Programming 3

Portfolio Question 7 (AT1.7)

South Metro TAFE

Jonah Cummins P458162

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# Data Structures

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Type** | **Purpose** |
| tempResult | Double | Temporally stores the result from the text display as the first number in an arithmetic sum. |
| finalResult | Double | The result from the tempResult and the textDisplay in an arithmetic sum. |
| plusClicked | Boolean | If the addition button is clicked, this will cause the text display to be put into the tempResult. |
| minusClicked | Boolean | If the subtraction button is clicked, this will cause the text display to be put into the tempResult. |
| divideClicked | Boolean | If the division button is clicked, this will cause the text display to be put into the tempResult. |
| mutiplyClicked | Boolean | If the mutiplication button is clicked, this will cause the text display to be put into the tempResult. |

# Algorithms

## Pseudocode

Button 0 to 9, decimal place and negative sign on click event methods

Display.text = Display.text + button.text

End Method

Addition Button

IF( Display.text!= empty && display.text != .)

tempResult += display.text

txtDisplay.Clear

plus = true

minus = false

divide = false

multiply = flase

END IF

END METHOD

Subtract Button  
 IF ( Display.text != empty && display.text != .)

tempResult += display.text

txtDisplay.Clear

plus = false

minus = true

divide = false

multiply = false

END IF

END METHOD

Divide Button

IF ( Display.text != empty && display.text != .)

tempResult += display.text

txtDisplay.Clear

plus = false

minus = false

divide = true

multiply = false

END IF

END METHOD

Multiplication Button

IF ( Display.text != empty && display.text != .)

tempResult += display.text

txtDisplay.Clear

plus = false

minus = false

divide = false

multiply = true

END IF

END METHOD

Square Root Button

IF (Display.text =! Empty)

Display.text = SqaureRoot(display.text)

ELSE

MessageBox (Error)

END IF

END METHOD

Cube Root Button

IF (Display.text =! Empty)

Display.text = CubeRoot(display.text)

ELSE

MessageBox (Error)

END IF

END METHOD

Inverse Button

IF (Display.text =! Empty)

Display.text = Inverse(display.text)

ELSE

MessageBox (Error)

END IF

END METHOD

Tan Button

IF (Display.text =! Empty && display.text < 90 && display.text >= 0)

Display.text = Tan(display.text)

ELSE

MessageBox (Error)

END IF

END METHOD

Sin Button

IF (Display.text =! Empty && display.text < 360 && display.text >= 0)

Display.text = Sin(display.text)

ELSE

MessageBox (Error)

END IF

END METHOD

Cos Button

IF (Display.text =! Empty && display.text < 360 && display.text >= 0)

Display.text = Cos(display.text)

ELSE

MessageBox (Error)

END IF

END METHOD

Equals Button

IF (plus)

finalResult = Add(tempResult, display.text)

ELSE IF (minus)

finalResult = Sub(tempResult, display.text)

ELSE IF (multipy)

finalResult = Mult(tempResult, display.text)

ELSE IF (divide)

finalResult = Div(tempResult, display.text)

END IF

Display.text = finalResult

tempResult = 0

END METHOD

## Error Handling

The error handling used in this is primarily preventing the user from entering anything that could cause issues. Before executing the maths, it also checks to ensure it’s a valid number such as two decimal points in a row. And also the prevention of entering values such as Tan(90).

# Testing Procedures

The recommended testing procedure would be to complete a testing table of various different sums to ensure the answers are correct and that it doesn’t crash.

# Upgrades and future enhancements

Upgrades that could be made are more math buttons that complete different sums, such as 2^2 etc. Another example could be the ability the type the numbers/symbols into the calculator, this would make it more user friendly.

# Git Hub

https://github.com/SmashTriple7