INTRODUCTION TO COMPUTER SCIENCE

MID-TERM PROJECT (CALCULATOR)

PRESENTATION

Group 13 Members

Rachata Raktham
Aung Thuya Han
Pamoda Tharangani Kodikara
Gayanga Dilhani Paranagamage
Amir Oladi
Joseph Gabrielle De Arco

TASKS ASSIGNED TO MEMBERS

Rachata Raktham	Coding Structure
Amir Oladi	Coding Structure
Joseph Gabrielle De Arco	Creating UI
Aung Thuya Han	Canva Preparation
Pamoda Tharangani Kodikara	Project Presentation
Gayanga Dilhani Paranagamage	Project Presentation

ABOUT

WHY WE CHOSE THE TOPIC CALCULATOR

- "A calculator is a tool everyone uses in daily life, making it a practical and relatable project to work on."
- "By creating a calculator app, we are building something that has real-world utility and can be used by others."
- "This project allows us to explore how technology simplifies everyday tasks, like performing complex calculations quickly and accurately."

PROJECT PLANNING MEETING

- Choosing a topic for the project
- Assigning tasks within the team
- Considering responsibilities and possible challenges

PROJECT UPDATE MEETING

- Reviewing progess on individual works
- Brainstorming challenges and solving errors
- Planning to meet deadline

CHALLENGES

1

Handling User Input

User might enter invalid inputs

2

Supporting Multiple Operations

Implementing basic operations (addition, subtraction, multiplication, division) and adding more complex operations (exponents, square root)

3

User Interface Design

Adding a user interface design (GUI) increases complexity significantly

4

Testing and Error Handling

Ensuring the app works correctly all inputs and operations

OUR APPROACH

1. **Identify the problem**
   Looking for crash, wrong output and unexpected behaviour

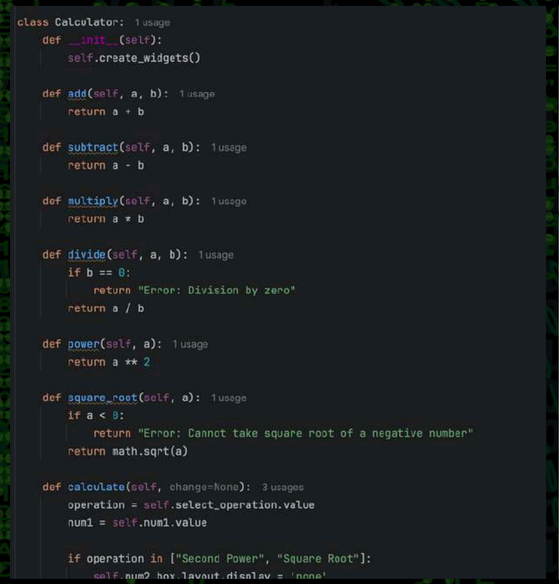
2. **Resolve errors**
   Fixing the issue immediately by adding error handling or adjusting logic based on the cause

3. **Correcting GUI logic**
   Finding syntax errors for complex operations and fixing misbehaviors when buttons are clicked

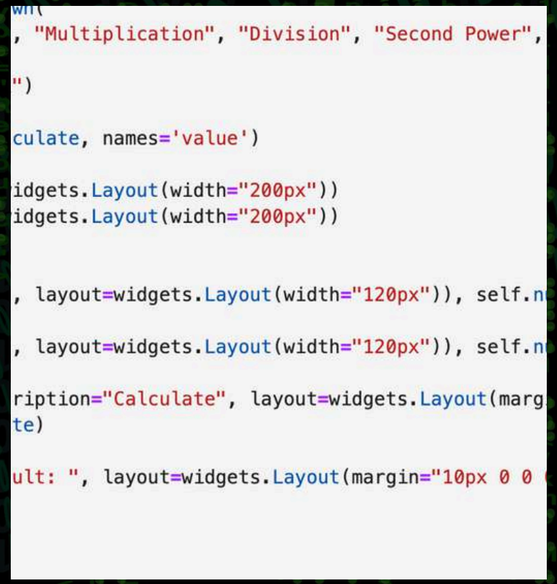
4. **Preventing future errors**
   Tesing thoroughly for all operations and commenting codes to explain logic for future debugging

