1.Write a java program to implement class mechanism- Create methods and invoke them inside main method

i.no return type and without parameter list

ii. no return type and with parameter list

iii. return type and without parameter list

iv. return type and with parameter list

Answer :(i)

package oop;

import java.util.Scanner;

public class EX1 {

Scanner input=new Scanner(System.in);

int lenght=input.nextInt();

int height=input.nextInt();

int widht=input.nextInt();

void display(){

int y;

y=lenght\*widht\*height;

System.out.println(y);

}

}

package oop;

public class test12 {

public static void main(String[] args) {

EX1 e=new EX1();

e.display();

}}

Answer:ii

package oop;

public class EX1b {

int height;

int width;

int length;

void getdata(int l,int h,int w){

length=l;

height=h;

width=w;}

void display(){

int y;

y=length\*width\*height;

System.out.println(y);

}}

package oop;

public class test123 {

public static void main(String[] args) {

EX1b p1=new EX1b();

p1.getdata(10, 20, 20);

p1.display();

}}

Answer:iii

package oop;

import java.util.Scanner;

public class EX1c {

Scanner input=new Scanner(System.in);

int lenght=input.nextInt();

int height=input.nextInt();

int widht=input.nextInt();

int setdata()

{

return lenght\*height\*widht;

}}

package oop;

public class test1234 {

public static void main(String[] args) {

EX1c p=new EX1c();

p.setdata();

System.out.println(p.setdata());

}

}

Answer:iv

public class EX1d {

int lenght;

int height;

int widht;

int area(int l,int h,int w){

lenght=l;

height=h;

widht=w;

return lenght\*widht\*height;

}

}

public class test1234 {

public static void main(String[] args) {

EX1d p=new EX1d();

int y=p.area(10,10,10);

System.out.println(y);

}

}

Example2:

package oop;

import java.util.Scanner;

public class JavaProgram {

public static void main(String args[])

{

int n, sum = 0, temp, remainder, digits = 0;

Scanner in = new Scanner(System.in);

System.out.println("Input a number =");

n = in.nextInt();

temp = n;

while (temp != 0) {

digits++;

temp = temp/10;

}

temp = n;

while (temp != 0) {

remainder = temp%10;

sum = (int) (sum + Math.pow(remainder, digits));

temp = temp/10;

}

if (n == sum)

System.out.println(n + " is an Armstrong number.");

else

System.out.println(n + " isn't an Armstrong number.");

}}

Example 3:

package oop;

public class StudentClass {

String name;

StudentClass()

{

System.out.println("Unknown");

}

StudentClass(String p)

{

name=p;

System.out.println(name);

}

}

package oop;

public class Ex3 {

public static void main(String[] args) {

StudentClass s1=new StudentClass();

StudentClass s2=new StudentClass("pintu hossain");

}

}

Example 4:

package oop;

import java.util.Scanner;

public class Addition {

int a,b;

void getdata(){

Scanner input=new Scanner(System.in);

System.out.println("Enter the two number:");

a=input.nextInt();

b=input.nextInt();

}

void display()

{

int y;

y=a+b;

System.out.println(y);

}

}

package oop;

import java.util.Scanner;

public class Subtraction {

int a,b;

void getdata1(){

Scanner input=new Scanner(System.in);

System.out.println("Enter the two number:");

a=input.nextInt();

b=input.nextInt();

}

void display1()

{

int y;

y=a-b;

System.out.println(y);

}

}

package oop;

import java.util.Scanner;

/\*\*

\*

\* @author Pintu

\*/

public class Multiplication {

int a,b;

void getdata2(){

Scanner input=new Scanner(System.in);

System.out.println("Enter the two number:");

a=input.nextInt();

b=input.nextInt();

}

void display2()

{

int y;

y=a\*b;

System.out.println(y);

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Ex4test {

public static void main(String[] args) {

Addition a1=new Addition();

a1.getdata();

a1.display();

Subtraction s1=new Subtraction();

s1.getdata1();

s1.display1();

Multiplication m1=new Multiplication();

m1.getdata2();

m1.display2();

}

}

Example 5:

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Employee {

String name,age;

int serialnumber,salary;

Employee(String n,String a)

{

name=n;

age=a;

}

Employee(String n,String a,int s1)

{

name=n;

age=a;

serialnumber=s1;

}

Employee(String n,String a,int s1,int s)

{

name=n;

age=a;

serialnumber=s1;

salary=s;

}

void display()

{

System.out.println("Name="+name);

System.out.println("Age="+age);

System.out.println("Serial number="+serialnumber);

