KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY (KIIT)

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School of Computer Engineering

WT LAB - 6

Submitted By :

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Section: IT-04

Branch : Information Technology

Q-1 Write a java program to create a class "box" with 3 data members length, width, height and a method volume. Then also implement the app "class demo" where an object of the box class is created with user entered dimension and volume is shown as output.

CODE:

```
package lab6;
import java.util.Scanner;

public class Box { double width; double height; double depth;

Box(double w, double h, double d) { width = w;
height = h; depth = d;
}

double volume() {
return width * height * depth;
}

void display() {
System.out.println("The volume : "+volume());
}
}


class BoxDemo {
public static void main(String args[]) { int l, b, h;
System.out.println("Enter the length, breadth and height of the box : "); Scanner in = new
Scanner(System.in);
l = in.nextInt(); b = in.nextInt(); h = in.nextInt(); in.close();

Box box1 = new Box(l, b, h); box1.display();
}
}
```

OUTPUT:

```
run:
Enter the length, breadth and height of the box :
5 6 7
The volume : 210.0
BUILD SUCCESSFUL (total time: 8 seconds)
```

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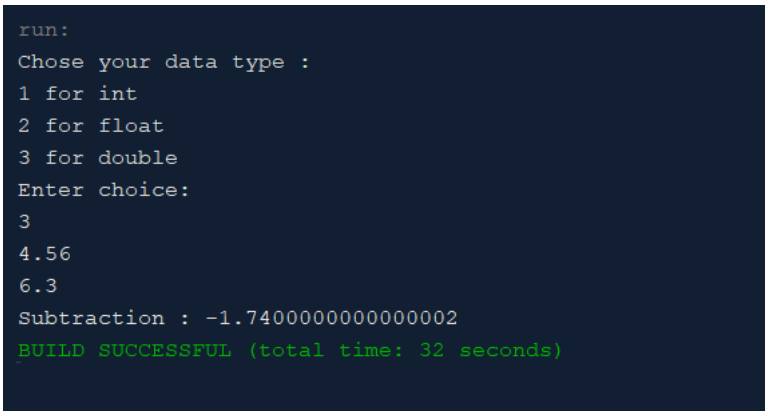
Q-2 Write a java program to overload the subtract method with various parameters in a class.

CODE:

```
import java.util.Scanner;

class q2 {
  void sub(int x, int
    y) { int a = x -
    y;
    System.out.println("Subtraction : " +a);
  }

  void sub(double x,
    double y) { double b =
    x - y;
    System.out.println("Subtraction : " + b);
  }

  void sub(float x, float
    y) { float b = x - y;
    System.out.println("Subtraction : " + b);
  }

  public static void main(String[] args) {
    System.out.println("Chose your data type :\n1 for int\n2 for float\n3 for
    double"); Scanner in = new Scanner(System.in);
    System.out.println("Enter
    choice: "); int choice =
    in.nextInt();
    if (choice == 1) {
      int x =
      in.nextInt(); int
      y = in.nextInt();
      q2 s = new
      q2(); s.sub(x,
      y);
    }

    if (choice == 2) {
      float x =
      in.nextFloat(); float
      y = in.nextFloat();
      q2 s = new q2();
      s.sub(x, y);
    }
```

```
      if (choice == 3) {
         double x =
         in.nextDouble();
         double y =
         in.nextDouble()

q2 s = new q2();
s.sub(x, y);
      }

      in.close();
   }
 }
```

OUTPUT:



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Q-3 Write a program which will overload area method and display the area of a circle, triangle & square as per user choice and user entered dimension.

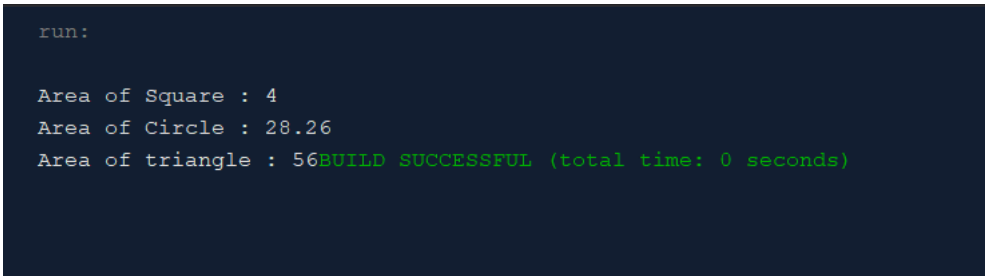
CODE:

```
class Area{
   void findarea(int x,int y)
   {
      int f = x*y;
      System.out.print("\nArea of triangle : "+f);
   }
   void findarea(float x)
   {
      float f = 3.14f*x*x;
      System.out.print("\nArea of Circle
      : "+f);
   }
   void findarea(int x)
   {
```

```
      int f = x*x;
      System.out.print("\nArea of Square : "+f);
   }
 }
 class q3{
   public static void main(String[] args)
   {
      Area obj = new
      Area();
      obj.findarea(2);
      obj.findarea(3.0f);
      obj.findarea(7,8);

}}
```