OUR PROJECT

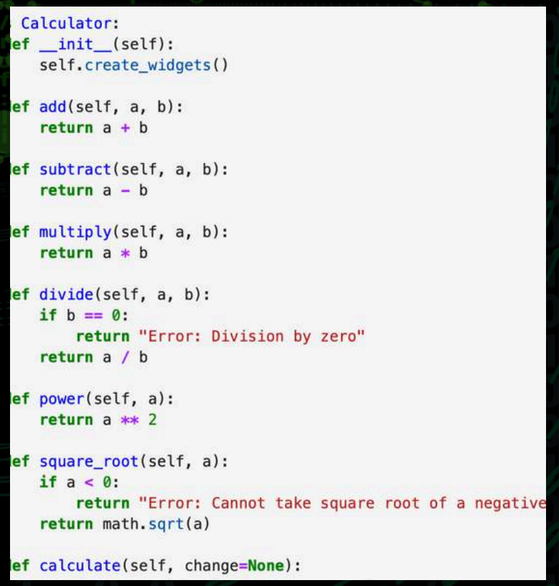
PORTFOLIO



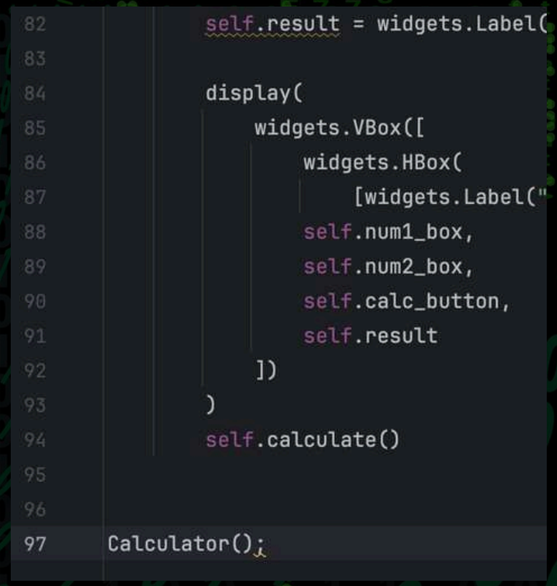
```
class Calculator:  1 usage
    def __init__(self):
        self.create_widgets()

    def add(self, a, b):  1 usage
        return a + b

    def subtract(self, a, b):  1 usage
        return a - b

    def multiply(self, a, b):  1 usage
        return a * b

    def divide(self, a, b):  1 usage
        if b == 0:
            return "Error: Division by zero"
        return a / b

    def power(self, a):  1 usage
        return a ** 2

    def square_root(self, a):  1 usage
        if a < 0:
            return "Error: Cannot take square root of a negative number"
        return math.sqrt(a)

    def calculate(self, change=None):  3 usages
        operation = self.select_operation.value
        num1 = self.num1.value

        if operation in ["Second Power", "Square Root"]:
            self.num2_box.layout.display = 'none'
```



```
wn(
, "Multiplication", "Division", "Second Power",

")

culate, names='value')

idgets.Layout(width="200px"))
idgets.Layout(width="200px"))


, layout=widgets.Layout(width="120px")), self.n

, layout=widgets.Layout(width="120px")), self.n

ription="Calculate", layout=widgets.Layout(marg
te)

ult: ", layout=widgets.Layout(margin="10px 0 0
```



```
Calculator:
ef __init__(self):
    self.create_widgets()

ef add(self, a, b):
    return a + b

ef subtract(self, a, b):
    return a - b

ef multiply(self, a, b):
    return a * b

ef divide(self, a, b):
    if b == 0:
        return "Error: Division by zero"
    return a / b

ef power(self, a):
    return a ** 2

ef square_root(self, a):
    if a < 0:
        return "Error: Cannot take square root of a negative
    return math.sqrt(a)

ef calculate(self, change=None):
```



```
82              self.result = widgets.Label(
83
84              display(
85                  widgets.VBox([
86                      widgets.HBox(
87                          [widgets.Label("
88                      self.num1_box,
89                      self.num2_box,
90                      self.calc_button,
91                      self.result
92                  ])
93              )
94              self.calculate()
95
96
97      Calculator();
```

OUR WORK IS JUST A CLICK AWAY!

