CSE 215L: Programming Language II Lab

Section: 7, Fall 2020

Midterm Exam

Instructions:

- You need to solve both the tasks
- Create a folder and use your student ID number as the name of this folder
- Copy your task files (the .java files) to this folder
- Zip the folder and submit it in Google Classroom

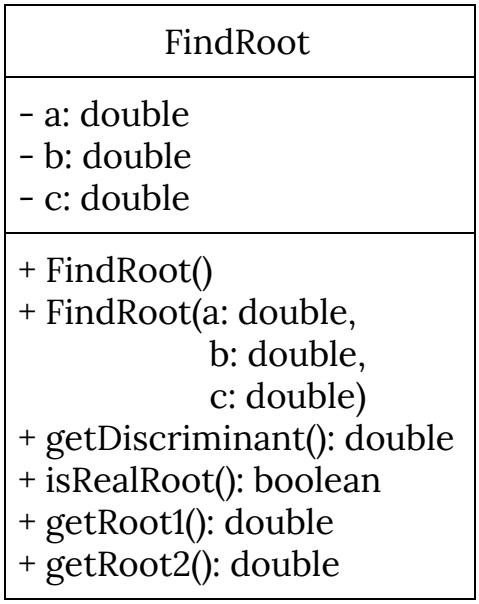
Task 1.

Write a method matchZebra(String s) that will check if the string has the letters z,e,b,r,a (letters may be uppercase or lowercase) in the same order.

Sample input	Sample output
Enter String: The craze of Burning Man.	true
Enter String: The zoo has an elephant and a bear.	false

Task 2

Implement the following UML diagram.



- Quadratic equation: $\mathbf{ax^2 + bx + c = 0}$
- getDiscriminant() method calculates and returns the discriminant of a quadratic equation using the formula: $\mathbf{b^2 - 4ac.}$
- isRealRoot() method checks and returns: true if the equation has real roots or false otherwise:
  If discriminant >= 0, equation has real roots
  If discriminant < 0, equation has no real root
- getRoot1() and getRoot2() methods calculate and return the roots of the equation.
  Formula to find the roots:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Write a test program that creates two objects of FindRoot class for two quadratic equations-
equation1: $\mathbf{x^2-4x+4=0}$
equation2: $\mathbf{5x^2-4x+4=0}$
and determine the roots of the equations. The program should display the message, “No real roots” if the equation has no real roots, but if it has real roots, then it should display the roots.