

Name of Experiment :- Write a program which a class "Calculator" which contains multiple sum method overloading

Introduction :

We have to design a class representing a calculator. In this calculator class we have to define multiple sum method using method overloading.

Objectives :

- o how to define multiple function containing some name
- o to learn method overloading
- o how to use method overloading

Analysis :

After analysing our problem we have found following components of our problem, to solve it.

o Class Calculator : this is the class representing a calculator

□ Data members :

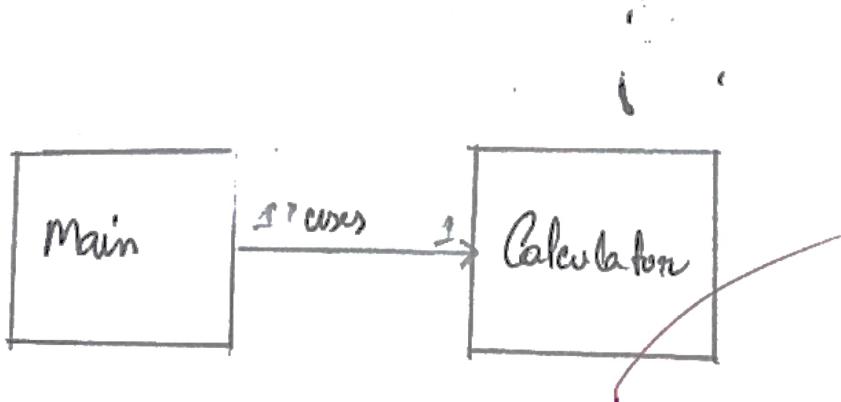
- prevResult : a double data type variable that will save previous operation result.

□ Methods :

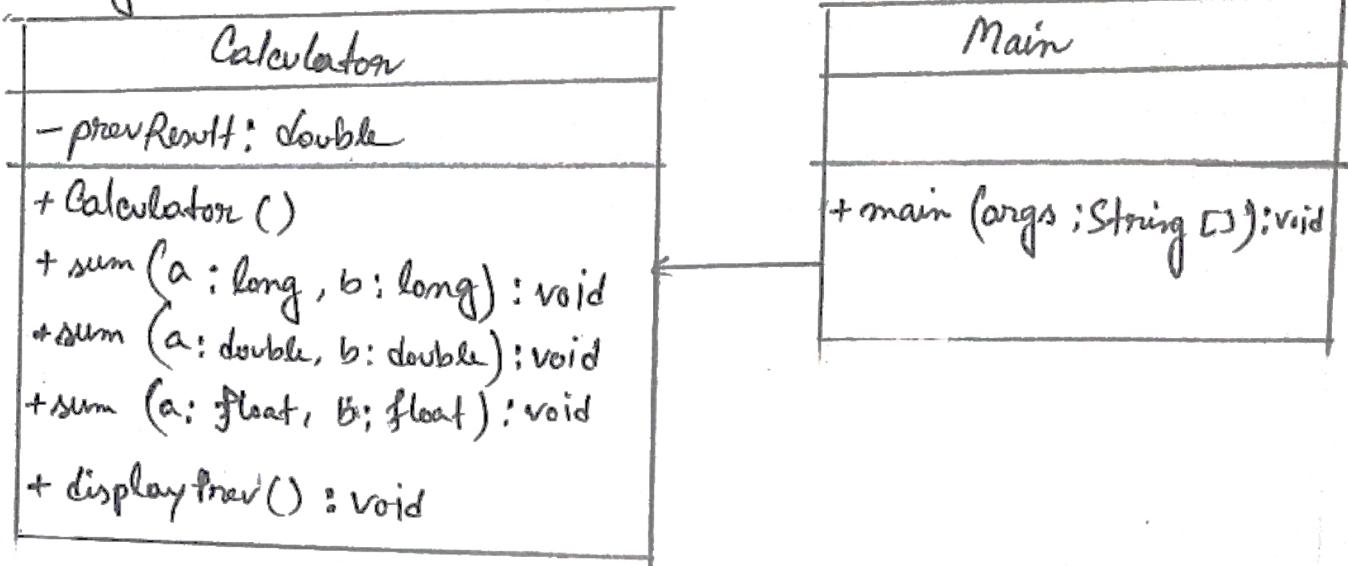
- sum : there will be multiple methods containing the name sum, which will add two integers or two double data type value or two floats
- displayPrev : this method will print the previous operation result;
- class Main : this class will contain the main method

□ Method :

- main : main method will use the Calculator class.