OUTPUT:



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Q-4 Write a program in java to define a class "rectangle" having 2 data members length & breadth, to calculate the area and perimeter of the rectangle. Use member functions to calculate and display.

CODE:

```
import java.util.Scanner;

class Rectangle { int length;
int breadth;

Rectangle(int l, int b) { length = l;
breadth = b;
}

int area() {
return length * breadth;
}

int perimeter() {
return 2 * (length + breadth);
}
void display() {
```

```
System.out.println("The Area is : " + area()); System.out.println("The Perimeter is : " +
perimeter());
}
}
```

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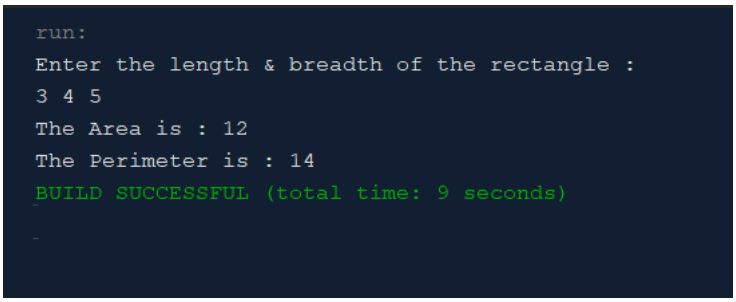
```
class q4 {
public static void main(String[] args) { int l, b;
System.out.println("Enter the length & breadth of the rectangle : "); Scanner in = new
Scanner(System.in);
l = in.nextInt(); b = in.nextInt(); in.close();
Rectangle rec1 = new Rectangle(l, b); rec1.display();
}
}
```

OUTPUT:



Q-5 Write a program in java to input & display the details of 'n' no. of students having roll, name & CGPA as data members. Also the display the name of the student having lowest CGPA.

Code:

```
import java.util.Scanner;

class Student { int[] roll; float[] cgpa; String[] name; int n;

Student(int[] roll, float[] CGPA, String[] Name, int N) { this.roll = roll;
cgpa = CGPA; name = Name; n = N;
}

int FindSmallest(float[] arr1) { int index = 0;
float min = arr1[index];
for (int i = 1; i < arr1.length; i++) { if (arr1[i] < min) {
min = arr1[i]; index = i;
}
}
return index;
}

void display() {
```

```
System.out.println("The Student details are : \n"); for(int i = 0;i < n;i++) {
System.out.print("\nRoll number : " + roll[i]); System.out.print("\nCGPA : "+cgpa[i]);
System.out.print("\nEnter the name of student : "+name[i]); System.out.println();
}
System.out.println("\nThe Student with lowest CGPA is : "); int x = FindSmallest(cgpa);



System.out.println(name[x]);
}
}

public class q5 {
public static void main(String[] args) { System.out.print("Enter the number of students :- ");
Scanner in = new Scanner(System.in);
int n = in.nextInt(); int[] roll;
float[] cgpa; String[] name;

roll = new int[n]; cgpa = new float[n];
name = new String[n]; for (int i = 0; i < n; i++) {

System.out.print("Enter the roll number of student :- "); roll[i] = in.nextInt();
System.out.print("Enter the CGPA of student :- "); cgpa[i] = in.nextFloat();
in.nextLine();
System.out.print("Enter the name of student :- "); name[i] = in.nextLine();
System.out.println();
}
Student s = new Student(roll, cgpa, name, n); s.display();
in.close();
}
}
```

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OUTPUT:

```
Enter the number of students :- 3
Enter the roll number of student :- 2006270
Enter the CGPA of student :- 9.25
Enter the name of student :- ISHU

Enter the roll number of student :- 2006285
Enter the CGPA of student :- 9.42
Enter the name of student :- SEJAL

Enter the roll number of student :- 2006287
Enter the CGPA of student :- 9.33
Enter the name of student :- SHIVANGI

The Student details are :


Roll number : 2006270
CGPA : 9.25
Enter the name of student : ISHU

Roll number : 2006285
CGPA : 9.42
Enter the name of student : SEJAL

Roll number : 2006287
CGPA : 9.33
Enter the name of student : SHIVANGI

The Student with lowest CGPA is :
ISHU
```