System.out.println("Salary="+salary);

}

}

package oop;

import java.util.Scanner;

/\*\*

\*

\* @author Pintu

\*/

public class EmployeeTest {

public static void main(String args[])

{

Scanner input=new Scanner(System.in);

System.out.println("Enter the Employee name and Age ");

String r=input.nextLine();

String t=input.nextLine();

System.out.println("Enter the Employee Serial number and Salary");

int sn=input.nextInt();

int sa=input.nextInt();

Employee e1 =new Employee(r,t);

e1.display();

Employee e2 =new Employee(r,t,sn);

e2.display();

Employee e3 =new Employee(r,t,sn,sa);

e3.display();

}

}

Example 6:

package oop;

import java.util.Scanner;

/\*\*

\*

\* @author Pintu

\*/

public class CheckingPassword {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Please enter a Password: ");

String password = input.next();

if (isValid(password)) {

System.out.println("Valid Password");

} else {

System.out.println("Invalid Password");

}

}

public static boolean isValid(String password) {

if (password.length() < 8) {

return false;

} else {

char c;

int count = 1;

for (int i = 0; i < password.length() - 1; i++) {

c = password.charAt(i);

if (!Character.isLetterOrDigit(c)) {

return false;

} else if (Character.isDigit(c)) {

count++;

if (count < 2) {

return false;

}

}

}

}

return true;

}

}

Example 8:

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Maximum {

int a,b,c;

int maximum(int n1,int n2,int n3)

{

a=n1;

b=n2;

c=n3;

if(a>b && a>c)

{

return a;

}

else if( b>c)

{

return b;

}

else

{

return c;

}

}

static double a1,b1,c1;

static double maximum(double n4,double n5,double n6)

{

a1=n4;

b1=n5;

c1=n6;

if(a1>b1 && a1>c1)

{

return a1;

}

else if(b1>a1 && b1>c1)

{

return b1;

}

else

{

return c1;

}

}

char h,k;

char maximum(char q,char p)

{

h=q;

k=p;

int r=Character.compare(h,k);

if(r>0)

{

return h;

}

else

{

return k;

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Ex8test {

public static void main(String[] args) {

Maximum m1=new Maximum();

System.out.println("Largest Number:"+ m1.maximum(5,10,6));

Maximum.maximum(12.4, 23, 4);

System.out.println("Largest Number:"+Maximum.maximum(12.4, 23, 4));

Maximum m2=new Maximum();

m2.maximum('a', 'b');

System.out.println("The largest chracter:"+ m2.maximum('a', 'b'));

}

}

}

Example 9:

package oop;

import java.util.Scanner;

/\*\*

\*

\* @author Pintu

\*/

public class StudentDetails {

private int roll,marks;

protected int reg\_no;

protected int session;

public String name,dept,address;

public void getdata()

{

Scanner input=new Scanner(System.in);

System.out.println("Enter the Student Name,Dept. and Address");

name=input.nextLine();

dept=input.nextLine();

address=input.nextLine();

}

public void setdata()

{

System.out.println(name);

System.out.println(dept);

System.out.println(address);

}

protected void getdata1()

{

Scanner input=new Scanner(System.in);

System.out.println("Enter the Student Registration number and Session");

reg\_no=input.nextInt();

session=input.nextInt();

}

protected void setdata1()

{

System.out.println(reg\_no);

System.out.println(session);

}

public void getdata2()

{

Scanner input=new Scanner(System.in);

System.out.println("Enter the Student Roll and Mark of Total Subject");

roll=input.nextInt();

marks=input.nextInt();

}

public void setdata2()

{

System.out.println(roll);

System.out.println(marks);

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Ex9 {

public static void main(String[] args) {

StudentDetails s=new StudentDetails();

s.getdata();

s.setdata();

s.getdata1();

s.setdata1();

s.getdata2();

s.setdata2();

}

}

Example 10:

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Complex {

int real, imaginary;

Complex()

{

}

Complex(int tempReal, int tempImaginary)

{

real = tempReal;

imaginary = tempImaginary;

}

Complex addComp(Complex C1, Complex C2)

{

Complex temp = new Complex();

temp.real = C1.real + C2.real;

temp.imaginary = C1.imaginary + C2.imaginary;

return temp;

}

Complex subComp(Complex C1, Complex C2)

{

Complex temp = new Complex();

temp.real = C1.real - C2.real;

temp.imaginary = C1.imaginary - C2.imaginary;

return temp;

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Cptest {

public static void main(String[] args) {

Complex C1 = new Complex(3, 2);

