Week8 extra

1.Write a program which has an abstract class Solid and implements cylinder, cone and

sphere by inheriting from solid to find surface area and volume.

import java.util.Scanner;

abstract class Solid

{

float d1,d2;

Solid(float r, float h)

{

d1=r;

d2=h;

}

abstract void surface\_area();

abstract void volume();

}

class Cylinder extends Solid

{

Cylinder(float r, float h)

{

super(r,h);

}

void surface\_area()

{

double sa=2\*3.14\*d1\*d2+2\*3.14\*d1\*d1;

System.out.println("the surface area of cylinder is:"+sa);

}

void volume()

{

double v=3.14\*d1\*d1\*d2;

System.out.println("the volume of cylinder is:"+v);

}

}

class Cone extends Solid

{

Cone(float r,float h)

{

super(r,h);

}

void surface\_area()

{

double sa=3.14\*d1\*(d1+Math.sqrt((d2\*d2)+(d1\*d1)));

System.out.println("the surface area of cone is:"+sa);

}

void volume()

{

double v=3.14\*d1\*d1\*(d2/3);

System.out.println("the volume of cone is:"+v);

}

}

class Sphere extends Solid

{

Sphere(float r,float h)

{

super(r,h);

}

void surface\_area()

{

double sa=4\*3.14\*d1\*d1;

System.out.println("the surface area of sphere is:"+sa);

}

void volume()

{

double v=(4/3)\*3.14\*d1\*d1\*d1;

System.out.println("the volume of sphere is:"+v);

}

}

class Main

{

public static void main(String args[])

{

int ch,flag=0;

Scanner ss=new Scanner(System.in);

while(flag==0)

{

System.out.println("Enter the choice");

System.out.println("1.CYLINDER\n2.CONE\n3.SPHERE");

ch=ss.nextInt();

switch(ch)

{

case 1:

System.out.println("Enter the radius and hieght of cylinder:");

float x=ss.nextFloat();

float y=ss.nextFloat();

Cylinder cy=new Cylinder(x,y);

cy.surface\_area();

cy.volume();

break;

case 2:

System.out.println("Enter the radius and hieght of cone");

float s=ss.nextFloat();

float w=ss.nextFloat();

Cone co=new Cone(s,w);

co.surface\_area();

co.volume();

break;

case 3:

System.out.println("Enter the radius of sphere:");

float f=ss.nextFloat();

Sphere sp=new Sphere(f,f);

sp.surface\_area();

sp.volume();

break;

default:

flag=1;

}

}

}

}

2. Develop a Java program to implement the hierarchy given below. Include atleast one

appropriate member in each of these classes. Set and display details in each of the class

and create objects of the leaf members in the hierarchy.

import java.util.Scanner;

class person

{

Scanner ss=new Scanner(System.in);

String name;

void disp\_person()

{

System.out.println("Enter the person name");

name=ss.nextLine();

}

}

class employee extends person

{

int age;

void disp\_emp()

{

System.out.println("Enter the employee age");

age=ss.nextInt();

}

}

class student extends person

{

int age;

void disp\_student()

{

System.out.println("Enter the student age");

age=ss.nextInt();

}

}

class teaching extends employee

{

String qualification;

void disp\_teach()

{

System.out.println("Enter the teaching staff qualification");

qualification=ss.next();

}

}

class non\_teaching extends employee

{

String qualification;

void disp\_nonteach()

{

System.out.println("Enter the non teaching staff qualification");

qualification=ss.next();

}

}

class ug extends student

{

String dep;

void disp\_ug()

{

System.out.println("Enter the ug department");

dep=ss.next();

}

}

class pg extends student

{

String dep;

void disp\_pg()

{

System.out.println("Enter the pg department");

dep=ss.next();

}

}

class Main

{

public static void main(String args[])

{

int flag=0;

Scanner xx=new Scanner(System.in);

teaching t=new teaching();

non\_teaching nt=new non\_teaching();

ug u=new ug();

pg p=new pg();

while(flag==0)

{

System.out.println("\nEnter the choice\n1.TEACHING STAFF\n2.NON TEACHING STAFF\n3.UG STUDENT\n4.PG STUDENT");

int ch=xx.nextInt();

switch(ch)

{

case 1:

t.disp\_person();

t.disp\_emp();

t.disp\_teach();

System.out.println("Name of the person : "+t.name);

System.out.println("Age of employee : "+t.age);

System.out.println("qualification of teaching staff: "+t.qualification);

break;

case 2:

nt.disp\_person();

nt.disp\_emp();

nt.disp\_nonteach();

System.out.println("Name of the person : "+nt.name);

System.out.println("Age of employee : "+nt.age);

System.out.println("qualification of non teaching staff: "+nt.qualification);

break;

case 3:

u.disp\_person();

u.disp\_student();

u.disp\_ug();

System.out.println("Name of the person : "+u.name);

System.out.println("age of student : "+u.age);

System.out.println("department of ug student : "+u.dep);

break;

case 4:

p.disp\_person();

p.disp\_student();

p.disp\_pg();

System.out.println("Name of the person : "+p.name);

System.out.println("age of student : "+p.age);

System.out.println("department of pg student : "+p.dep);

break;

default:

flag=1;

}

}

}

}