Week 8 extra programs

/\*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.\*;

abstract class solid

{

int a,b;

abstract void surface\_area();

abstract void volume();

}

class cylinder extends solid

{

float area,vol;

void surface\_area()

{

area=(2.0f\*3.14f\*a\*b)+(2.0f\*3.14f\*a\*a);

System.out.println("surface area of cylinder = "+area);

}

void volume()

{

vol=3.14f\*a\*a\*b;

System.out.println("volume of cylinder = "+vol);

}

}

class cone extends solid

{

float area,vol;

void surface\_area()

{

float l=(float)Math.sqrt(a\*a+b\*b);

area=(3.14f\*a\*l)+(3.14f\*a\*a);

System.out.println("surface area of cone = "+area);

}

void volume()

{

vol=3.14f\*a\*a\*b/3.0f;

System.out.println("volume of cone = "+vol);

}

}

class sphere extends solid

{

float area,vol;

void surface\_area()

{

area=4.0f\*3.14f\*a\*a;

System.out.println("surface area of sphere = "+area);

}

void volume()

{

vol=4.0f\*3.14f\*a\*a\*a/3.0f;

System.out.println("volume of sphere = "+vol);

}

}

class solids

{

public static void main(String args[])

{

Scanner sc=new Scanner(System.in);

cylinder a1=new cylinder();

System.out.println("enter radius and height of cylinder");

a1.a=sc.nextInt();

a1.b=sc.nextInt();

cone a2=new cone();

System.out.println("enter radius and height of cone");

a2.a=sc.nextInt();

a2.b=sc.nextInt();

sphere a3=new sphere();

System.out.println("enter radius of sphere");

a3.a=sc.nextInt();

a1.surface\_area();

a1.volume();

a2.surface\_area();

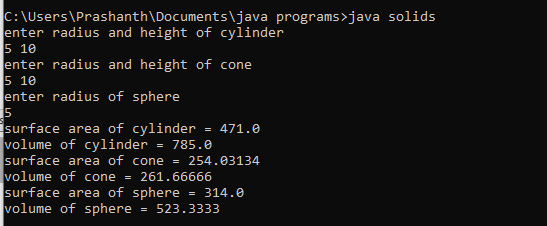
a2.volume();

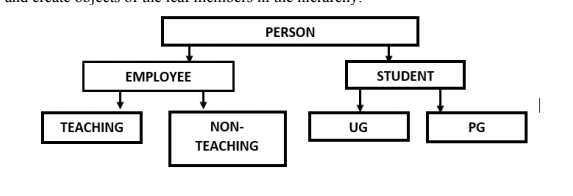
a3.surface\_area();

a3.volume();

}

}





/\*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.\*/

class person

{

String name="neha";

void disp\_person()

{

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

}

}

class employee extends person

{

int age=35;

void disp\_age\_emp()

{

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

}

}

class student extends person

{

int age=22;

void disp\_age\_stud()

{

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

}

}

class teaching extends employee

{

String qual="M.Tech";

void disp\_teaching()

{

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

}

}

class non\_teaching extends employee

{

String qual="MBA";

void disp\_non\_teaching()

{

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

}

}

class ug extends student

{

String dep="computer science";

void disp\_ug()

{

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

}

}

class pg extends student

{

String dep="MSc in artificial intelligence";

void disp\_pg()

{

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

}

}

class general

{

public static void main(String args[])

{

teaching o1=new teaching();

non\_teaching o2=new non\_teaching();

ug o3=new ug();

pg o4=new pg();

System.out.println("-------------------------------------------");

o1.disp\_person();

o1.disp\_age\_emp();

o1.disp\_teaching();

System.out.println("-------------------------------------------");

o2.disp\_person();

o2.disp\_age\_emp();

o2.disp\_non\_teaching();

System.out.println("-------------------------------------------");

o3.disp\_person();

o3.disp\_age\_stud();

o3.disp\_ug();

System.out.println("-------------------------------------------");

o4.disp\_person();

o4.disp\_age\_stud();

o4.disp\_pg();

}

}

