Lab 1

# Program to find total, average of given two numbers by using function with default arguments, static data members and this keyword

Lab 2

# Program to illustrate class and objects

## Definitions

* Import – Keyword used when importing a package. When we import a package we can use the classes and methods present in that package as a part of our program.

Syntax : import package\_name

* Scanner class – Used to get user input. It is found in the java.util package. We need to create an object of scanner class to call the input methods

Syntax : Scanner object\_name = new Scanner(System.in)

Where System.in means we are taking input from the standard console

* Class – A class is like a blueprint for an object. It shows us the properties and methods that all objects can have and use. The class keyword is used to define a class.

Syntax : class class\_name { //properties and methods }

By convention, class name usually starts with a capital letter

* Float – It is a primitive datatype. Decimal numbers are called floating point ‘float’.

Syntax : float variable\_name\_1, ….., variable\_name\_n;

* Public – If a method or property is defined as public, it can be accessed outside of the class.
* This – It is a keyword used to refer to the current instance of the class. It can also be used to invoke the constructor of the class.
* Static – A static method can be called without the creation of an object.
* Main – Every program must have a main function. This is where the execution of the program begins.

Syntax : public static void main(String[] args) { //Code }

* New – The new keyword is used to create an object of a class.

Syntax : Class\_name object\_name = new Class\_name(parameters);

Where parameters are used to initialize values of properties by using constructors. Parameters can be 0 or many.

* Println – It is the method used to output information onto the screen. It is a method of the print stream. The print stream is created by calling System.out

Syntax : System.out.println();

## Code:

/\* Program to find

   - Total

   - Average

   of 2 numbers using a function with

   - Default arguments

   - Static data members

   - this keyword \*/

import java.util.Scanner;

class Total {

    float A, B;

    public Total() {

        this.A = 2;

        this.B = 3;

    }

    public Total(float x, float y) {

        this.A = x;

        this.B = y;

    }

    float total() {

        return A + B;

    }

    float average() {

        return this.total() / 2;

    }

    //Static methods for the same functions

    public static float total(float A, float B) {

        return A + B;

    }

    public static float average(float A, float B) {

        return total(A, B) / 2;

    }

}

public class Lab1 {

    public static void main(String[] args) {

        try (Scanner sc = new Scanner(System.in)) {

            Total t1 = new Total();

            System.out.println("Using default values : ");

            System.out.println("A = " + t1.A + " and B = " + t1.B);

            System.out.println("Total = " + t1.total());

            System.out.println("Average = " + t1.average());

            System.out.println();

            System.out.println("Enter 2 numbers");

            float A = sc.nextFloat();

            float B = sc.nextFloat();

            System.out.println();

            Total t2 = new Total(A, B);

            System.out.println("Using values taken from user : ");

            System.out.println("A = " + t2.A + " and B = " + t2.B);

            System.out.println("Total = " + t2.total());

            System.out.println("Average = " + t2.average());

            System.out.println();

            System.out.println("Using values taken from user and using static methods : ");

            System.out.println("A = " + A + " and B = " + B);

            System.out.println("Total = " + Total.total(A, B));

            System.out.println("Average = " + Total.average(A, B));

        }

        System.out.println();

    }

}

## Explaination:

* In this program, we first create an object t1 of class Total using the default constructor. This assigns the values 2 and 3 to A and B respectively. The total method of class Total is called on this object t1, and the result is printed. Then, we call the average method on t1 and print the result.
* We then take 2 values A and B as input from the user. We create a new object t2 using the parameterized constructor which assigns the values of A and B as given by the user. Then we calculate and print total and average similar to t1.
* The use of static method is shown by calling the static methods total and average with A and B as parameters. This is done without the use of objects to show that we can use static methods without having to create any object.

## Output:

