NORTHERN UNIVERSITY BANGLADESH

SMZ

Department of Computer Science and Engineering
Lab01, Fall-2023
Course Title: Object Oriented Programming Lab (C++)
Course Code: CSE 1360; Section: 2D

Task 01:

Implement the design of the Calculator class so that the following output is produced:

```
int main() {
    Calculator c1;
    cout << "==================" << endl;
    int val = c1.calculate(10, 20, '+');
    cout << "Returned value: " << val << endl;
    c1.showCalculation();
    cout << "==================" << endl;
    val = c1.calculate(val, 10, '-');
    cout << "Returned value: " << val << endl;
    c1.showCalculation();
    cout << "==================" << endl;
    val = c1.calculate(val, 5, '*');
    cout << "Returned value: " << val << endl;
    c1.showCalculation();
    cout << "==================" << endl;
    val = c1.calculate(val, 16, '/');
    cout << "Returned value: " << val << endl;
    c1.showCalculation();
    return 0;
}
```

Output

```
Calculator is ready!
==================
Returned value: 30
10 + 20 = 30
==================
Returned value: 20
30 - 10 = 20
==================
Returned value: 100
20 * 5 = 100
==================
Returned value: 6.25
100 / 16 = 6.25
```

Task 02

Design a class Shape for the given code below.

• Write a class Shape.

• Write the required constructor that takes 3 parameters and initialize the instance variables accordingly.

• Write a method area() that prints the area.

Hint: the area method can calculate only for the shapes: Triangle, Rectangle, Rhombus, and Square. So, you have to use conditions inside this method

For this task, assume that --

● for a triangle, the arguments passed are the base and height

● for a rhombus, the arguments passed are the diagonals

● for a square or rectangle, the arguments passed are the sides.

```
int main() {
    Shape triangle("Triangle", 10, 25);
    triangle.area();
    cout << "==========================" << endl;
    Shape square("Square", 10, 10);
    square.area();
    cout << "==========================" << endl;
    Shape rhombus("Rhombus", 18, 25);
    rhombus.area();
    cout << "==========================" << endl;
    Shape rectangle("Rectangle", 15, 30);
    rectangle.area();
    cout << "==========================" << endl;
    Shape trapezium("Trapezium", 15, 30);
    trapezium.area();
    return 0;
}
```

Output

```
Area: 125.0
==========================
Area: 100
==========================
Area: 225.0
==========================
Area: 450
==========================
Area: Shape unknown
```