter Employee Name :
Sham
Enter Employee Age : 45
Enter Employee Salary : 78800
Details of Employees

| 111 | ram | 33 | 45000 |
| 222 | Sham | 45 | 78800 |

4. Mr John is office executive in Engineering college. He wants to count the number of admissions on each day branch wise. Design a java application which counts the number of students admitted in CSE, ISE and ECE branch depending upon the roll number allocated to the student. The format of roll number is as follows. Example : 20221CSE001.

RollNumber Format : year-1-branch name-last three digits of roll number

Program

```
import java.util.*;
public class Stringprogram1 {
   public static void main(String args[]) {
    int countcse,countece,countise;
```

```java
      countcse=0;
      countece=0;
      countise=0;
      Scanner s = new Scanner(System.in);
      String rollnumbers[] = new String[10];

      System.out.println("Enter the roll number of 10 students");
      for(int i = 0; i<10;i++)
      {
         rollnumbers[i] = s.next();
      }
      for(int i = 0; i<10; i++)
      {
         String str = rollnumbers[i].toLowerCase();
         String substringstr = str.substring(5,8);

         if(substringstr.equals("cse"))
         countcse = countcse+1;
         else if(substringstr.equals("ise"))
         countise = countise+1;
         else
         countece = countece+1;

      }
      System.out.println("Total CSE students " + countcse);
      System.out.println("Total ISE students " + countise);
      System.out.println("Total ECE students " + countece);
      }
}
```

Output

Enter the roll number of 10 students
20221cse001
20221cse002
20221cse003
20221cse004
20221cse005
20221cse006
20221CSE007
20221ece001
20221ece002
20221ise200
Total CSE students 7
Total ISE students 1
Total ECE students 2

5. XYZ bank wants to generate a 16 digit transaction password for the customers during each transaction. The transaction password is constructed based on the username and some random digits. Design a java application which generates a 16 digit transaction password using following rule
Note : Transaction Password = first half of user name + random digits + second half of user name and total length of Transaction Password is 16. The entered username should not contain any blank spaces.

Program:

```java
import java.util.*;
public class Stringprogram1 {
    public static void main(String args[]) {
    Scanner s = new Scanner(System.in);
    Random r = new Random();
    StringBuffer tpassword =  new StringBuffer();
    int min=0;
    int max=9;
    String name,firsthalf,secondhalf;
    System.out.println("Enter username : ");
    name = s.next();
    int len = name.length();
    System.out.println("Length of username is " + len);
    firsthalf = name.substring(0,len/2);
    secondhalf = name.substring(len/2,len);
    tpassword.append(firsthalf);
    for(int i = 0;i< 16-len; i++)
    {
    int num = r.nextInt((max - min) + 1) + min;
    tpassword.append(num);
    }
    tpassword.append(secondhalf);

    System.out.println("16 digits transaction password is : " + tpassword);
    }
}
```

Output

Enter username :
reshmashet
Length of username is 11
16 digits transaction password is : resha68585mashet

6. The Royal Sea International provides Passenger Ships and Container Ships. Based on the requirement of the user display suitable ship and its details. Design a Java application based on inheritance for the same.

