HEXADECIMAL CALCULATOR DOCUMENTATION

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Contents

Brief Description of Application

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Purpose

A simple JavaFX application perform basic mathematical calculations in hexadecimal numbers, and also display the equivalent values in decimal numbers (ordinary numbers).

Language/Tools Used

JavaFX, Java, FXML

Testing Framework

JUnit (Parameterized Unit Testing)

Software Development Platform
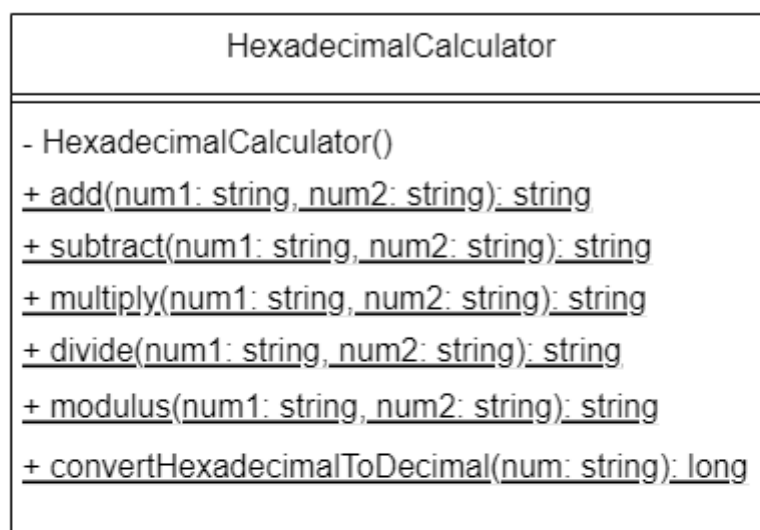
Intellij IDEA IDE by Jetbrains

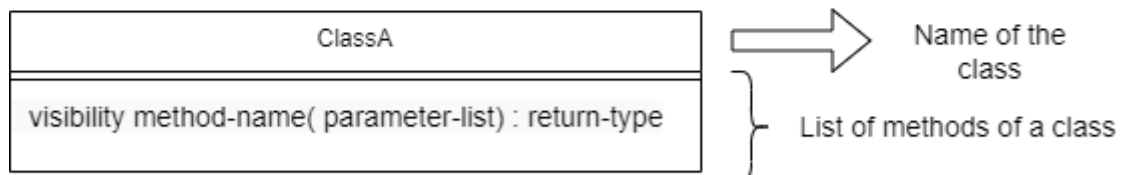# Application Architecture and Design

Architecture Pattern Used

Model-View-Controller (MVC) Architectural Pattern

UML Class Diagram of HexadecimalCalculator

HexadecimalCalculator
- HexadecimalCalculator() + add(num1: string, num2: string): string + subtract(num1: string, num2: string): string + multiply(num1: string, num2: string): string + divide(num1: string, num2: string): string + modulus(num1: string, num2: string): string + convertHexadecimalToDecimal(num: string): long

Legend

ClassA
visibility method-name(parameter-list) : return-type

⇒ Name of the class

List of methods of a class

+   represent public visibility

-     represent private visibility

<u>underlinedMethod()</u>   represent static method

Format of Parameter List: argument-name: data-type

Application Pseudocode

Try:

Obtain the two hexadecimal numbers the user entered;

Obtain the math operation which the user seleced (i.e. add, subtract, multiply or divide)

Perform the hexadecimal calculation using the two hexadecimal numbers depending on the math operation selected;

Display the result in hexadecimal number;

Display the two hexadecimal numbers and result in decimal numbers equivalent;

Catch:

Display error message (e.g.invalid user input)

EndTry

Application Screenshots
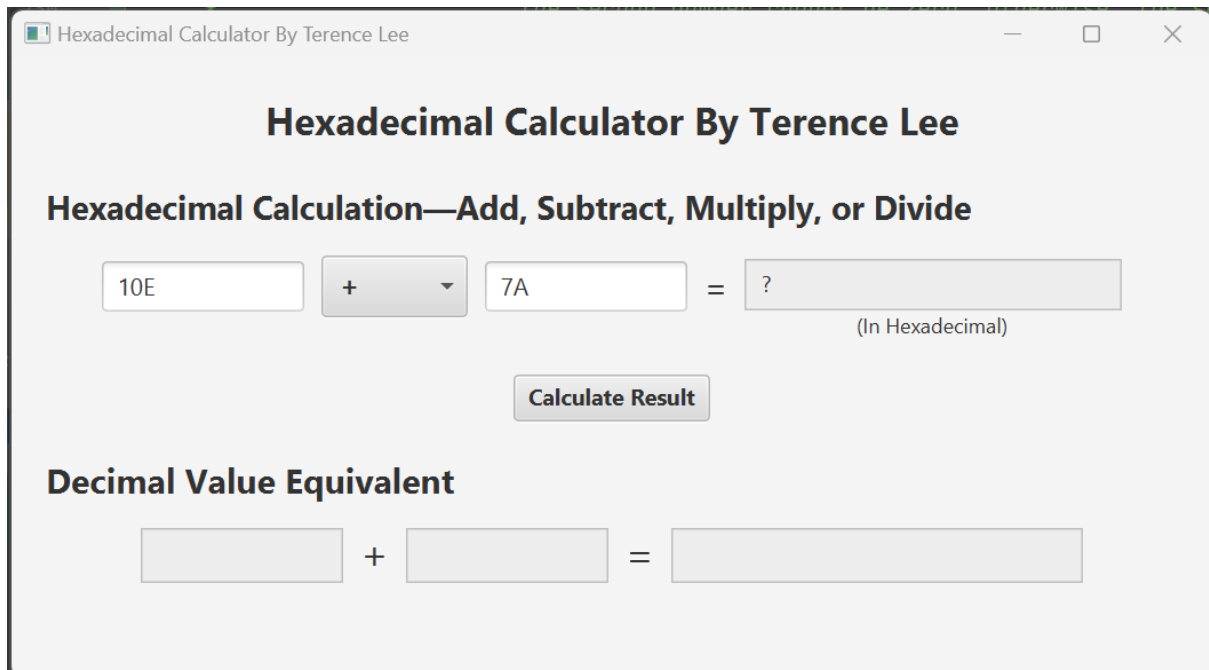
Figure 1: How the application looks like when first launched
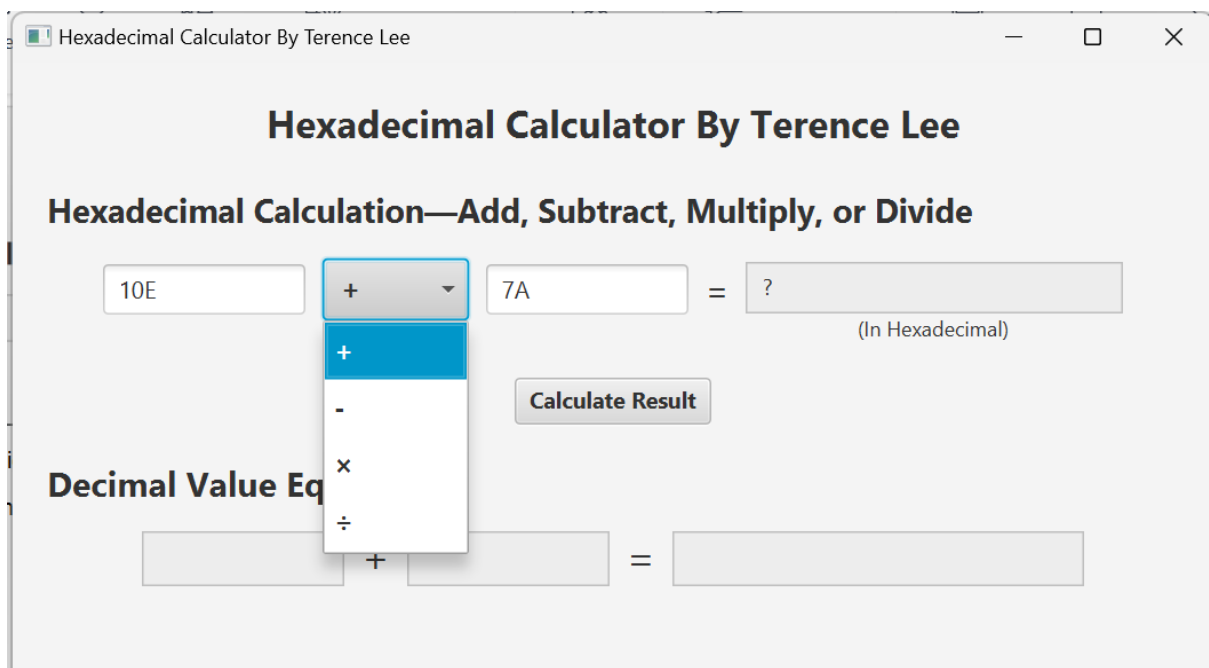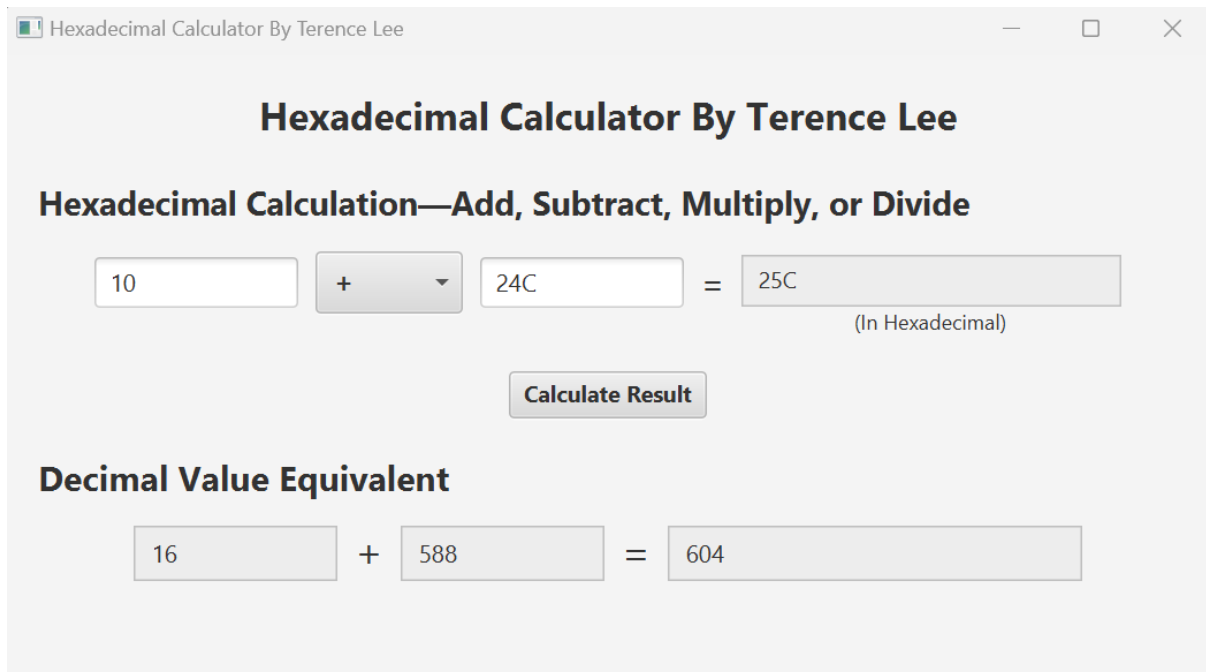
Figure 2: User can choose one of the four basic mathematical operations to calculate hexadecimal numbers

Testing Addition

Figure 3: Application display results of the addition operation in hexadecimal, along with the decimal value equivalent at the bottom

Testing Subtraction
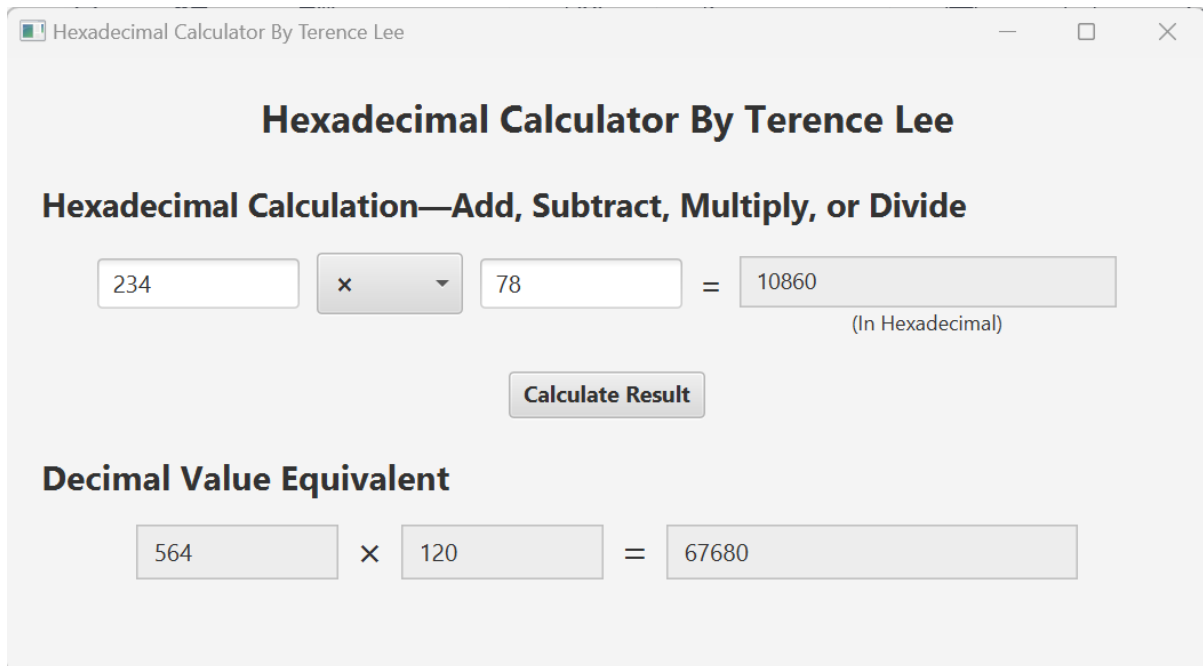

Figure 4: Application display results of the subtraction operation in hexadecimal, along with the decimal value equivalent at the bottom

Testing Multiplication

Figure 5: Application display results of the multiplication operation in hexadecimal, along with the decimal value equivalent at the bottom

Testing Division

Figure 5: Application display results of the division operation in hexadecimal, along with the decimal value equivalent at the bottom
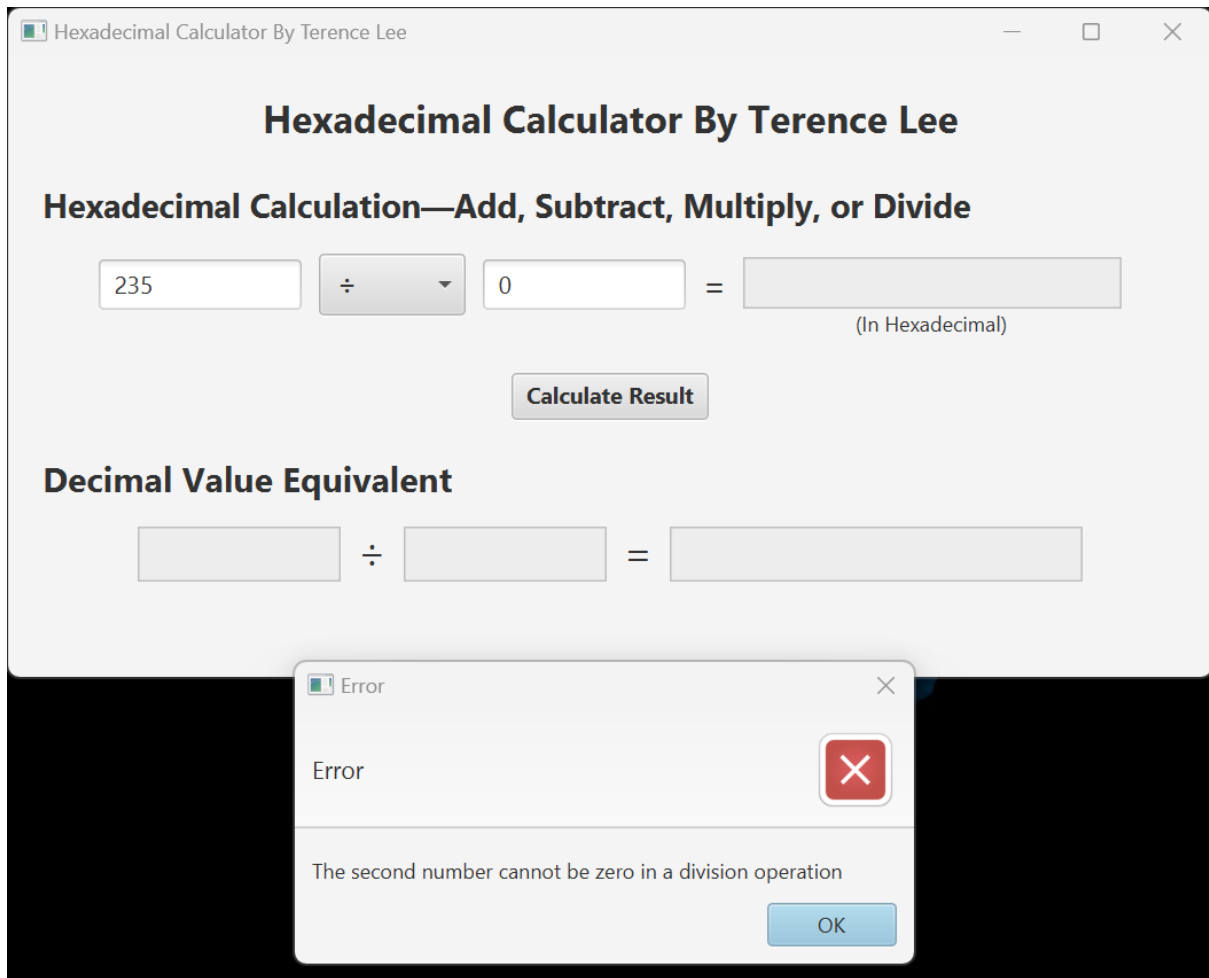
Testing Division By Zero

