Practical No.3

Name: Jadhav Siddhesh Ramesh
Class: T.Y B.sc(Computer Science)
Div: A Batch: B
Roll No : 32
Subject :CS- 359 Object Oriented Programming Language Using Java-I
Practical Name: Inheritance and Interfaces
Performance Date: Submission Date:

Que.1) Write a program for multilevel inheritance such that country is inherited from continent. State is inherited from country. Display the place, state, country and continent.
Program:

```
import java.io.InputStreamReader;
import java.io.BufferedReader;
import Java.io.IOException;
class continent
{
String con;
InputSteramReader i=new InputSteamReader(System.in);
BufferedReader r=new BufferedReader(i);
void con_input() throws IOException
{
System.out.println("Enter continent name:");
con=r.readLine();
}
}
class Country extends Continent
{
String cou;
void cou_input() throws IOException
{
System.out.println("Enter country name:");
cou=r.readLine();
}
}
class state extends Country
{
String sta;
void sta_input() throws IOException
{
System.out.println("Enter State Name:");
sta=r.readLine();
}
}
class Maincontinent1 extends state
{
String pla;
void pla_input() throws IOException
{
System.out.println("Enter Place Name:");
pla=r.readLine();
```

```
}

public static void main(String args[]) throws IOException
{
Main a=new Main();
s.con_input();
s.cou_input();
s.sta_input();
s.pla_input();
System.out.println("\n\nContinent:"+s.con);
System.out.println("Country:"+s.cou);
System.out.println("State:"+s.sta);
System.out.println("Place:"+s.pla);
}
}
```

Output:

```
Enter Continent Name:
Asia
Enter Country Name:
India
Enter State Name:
Maharashta
Enter Place Name:
Junnar

Continent:Asia
Country:India
State:Maharashta
Place:Junnar
```

Que.2) Define an abstract class Staff with protected members id and name. Define a parameterized constructor. Define one subclass OfficeStaff with member department. Create n objects of OfficeStaff and display all details.

Program:

```
import java.util.*;
abstract class Staff
{
protected int mid;
protected String mname;
Staff(int mid,String mname)
{
this.mid=mid;
this.mname=mname;
}
abstract void display();
}
class officestaff extends Staff
{
String dept;
officestaff(int mid,String mname,String dept)
{
super(mid,mname);
```

```
this.dept=dept;
}
void display()
{
System.out.println("member id="+mid);
System.out.println("member name="+mname);
System.out.println("member department="+dept);
System.out.println(" ");
}
}
public class staff2
{
public static void main(String args[])
{
Scanner sc= new Scanner(System.in);
System.out.println("how many object you want to create");
int n= sc.nextInt();
officestaff  o[]=new officestaff[n];
for(int i=0;i<n;i++)
{
System.out.println("enter the member id ");
int mid= sc.nextInt();
System.out.println("enter the member name ");
String mname= sc.next();
System.out.println("enter the member department ");
String dept= sc.next();
o[i] = new officestaff(mid,mname,dept);
}
System.out.println("Total no of object created"+n);
for(int i=0;i<n;i++)
{
o[i].display();
}
}
}
```

Output:

```
how many object you want to create
3
enter the member id
56
enter the member name
shruti
enter the member department
bcs
enter the member id
23
enter the member name
sakshi
enter the member department
bca
enter the member id
```

```
65
enter the member name
rutuja
enter the member department
farmacy
Total no of object created3
member id=56
member name=shruti
member department=bcs

member id=23
member name=sakshi
member department=bca

member id=65
member name=rutuja
member department=farmacy
```

Que.3) Write a program to find the cube of given number using function interface.

Program:

```
import java.util.Scanner;
public class FindingCube
{
public static void main(String[]args)
{
int n=5;
System.out.println("Enter a number:");
Scanner sc=new Scanner(System.in);
int num=sc.nextInt();
System.out.println("Cube of the given number is"+(num*num*num));
}
}
```

Output:

```
Enter a number:
4
Cube of the given number is64
```

Que.4) Write a program to using marker interface create a class product(product_id, product_name, product_cost, product_quantity) define a default and parameterized constructor. Create objects of class product and display the contents of each object and Also display the object count.

Program:

```
import java.util.*;
interface ProductMarker
{
}
class Product implements ProductMarker
{
int id;
String name;
int cost;
int quantity;
```

```
int count;
Product(){
id=0;
name=" ";
cost=0;
quantity=0;
}
Product(int id, String name, int cost, int quantity){
this.id=id;
this.name=name;
this.cost=cost;
this.quantity=quantity;
this.count++;
}
}
public class Products
{
public static void main(String[]args)
{
int count=0;
Scanner a = new Scanner(System.in);
System.out.println("How many product ?");
int number = a.nextInt();

System.out.println("\n");
Product products[] = new Product[number];
System.out.println("Enter product data");
for(int k=0;k<number;k++)
{
System.out.println("Product Id");
int id = a.nextInt();
System.out.println("Product name");
String name = a.next();
System.out.println("Product cost");
int cost = a.nextInt();
System.out.println("Product quantity");
int quantity = a.nextInt();
System.out.println("\n");
products[k] = new Product(id, name, cost, quantity);
count++;
}

if(products[0] instanceof ProductMarker){
System.out.println("Class is using ProductMarker");
}
System.out.println("Product details\n");
for(Product product:products)
{
System.out.println("Product Id"+product.id);
System.out.println("Product name"+product.name);
System.out.println("Product cost"+product.cost);
System.out.println("Product quantity"+product.quantity);
```

```
System.out.println("\n");
}
System.out.println("Total object is"+count);
}
}
```

Output:

```
How many product ?
2


Enter product data
Product Id
1
Product name
Medimix
Product cost
30
Product quantity
3


Product Id
2
Product name
Santoor
Product cost
20
Product quantity
6


Class is using ProductMarker
Product details

Product Id1
Product nameMedimix
Product cost30
Product quantity3


Product Id2
Product nameSantoor
Product cost20
Product quantity6


Total object is2
```