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| **LAB211 Assignment** | **Type:** | **Short Assignment** |
| **Code:** | **J1.S.P0050** |
| **LOC:** | **72** |
| **Slot(s):** | **1** |

**Title**

Solving the equation, find the square numbers, even numbers, and odd numbers.

**Background**

N/A

**Program Specifications**

Design a program that lets users input coefficients of superlative and quadratic equations. Display the odd, even and square numbers from input coefficients.

***Function details:***

### Function 1: Display a menu and ask users to select an option.

* Users run the program. The program prompts users to select an option.
* Users select an option, perform **Function** **2**.

**Function 2:** Perform function based on the selected option:

* Option 1: Calculate Superlative Equation
  + The require user to input coefficients A, B
  + Validate inputted values (A, B must be valid numbers)
  + Calculate the solution x and display it on the screen
  + Find and display even, odd and square numbers from inputted coefficients
  + Return to the main screen
* Option 2: Calculate Quadratic Equation
  + The require user to input coefficients A, B, C
  + Validate inputted values (A, B, C must be valid numbers)
  + Calculate the solution x1, x2 and display them on the screen
  + Find and display even, odd and square numbers from inputted coefficients
  + Return to the main screen. 1
* Option 3: Exit the program

***Expectation of User interface:***

========= Equation Program =========

1. Calculate Superlative Equation

2. Calculate Quadratic Equation

3. Exit

Please choice one option:

----- Calculate Equation -----

Enter A: a

Please input number

Enter A: 4

Enter B: 5

Solution: x = -1.250

Number is Odd:5.0, -1.25

Number is Even:4.0

Number is Perfect Square:4.0

----- Calculate Quadratic Equation -----

Enter A: a

Please input number

Enter A: 4

Enter B: 4

Enter C: 1

Solution: x1 = -0.500 and x2 = -0.500

Odd Number(s):1.0, -0.5, -0.5

Number is Even:4.0, 4.0

Number is Perfect Square:4.0, 4.0, 1.0

2

1

3

**Guidelines**

Student must implement the following methods:

*calculateEquation*

*calculateQuadraticEquation*

in startup code.

**Recommend:**

Find the square number by using Math.sqrt to root 2, find odd as a% 2! = 0.

Use public Float checkin (String floatString) in class Number to check if a, b, c enter numerical values Is yet.Use public boolean isOdd (float number) function to check odd number or not

Use ham isPerfectSquare public boolean (float number) to check the number is a local number or not.

**Function 1:** Solving superlative equation

* Must write the function: public List <Float> calculateEquation (float a, float b)
  + Input:
    - a: a value
    - b: b value
* Return: list (no solution = null, infinitely many solutions = empty). **Function 2: Solving quadratic.** Must write the function: public List<Float> calculateQuadraticEquation(float a, float b, float c)
  + Input: a - the value of a; b: the value of b; c: the value of c.
  + Return Value: list (where no solution = null, infinitely many solutions = empty).