Design :-



`Calculator ():`

initialize `prevResult` with 0

`sum (a: long, b: long):`

add a and b

save the result in `prevResult`

`sum (a: double, b: double):`

add a and b

save the result in `prevResult`

`sum (a: float, b: float):`

add a and b

save the result in `prevResult`

`display Prev();`

display `prevResult`

main(args : String[]):

create object of class calculator
use overloaded methods

Implementation :-

Class Calculator {

private double prevResult;

public Calculator () {

prevResult = 0;

}

public void sum (double a, double b) {

prevResult = a + b;

{

public void sum (float a, float b) {

prevResult = a + b;

{

public void displayPrev () {

System.out.println ("Previous operation result: " + prevResult);

{

{

```

class Main {
    public static void main (String [] args) {
        Calculator cal = new Calculator ();
        Scanner sc = new Scanner (System.in);
        long a = sc.nextInt (), b = sc.nextInt ();
        cal.sum (a, b);
        cal.displayPrev ();
        double c = sc.nextDouble (); d = sc.nextDouble ();
        cal.sum (c, d);
        cal.displayPrev ();
        float e = sc.nextFloat (); f = sc.nextFloat ();
        cal.sum (e, f);
        cal.displayPrev ();
    }
}

```

Conclusion :-

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Input :

10000	4532
53.53	42.42
100.499	892.0001

Output :

Previous operation result : 14532
 Previous operation result : 95.95
 Previous operation result : 992.999999999
 Previous operation result : 992.999999999

LAB Report - 02 (Ex-~~2~~ 4)

CSE-312Φ

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Name of Experiment :- Write a java program to find out area of a triangle, rectangle, square and circle using method overloading.

Introduction :-

We have to design a class which will have some overloaded function to calculate the area of triangle, rectangle, square and circle.

Analysis :-

After analysis our problem we have found following components of our problem to solve it.

- **class AreaCalculator :** this class will have multiple overloaded methods to calculate areas of different shapes.

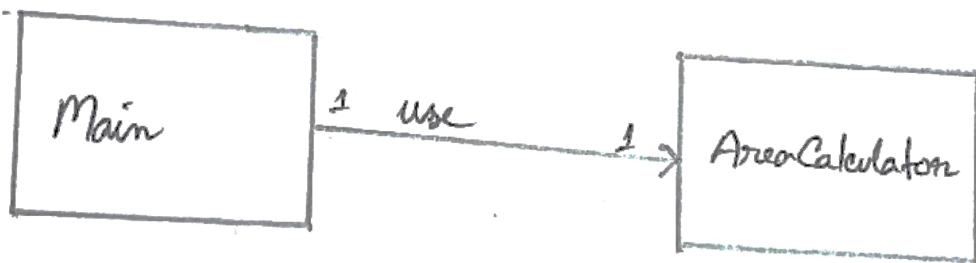
II Methods :

- **area :** this function will take two double parameters to calculate the area of triangle.
- **area :** this overloaded method taking two long parameters to calculate the area of rectangle.