Q-6 Write a program to calculate area according to user input, whether it is circle, square or triangle --- menu driven

Code:

```
 import java.util.Scanner;
import java.lang.Math;
class q6 {
void area(int x, int y)
{ int a = x * y;
System.out.println("Area of rectangle: " + a);
}
void area(int r) { double pi = 3.14; double b = pi * r * r;
System.out.println("Area of circle: " + b);
}
void area(int a, int b, int c) {
double s = (double)(a + b + c) /
2;
double ans = Math.sqrt((s) * (s - a) * (s - b) * (s -
c)); System.out.println("Area of triangle: " +
ans);
}
public static void main(String[] args) {
System.out.println("1 for Rectangle \n2 for Triangle\n3 for Circle\nChose your
shape : ");
Scanner in = new Scanner(System.in);
int choice = in.nextInt();
System.out.println("Enter the values :
"); q6 s = new q6();
switch (choice) {
case 1 -> {
int x = in.nextInt(); int y
=  in.nextInt();  s.area(x,
y);
}
case 2 -> {
int a = in.nextInt(); int b
=  in.nextInt();  int  c  =
in.nextInt();  s.area(a,  b,
c);
}
case 3 -> {
int r = in.nextInt();
s.area(r);
          }
       }
       in.close();
   }
 }
```

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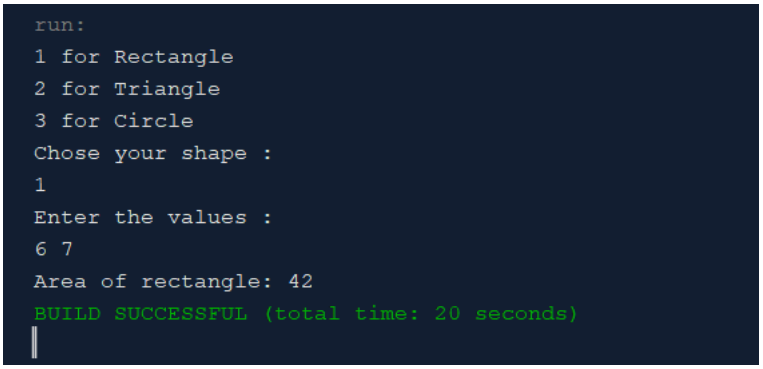
OUTPUT:



Q-7 Write a program in java to define a class "number" with appropriate data members and functions to
input 'n' number of integers and swap the biggest and smallest elements. Use member functions read, swap and display.

CODE:

```
import java.util.Scanner;
class Number { public int[] arr; int n;
Number() {
Scanner sc = new Scanner(System.in); System.out.print("\nEnter the number of integers : "); n = sc.nextInt();

arr = new int[n];
}

void getdata() {
Scanner sc = new Scanner(System.in); System.out.print("\nEnter the data : "); for (int i = 0; i < n; i++) {
arr[i] = sc.nextInt();
}
}

void display() { System.out.print("\n"); for (int i = 0; i < n; i++) {
System.out.print("\tarr["+i+"] : "+arr[i]+"\n");
}
}

void swap() {
int min = arr[0], max = arr[0]; int x = 0, y = 0;
for (int i = 0; i < n; i++) { if (arr[i] < min) {
min = arr[i]; x = i;
}
if (arr[i] > max) { max = arr[i];
y = i;
}
```

```
}
int temp = arr[x]; arr[x] = arr[y]; arr[y] = temp;
System.out.print("\n\nNumbers to be swapped are : arr["+x+"] = "+arr[x]+" and arr["+y+"] =
"+arr[y]); display();
}
}

public class q7 {
public static void main(String[] args) { Number obj = new Number(); obj.getdata();
obj.display(); obj.swap();
}
}
```

OUTPUT:

```
run:

Enter the number of integers : 3

Enter the data : 1
2
3

        arr[0] : 1
        arr[1] : 2
        arr[2] : 3


Numbers to be swapped are : arr[0] = 3 and arr[2] = 1
        arr[0] : 3
        arr[1] : 2
        arr[2] : 1
BUILD SUCCESSFUL (total time: 8 seconds)
```