Information Technology Institute

Intake 40

Embedded Systems Track

JAVA PROJECT

Calculator Application

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Description:

Calculator with 3rd party keypad to be connected to a PC to manipulate a Java made Calculator application with good friendly GUI.

Deliverable:

Hardware:

Keypad with buttons from 0 to 9 in addition to +, -,*, /, = and .

Software:

Desktop application - Frame based – shows the calculator GUI with: A Display, Buttons from 0 to 9 and . in addition to operations buttons +, -, *, /, =.
The Soft Buttons should be highlighted when pressing the corresponding hard button on the keypad
All the operations should be implemented.

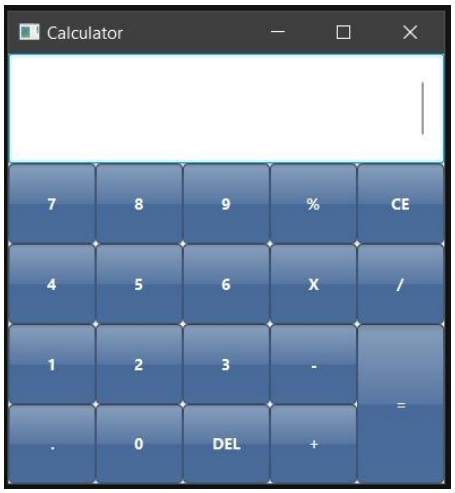
Implementation:

We are divided into three groups to implement three modules:

- GUI:
  to implement the Graphics of the Java Application.
- Serial:
  to implement the communication between the Arduino using Keypad and the Java application.
- Calculator Algorithm:
  to implement the Calculator as a function.

After implementing each module, we integrate them together to have another Big Module which is our Project.

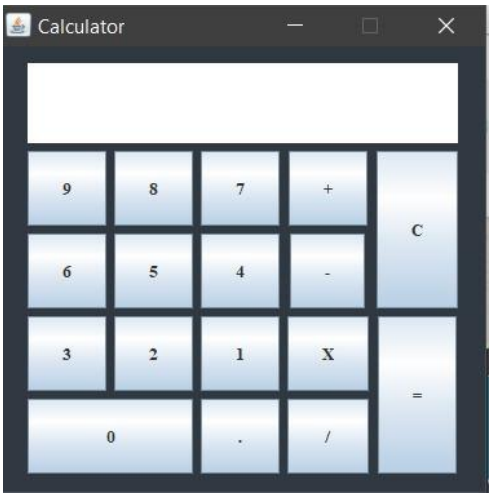
The software is implemented using two methods:



1- **JavaFx**

We implemented the GUI using screen builder as well as implementing all the calculator functions in the FXML Controller, but we faced some problems during its integration with the Arduino so we switched to the 2nd method.

2- **Swing**



We switched the whole application and implemented the GUI using java swing with GridLayout and GridConstraints to add textfield and buttons to the suitable position, and other swing methods for styling.

Calculator Features:

Our calculator can solve Addition, Subtraction, Division, and Multiplication with the floating point.
Our Project is divided into two parts:

- Making calculations using Keypad (external Hardware).
- Making calculations using GUI.

Code:

https://drive.google.com/file/d/1DnNq4vAuikrPFY_XXR74mL8k0bgvBng-/view?usp=sharing