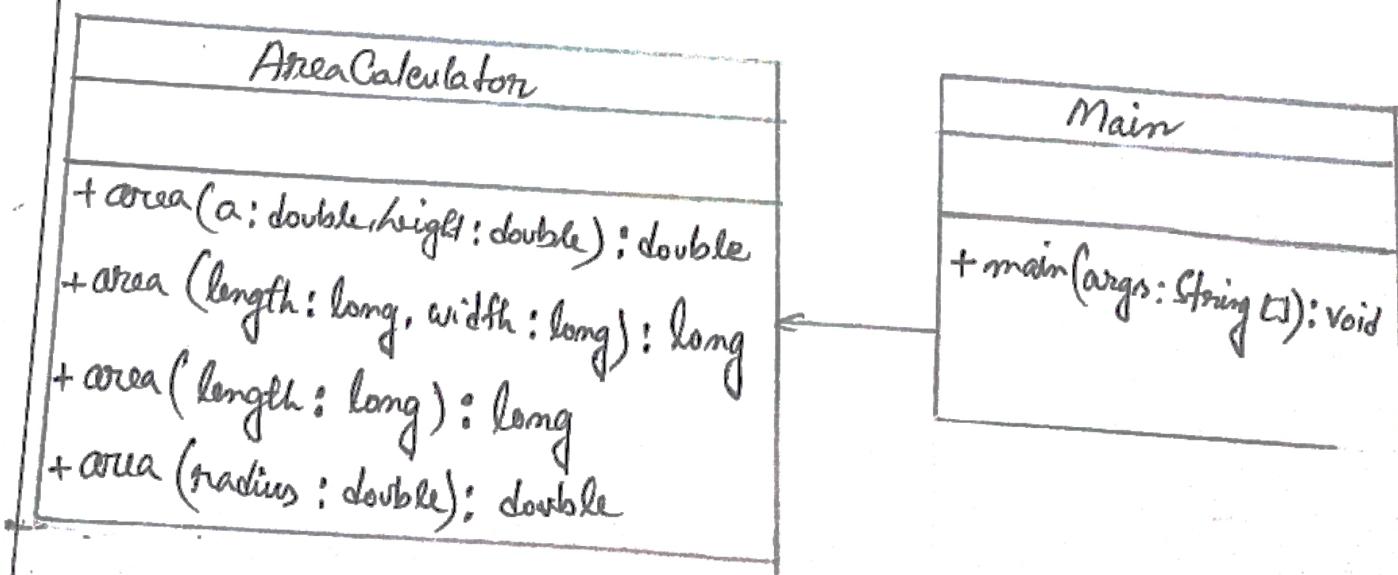
- area : this overloaded method taking one long parameter to calculate the area of square.
- area : this overloaded method takes one double parameter to calculate the area of circle.
- Class Main : this class will contain the main method

If Method :

main : main method will use the AreaCalculator class.



Design :-



area (base : double, height : double) :

// calculate the area of triangle and return it.

return $\frac{1}{2} * \text{base} * \text{height}$;

area (length : long, width : long) ;

// calculate the area of rectangle and return it

return length * width

area (length : long) :

// calculate the area of square and return it

return length * length.

area (radius : double) :

// calculate the area of circle and return it.

return PI * radius * radius

-main (args : String[]) :

// creates AreaCalculator class and calculate area of
shaper create AreaCalculator class object.

Calculate area of shapes and print it.

Implementation :

```
class AreaCalculator {  
    public double area (double base, double height) {  
        return  $\frac{1}{2} \times$  base  $\times$  height;  
    }  
    public long area (long length, long width) {  
        return length  $\times$  width;  
    }  
    public long area (long length) {  
        return length  $\times$  length;  
    }  
    public double area (double radius) {  
        return Math.PI  $\times$  radius  $\times$  radius;  
    }  
}
```

```
class Main {  
    public static void main (String [] args) {  
        AreaCalculator ae = new AreaCalculator ();  
        System.out.println ("Area of triangle with base: 5m and  
                           height : 4m = " + ae.area (5.0, 4.0));  
    }  
}
```

System.out.println ("Area of rectangle with length : 10m
and width : 20m = "+ ac.area(10, 20));

System.out.println ("Area of square with length : 100m = "+ ac.
area(100));

System.out.println ("Area of circle with radius : 3m = "+ ac.area
(3.0));

}

}

Conclusion :-

Area of triangle with base : 5m and height : 4m = $10 \cdot 0$

Area of rectangle with length : 10m and width : 20m = 200

Area of square with length : 100m = 10000

Area of circle with radius : 3m = $28 \cdot 274338828$

Chopra