

1. Design a class named **QuadraticEquation** for a quadratic equation  $ax^2 + bx + c = 0$ . The class contains:
  - Private data fields **a**, **b**, and **c** that represent three coefficients (default 0).
  - no-arg constructor for the default coefficients.
  - A constructor for the arguments for **a**, **b**, and **c**.
  - A method named **getDiscriminant()** that returns the discriminant, which is  $b^2 - 4ac$ .
  - The methods named **getRoot1()** and **getRoot2()** for returning two roots of the equation.

$$r_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \quad \text{and} \quad r_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

These methods are useful only if the discriminant is **nonnegative**. Let these methods return 0 if the discriminant is negative.

Write a test program that prompts the user to enter values for **a**, **b**, and **c** and displays the result based on the discriminant. If the discriminant is positive, display the two roots. Otherwise, display “The equation has no roots.”

2. Design a class named **MyPoint** to represent a point with x- and y-coordinates. The class contains:
- The data fields **x** and **y** that represent the coordinates.
  - A no-arg constructor that creates a point (0, 0).
  - A constructor that constructs a point with specified coordinates.
  - A method named **distance()** that returns the distance from this point to another point with specified x and y-coordinates.

Write a test program that creates the two points (5, 10) and (10, 30.5) and displays the distance.

### Assignment:

1. Create a class named **BankingAccount** that contain three private member variables:
  - a. an integer variable named **accountNumber**.
  - b. a string variable named **name**.
  - c. a double variable named **balance**.

The class will have only one constructor that takes 3 arguments, one for each member variable. The class also contains two member methods named **report** and **calculateInterestEarned**. The method **report** takes no parameters and returns nothing. The method **calculateInterestEarned** takes no parameters and returns a double value. The method **report** will display the data of the calling object. The method **calculateInterestEarned** will calculate and return the account's interest earned, which is a percentage of the account's balance, and the percentage itself depends on the account's balance (Interest earned = balance \* interest rate).

Interest rate %	Balance
5%	>= 10,000
3%	>= 5,000
2%	>= 1,500
1%	>= 1,000
0.5%	< 1,000

Again, the class should contain getter and setter methods for each member variable. Create another class named Lab2\_p2 with a main function where you will create two objects of the class **BankingAccount** and read their data from the user. Then display their data as shown in the example.