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~~Experiment:-9~~

1 ~~Create a class Box that uses a parameterized constructor to initialize~~

Assignment:-9

1 write a Java Program to create a class called share with Instance length and breadth. Implement method overloading to initializes the instance variables, calculate and print area of rectangle and square and scalene triangle.

2 write a java program to create a class called "Book" with instance variables title, author and Price. Implement a zero argument constructor for default values and two parameterized constructors:
a) one construction takes title and author as parameters.
b) The other constructor takes title, author, and Price as parameters.
c) Print the values of the variables for each constructor.

3 write a java Program to create a class called student with instance variables StudentId, StudentName, and grade. Implement a default construction and a parameterized construction that takes all three instance variables. Use constructor chaining to initialize the variables. Print the values of the variables.

4 write a java program to create a class called Account with instance variables accountNumber and balance. Implement a parameterized constructor that initializes these variables with validation:

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a. accountNumber should be non-null and non-empty.
b. balance should be non-negative.
c. print an error message if the validation fails.

* write a java program to create a class called Point with instance variable X and Y. Implement overloaded constructor:
a. one constructor takes int parameters.
b. Another constructor takes double parameters.
c. print the values of the variables for each constructor.

Answer:-

```
1 import java.lang.*;
import java.util.*;
Public class Shape {
    int length, breadth, temp;
    public void area(int length, int breadth){
        this.length=length;
        this.breadth=breadth;
        int area = this.length * this.breadth;
        System.out.println("Area of Rectangle :- " +
                area + "\n");
    }
    public void area(int side) {
        length = side;
        int area = length * length;
        System.out.println("Area of Square :- " +
                area + "\n");
    }
```

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```
Public void area (int a, int b, int c) {
    length = a;
    breadth = b;
    temp = c;
    int s = (length + breadth + temp) / 2;
    int area = (int) math.sqrt (s*(s-length) *
                (s-breadth) *(s- temp));
    System.out.println ("Area of scalene Triangle
            is :- " + area);
}
Public static void main (String args[]) {
    Scanner sc = new Scanner (System.in);
    Shape obj = new Shape();
    System.out.print ("Enter the length of Rectangle:-");
    int l = sc.nextInt();
    System.out.print ("Enter the breadth of Rectangle:-");
    int b = sc.nextInt();
    obj.area(l,b);

    System.out.print ("Enter the side of square:-");
    l = sc.nextInt();
    obj.area(l);

    System.out.print ("Enter side 'a' of scalene Triangle:-");
    l = sc.nextInt();
    System.out.print ("Enter side 'b' :-");
    b = sc.nextInt();
    System.out.print ("Enter side 'c' :-");
    int c = sc.nextInt();
    obj.area (l, b, c);
    sc.close();
}
}
```

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output :-
Enter the length of Rectangle :- 2
Enter the breadth of Rectangle :- 4
Area of Rectangle :- 8

Enter the side of square :- 8
Area of square :- 64

Enter side 'a' of scalene Triangle :- 5
Enter side 'b' :- 4
Enter side 'c' :- 6
Area of scalene Triangle is :- 6

2
```
import java.lang.*;
import java.util.*;
public class Book {
    String title, author;
    float price;
    Book() {
        title = "unknown";
        author = "unknown";
        price = 0.0f;
    }
    Book (String t, String a) {
        title = t;
        author = a;
        price = 0.0f;
    }
    Book (String t, String a, float p) {
        title = t;
        author = a;
        price = p;
    }
```

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```
Public void display() {
    System.out.println("Title :- " + title);
    System.out.println("Author :- " + author);
    System.out.println("Price :- " + price + "\n");
}
Public static void main (String args[]) {
    Scanner sc = new Scanner (System.in);
    Book b1 = new Book();
    System.out.println("Details of book 1 :- ");
    b1.display();

    System.out.println("Enter title of book :- ");
    String t = sc.nextLine();
    System.out.println("Enter author of book :- ");
    String a = sc.nextLine();
    Book b2 = new Book (t, a);
    System.out.println("Details of book 2 :- ");
    b2.display();

    System.out.print("Enter Price of book :- ");
    float P = sc.nextFloat();
    Book b3 = new Book (t, a, P);
    System.out.println("Details of book 3 :- ");
    b3.display();

    sc.close();
}
}
```

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output:-
Details of book 1:-
Title:- Unknown
Author:- Unknown
Price:- 0.0

Enter title of book:- David Cooperfiled
Enter authere of book:- Charles Dickens
Details of book 2:-
Title:- David Cooperfiled
Author:- Charles Dickens
price:- 0.0

Enter Price of book:- 650.32
Details of book 3:-
Title:- David Cooperfiled
Author:- Charles Dickens
Price:- 650.32

3 import java.lang.*;
Public class Student {
    int StudentID;
    String StudentName, grade;
    Student() {
        this (100, "Rajesh Rana", "B");
    }
    Student (int studentID, String studentName,
                String grade) {
        this.studentID = studentID;
        this.studentName = studentName;
        this.grade = grade;
    }

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```
public void display(){
        System.out.println("Student ID :- "+studentID);
        System.out.println("Student Name :- "+studentName);
        System.out.println("Student Grade : "+grade);
    }
    public static void main(String args[]){
        Student s = new Student();
        s.display();
    }
}
```

output :-
Student ID :- 100
Student Name :- Rajesh Rana
Student Grade :- B

```java
import java.lang.*;
import java.util.*;

public class Account {
    String accountNumber;
    float balance;

    Account(String a, float b){
        if(a == null || a == ""){
            System.out.println("Enter valid account number.");
            return;
        }

        if(b < 0){
            System.out.println("Balance cannot be negative.");
            return;
        }

        accountNumber = a;
        balance = b;
        display();
    }

    public void display(){
        System.out.println("\nAccount details:- ");
        System.out.println("Account Number:- " + accountNumber);
        System.out.println("Balance:- " + balance);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter account number:- ");
        String a = sc.nextLine();
        System.out.print("Enter balance:- ");
        float b = sc.nextFloat();
        Account acc = new Account(a, b);

        sc.close();
    }
}

```

output :-

Enter account number :- 123456789.

Enter balance :- 385

Account details :-

Account Number :- 123456789

Balance :- 385.0

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(5)
```
import java.lang.*;
import java.util.*;
Public class Point {
    double x, y;
    Point (int a, int b) {
        x = a;
        y = b;
        System.out.Printf ("int construction :- (%.0f, %.0f)\n",
                a, b);
    }
    Point (double a, double b) {
        x = a;
        y = b;
        System.out.println ("double construction :- (" +
                x + ", " + y + ")");
    }
    public static void main (String args[]) {
        Scanner sc = new Scanner (System.in);
        System.out.Print ("Enter x (int) :- ");
        int a = sc.nextInt();
        System.out.Print ("Enter Y (int) :- ");
        int b = sc.nextInt();
        Point P1 = new Point (a, b);

        System.out.Print ("Enter x (double) :- ");
        double c = sc.nextDouble();
        System.out.Print ("Enter Y (double) :- ");
        double d = sc.nextDouble();
        Point P2 = new Point (c, d);
        sc.close();
    }
}
```

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Output :-

Enter x (int) :- 2
Enter y (int) :- 5
Int constructor :- (2, 5)
Enter x (double) :- 8.7
Enter y (double) :- 3.4
double constructor :- (8.7, 3.4).