Figure 6: Application displaying error message if the user attempts to divide a hexadecimal number by zero (expected results)

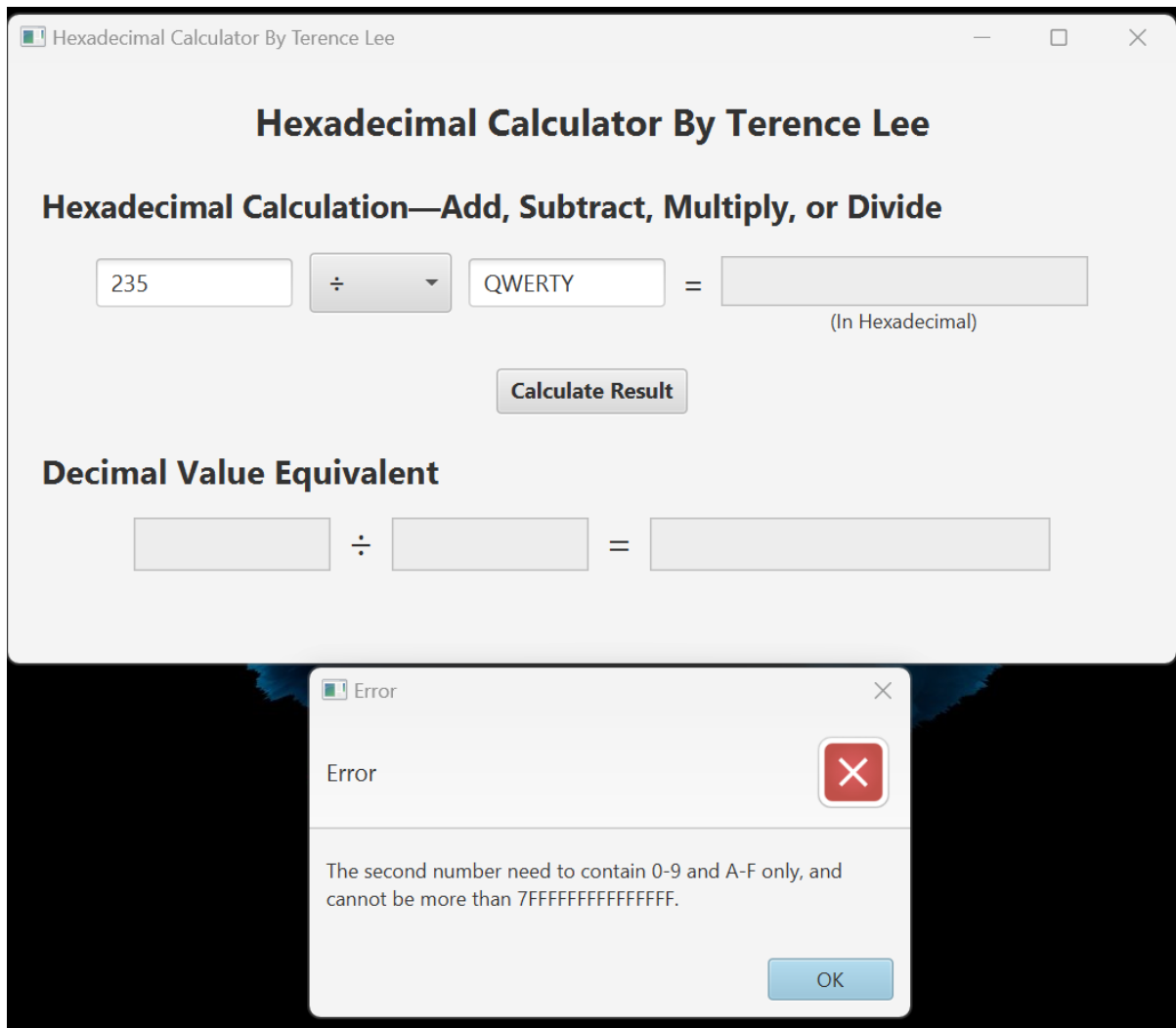## Testing Performing Math Operation on Invalid Number

Figure 7: Application displaying error message if the user attempts to add to an invalid hexadecimal number (expected results)