Program

```java
import java.util.Scanner;
class Vehicle
{
    String vehiclename;
    void display()
    {
        System.out.println("Vehicle Name is :" + vehiclename);
    }
}
class WaterVehicle extends Vehicle
{
    int length_of_waterline;
    int length;
    void display()
    {
        super.display();
        System.out.println("Length of Water line :" + length_of_waterline);
        System.out.println("Length :"+ length);
    }
}
class Passengership extends WaterVehicle
{
    int no_of_decks, no_of_crew,no_of_lifeboats;
    String restaurant_name;
    String hospital_name;

    Passengership( int decks, int crew, int lifeboat, String r)
    {
        no_of_decks = decks;
        no_of_crew = crew;
        no_of_lifeboats = lifeboat;
        restaurant_name = r;
    }
    void display()
    {
        super.display();
        System.out.println("No of decks :" + no_of_decks);
        System.out.println("No of crew members :" + no_of_crew);
        System.out.println("No of Life Boats :" + no_of_lifeboats);
        System.out.println("Restaurant Name :" + restaurant_name);
    }
}
class Containership extends WaterVehicle
{
    int no_of_holds;
    String container_material;
    String container_type;
```

```java
    Containership ( int holds, String m, String t)
    {
       no_of_holds= holds;
       container_material = m;
       container_type = t;
    }
    void display()
    {
       super.display();
       System.out.println("No of Holds :" + no_of_holds);
       System.out.println("Container Material :" + container_material);
       System.out.println("Container Type :" + container_type);
    }
}
public class InheritanceDemo
{
    public static void main(String args[])
    {
       Scanner s =  new Scanner(System.in);
       System.out.println("Enter your purpose 1. Travel on Ship 2. Transportation of Goods");
       int ch  = s.nextInt();
       if(ch==1)
       {
          Passengership ship = new Passengership( 10, 100,1000,"Royal Food");
          ship.vehiclename = "Oasis of Seas";
          ship.length_of_waterline = 1000;
          ship.length = 1200;
          ship.display();
       }
       else
       {
          Containership ship = new Containership(6,"Steel","Refrigerated");
          ship.vehiclename = "MSC Oscar";
          ship.length_of_waterline = 2000;
          ship.length = 2400;
          ship.display();
       }
    }
}
```

Output

Enter your purpose 1. Travel on Ship 2. Transportation of Goods
1
Vehicle Name is :Oasis of Seas
Length of Water line :1000
Length :1200
No of decks :10
No of crew members :100

No of Life Boats :1000
Restaurant Name :Royal Food

7. The shopping website named Shopify wants to offer supercoins for the customer based on thier purchases. The elite customer earns 2 supercoins for each 100 Rs spent and icon customer earns 4 supercoins for each 100 Rs spent. Design a java application which calculates the total super coins collected yearly by the customer on the basis of amount spent in each month.

Program

```java
import java.util.Scanner;
class EliteCustomer
{
int no_of_supercoins;
double[] amount_spent = new double[12];
double total_amount=0;

void calculatetotalamount()
{
   Scanner s = new Scanner(System.in);
   int i;
   for(i=0;i<12;i++)
   {
      System.out.println("Enter the amount spent on orders in Month " + (i+1));
      amount_spent[i] = s.nextDouble();
   }
   for(i=0;i<12;i++)
   {
      total_amount = total_amount+ amount_spent[i];
   }
   System.out.println("Total amount spent in a year is " + total_amount);
}
void calculatesupercoins()
{
   System.out.println("You are eligible for 2 supercoins per 100 Rs spent");
   no_of_supercoins = (int)(total_amount/100)*2;
   System.out.println("The number of supercoins earned is " + no_of_supercoins);
}
}
class IconCustomer extends EliteCustomer
{
void calculatesupercoins() //overridden method
{
   System.out.println("You are eligible for 4 supercoins per 100 Rs spent");
   no_of_supercoins = (int)(total_amount/100)*4;
   System.out.println("The number of supercoins earned is " + no_of_supercoins);
}
```

```
}
public class SuperCoins
{
    public static void main(String args[])
    {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the customer type 1. Elite or 2. Icon");
        int ch = s.nextInt();
        if(ch==1)
        {
            EliteCustomer customer = new EliteCustomer();
            customer.calculatetotalamount();
            customer.calculatesupercoins();
        }
        else
        {
            IconCustomer customer = new IconCustomer();
            customer.calculatetotalamount();
            customer.calculatesupercoins();
        }
    }
}
```

Output

Enter the customer type 1. Elite or 2. Icon
2
Enter the amount spent on orders in Month 1
1000
Enter the amount spent on orders in Month 2
1000
Enter the amount spent on orders in Month 3
1000
Enter the amount spent on orders in Month 4
1000
Enter the amount spent on orders in Month 5
0
Enter the amount spent on orders in Month 6
0
Enter the amount spent on orders in Month 7
0
Enter the amount spent on orders in Month 8
2000
Enter the amount spent on orders in Month 9
4000
Enter the amount spent on orders in Month 10
0
Enter the amount spent on orders in Month 11
0

Enter the amount spent on orders in Month 12
0
Total amount spent in a year is 10000.0
You are eligible for 4 supercoins per 100 Rs spent
The number of supercoins earned is 400