System.out.println("Complex number 1 : "+ C1.real + " + i"+ C1.imaginary);

Complex C2 = new Complex(9, 5);

System.out.println("Complex number 1 : "+ C2.real + " + i"+ C2.imaginary);

Complex C3 = new Complex();

C3 = C3.addComp(C1, C2);

System.out.println("Sum of complex number : "+ C3.real + " + i"+ C3.imaginary);

C3=C3.subComp(C1, C2);

System.out.println("Subtraction of complex number : "+ C3.real + C3.imaginary+"i");

}

}

Example 11:

/\*

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\*/

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class SavingAccount {

static float annull\_Interest\_Rate;

private float savingsBalance;

private float monthlyInterst;

public SavingAccount(float s)

{

savingsBalance=s;

}

public void calculateMonthlyInterest()

{

monthlyInterst=(savingsBalance\*annull\_Interest\_Rate)/12;

System.out.println( monthlyInterst);

}

public static void modifyInterestRate(float interestRate)

{

annull\_Interest\_Rate=interestRate;

}

public void calculateSavings()

{

savingsBalance=savingsBalance+ monthlyInterst;

}

public void display()

{

calculateSavings();

System.out.println(savingsBalance);

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class SavingAccountTest {

public static void main(String[] args) {

SavingAccount t1=new SavingAccount(20000);

SavingAccount t2=new SavingAccount(30000);

SavingAccount.modifyInterestRate(5);

t1.calculateMonthlyInterest();

t1.display();

t2.calculateMonthlyInterest();

t2.display();

}

}

Example 12:

/\*

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\*/

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Rectangle1 {

private float lenght,width;

Rectangle1()

{

lenght=1;

width=1;

}

public void setlenght(float lenght)

{

if(lenght>0 || lenght<20)

{

this.lenght=lenght;

}

}

public float getlenght()

{

return lenght;

}

public void setwidth(float width)

{

if(width>0 || width<20)

{

this.width=width;

}

}

public float getwidth()

{

return width;

}

public float getperimeter()

{

return (getwidth()+getlenght())\*2;

}

public float getarea()

{

return getlenght()\*getwidth();

}

public void display()

{

System.out.println("perimeter:"+(getwidth()+getlenght())\*2);

System.out.println("Area:"+getlenght()\*getwidth());

}

}

/\*

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\*/

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Example12test {

public static void main(String[] args) {

Rectangle1 r=new Rectangle1();

Rectangle1 r1=new Rectangle1();

r1.setlenght(10);

r1.setwidth(16);

r1.display();

}

}

Inheritance

Example 1

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Box {

double depth;

double hieght;

double width;

double volume(){

return depth\*hieght\*width;

}

void dsiplay(){

System.out.println(depth\*hieght\*width);

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Box3d extends boxex1{

Box3d(int x, int y,int z) {

super(x, y);

hieght=z;

}

int volume()

{

return length\*breadth\*hieght;

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class BoxTest {

public static void main(String[] args) {

Box b=new Box();

b.depth=5;

b.hieght=6;

b.width=5;

b.volume();

b.dsiplay();

}

}

Example 2:

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class MountainBike extends Bicycle {

public int seatHeight;

public MountainBike(int Cadence, int Speed, int Gear,int height) {

super(Cadence,Speed,Gear) ;

seatHeight=height;

}

@Override

void display()

{

super.display();

System.out.println("Seat Hieght="+seatHeight);

}

}

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class MountainBikeDemo {

public static void main(String[] args) {

MountainBike mb1 = new MountainBike(3, 10, 3,58);

mb1.display();

}

}

Example 4:

/\*

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\*/

package oop;

/\*\*

\*

\* @author Pintu

\*/

public abstract class Shapes {

float a,b;

Shapes(float a,float b)

{

this.a=a;

this.b=b;

}

abstract void area();

}

/\*

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\*/

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Rectangle extends Shapes {

Rectangle(float a,float b)

{

super(a,b);

}

@Override

void area()

{

double result =a\*b;

System.out.println("Rectangle area:"+result);

}

}

/\*

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package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Triangle extends Shapes {

Triangle(float a,float b)

{

super(a,b);

}

@Override

void area()

{

double result =0.5\*a\*b;

System.out.println("Rectangle area:"+result);

}

}

/\*

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\*/

package oop;

/\*\*

\*

\* @author Pintu

\*/

public class Circle1 extends Shapes {

Circle1(float r)

{

super(r,r);

}

@Override

void area()

{

float result =(float) (Math.PI\*a\*b);

System.out.println("Rectangle area:"+result);

}

}