

```
/*-----  
problem statement: Write a Java Program for the following problem  
scenario.
```

Scenario:

A package named "BasicMath" is to be created which has a class named Basic and has methods to perform following computations:

- i. Addition of two numbers
- ii. Subtraction of two numbers.
- iii. Multiplication of two numbers
- iv. Division of two numbers.

Another package named "AdvancedMath" is to be created which has a class named Advanced and has methods to perform following computations using built in features of java.

- i. Find sine of an angle.
- ii. Find ab.
- iii. Find log10 of a number.

To test above scenes, another class named TestDemo is to be created defined inside a default package. This class must invoke all the methods of Basic and Advanced classes.

Termwork-3

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Theory:

-> Packages: Package in Java is a mechanism to encapsulate a group of classes,  
sub packages and interfaces.

```
-----*/  
import BasicMath.Basic;  
import AdvancedMath.Advanced;  
import java.util.Scanner;  
import java.text.DecimalFormat;  
  
public class termwork_3{  
    private static final DecimalFormat df = new DecimalFormat("0.0000");  
    public static void main(String[] args) {  
        int menuChoice=0;  
        Scanner in = new Scanner(System.in);  
        while(menuChoice!=8){  
            try{  
                System.out.printf("\n\n\n\n");  
                System.out.println("  MENU  ");  
                System.out.println("  -----  ");  
                System.out.println("  1 to ADD two numbers");  
                System.out.println("  2 to Subtract two numbers");  
                System.out.println("  3 to Multiply two numbers");  
            }  
            catch (Exception e){  
                System.out.println("Error: " + e.getMessage());  
            }  
        }  
    }  
}
```

```

        System.out.println(" 4 to Divide two numbers");
        System.out.println(" 5 to find sine of the given angle in
degrees");

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        System.out.println(" 6 to find absolute value");
        System.out.println(" 7 to find log10");
        System.out.println(" 8 to Exit");
        System.out.print (" Enter your option : ");
        menuChoice = in.nextInt ();
        switch (menuChoice)

```

```

        {
            case 1 : {
                add();
                break;
            }
            case 2 : {
                subtract();
                break;
            }
            case 3 : {
                multiply();
                break;
            }
            case 4 : {
                divide();
                break;
            }
            case 5 : {
                sine();
                break;
            }
            case 6 : {
                abs();
                break;
            }
            case 7 : {
                log();
                break;
            }
        }
    }

```

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    }
    finally{}

```

```

}

```

```

private static void add() {
    float num1,num2,res;
    Scanner in = new Scanner(System.in);
    System.out.print(" Enter two numbers: ");
    num1=in.nextInt();
    num2=in.nextInt();
    Basic b1 = new Basic();
    res=b1.addition(num1, num2);
    System.out.println(" The addition of two numbers is: " +
df.format(res));

```

```

}

```

```

private static void subtract() {
    float num1,num2,res;
    Scanner in = new Scanner(System.in);
    System.out.print("  Enter two numbers: ");
    num1=in.nextInt();
    num2=in.nextInt();
    Basic b2 = new Basic();
    res=b2.subtraction(num1, num2);
    System.out.println("  The subtraction of two numbers is: " +
df.format(res));

}

private static void multiply() {
    float num1,num2,res;
    Scanner in = new Scanner(System.in);
    System.out.print("  Enter two numbers: ");
    num1=in.nextInt();
    num2=in.nextInt();
    Basic b3 = new Basic();
    res=b3.multiplication(num1, num2);
    System.out.println("  The multiplication of two numbers is: " +
df.format(res));

}

private static void divide() {
    float num1,num2,res;
    Scanner in = new Scanner(System.in);
    System.out.print("  Enter two numbers: ");
    num1=in.nextInt();
    num2=in.nextInt();
    Basic b4 = new Basic();
    res=b4.division(num1, num2);
    System.out.println("  The division of two numbers is: " +
df.format(res));

}

private static void sine() {
    double degree,res;
    Scanner in = new Scanner(System.in);
    System.out.print("  Enter the angle in degrees: ");
    degree=in.nextInt();
    Advanced a1 = new Advanced();
    res=a1.sine(degree);
    System.out.println("  The sine of " + degree + "is:" +
df.format(res));

}

private static void abs() {
    double num,res;
    Scanner in = new Scanner(System.in);
    System.out.print("  Enter a number: ");
    num=in.nextInt();
    Advanced a2 = new Advanced();
    res=a2.ab(num);

```

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        System.out.println(" The absolute value is: " + df.format(res));
    }

    private static void log() {
        double num,res;
        Scanner in = new Scanner(System.in);
        System.out.print(" Enter a number: ");
        num=in.nextInt();
        Advanced a3 = new Advanced();
        res=a3.log(num);
        System.out.println(" The log10 value is: " + df.format(res));
    }
}

```

/\* sample input and output:

MENU

-----

```

1 to ADD two numbers
2 to Subtract two numbers
3 to Multiply two numbers
4 to Divide two numbers
5 to find sine of the given angle in degrees
6 to find absolute value
7 to find log10
8 to Exit
Enter an your option : 1
Enter two numbers: 2 3
The addition of two numbers is: 5.0000

```

MENU

-----

```

1 to ADD two numbers
2 to Subtract two numbers
3 to Multiply two numbers
4 to Divide two numbers
5 to find sine of the given angle in degrees
6 to find absolute value
7 to find log10
8 to Exit
Enter an your option : 2
Enter two numbers: 3 2
The subtraction of two numbers is: 1.0000

```

MENU

-----

```

1 to ADD two numbers
2 to Subtract two numbers
3 to Multiply two numbers

```

4 to Divide two numbers  
5 to find sine of the given angle in degrees  
6 to find absolute value  
7 to find log10  
8 to Exit  
Enter an your option : 3  
Enter two numbers: 2 3  
The multiplication of two numbers is: 6.0000

MENU

-----  
1 to ADD two numbers  
2 to Subtract two numbers  
3 to Multiply two numbers  
4 to Divide two numbers  
5 to find sine of the given angle in degrees  
6 to find absolute value  
7 to find log10  
8 to Exit  
Enter an your option : 4  
Enter two numbers: 4 2  
The division of two numbers is: 2.0000

MENU

-----  
1 to ADD two numbers  
2 to Subtract two numbers  
3 to Multiply two numbers  
4 to Divide two numbers  
5 to find sine of the given angle in degrees  
6 to find absolute value  
7 to find log10  
8 to Exit  
Enter an your option : 5  
Enter the angle in degrees: 45  
The sine of 45.0is:0.7071

MENU

-----  
1 to ADD two numbers  
2 to Subtract two numbers  
3 to Multiply two numbers  
4 to Divide two numbers  
5 to find sine of the given angle in degrees  
6 to find absolute value  
7 to find log10  
8 to Exit  
Enter an your option : 6  
Enter a number: -8

The absolute value is: 8.0000

#### MENU

-----

1 to ADD two numbers

2 to Subtract two numbers

3 to Multiply two numbers

4 to Divide two numbers

5 to find sine of the given angle in degrees

6 to find absolute value

7 to find log10

8 to Exit

Enter an your option : 7

Enter a number: 150

The log10 value is: 2.1761

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