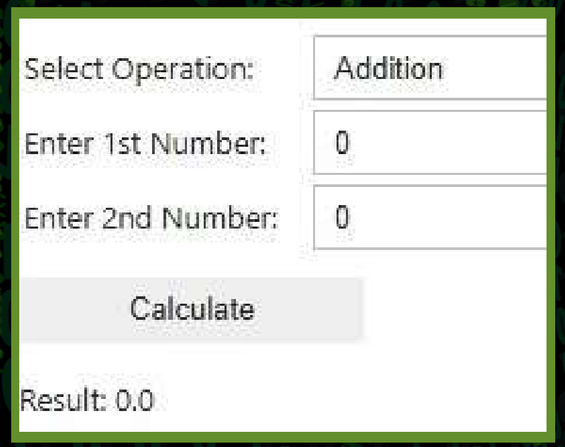
On Trello

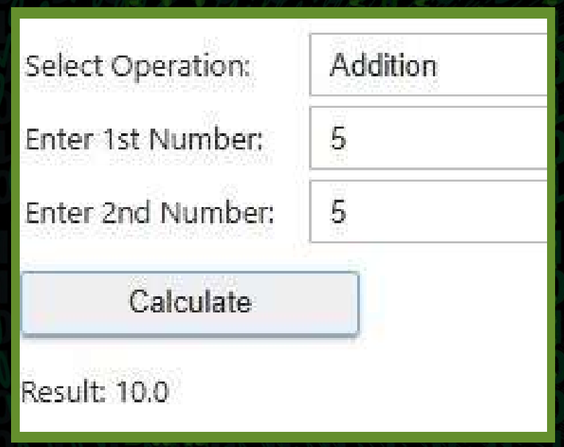
https://trello.com/b/uXO2AlGv

On Github

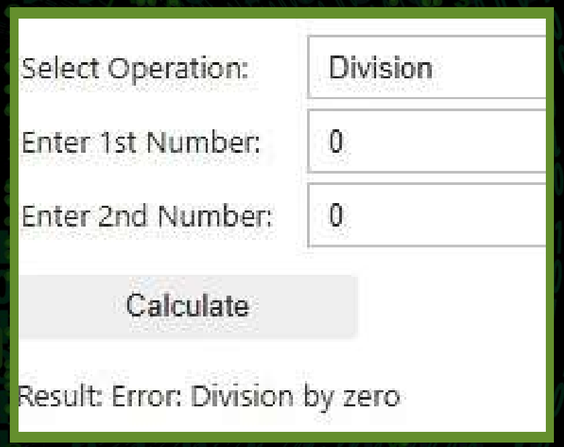
https://github.com/Amirol89/final-project.git

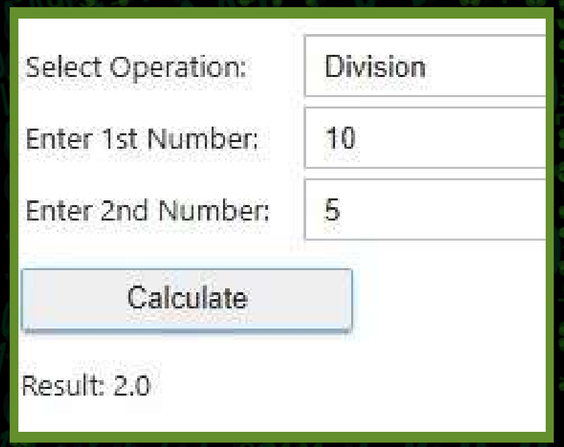
OUR PROJECT DEMO





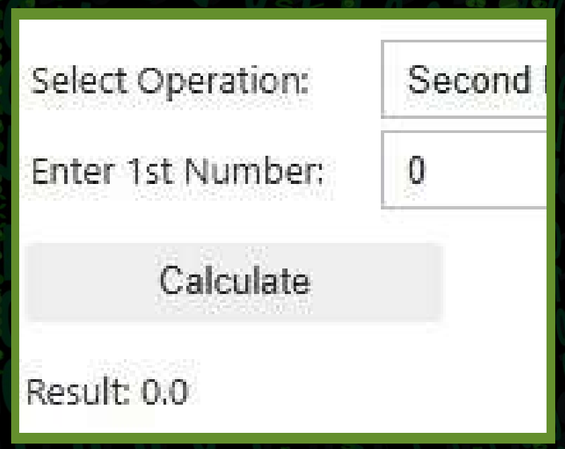
Addition

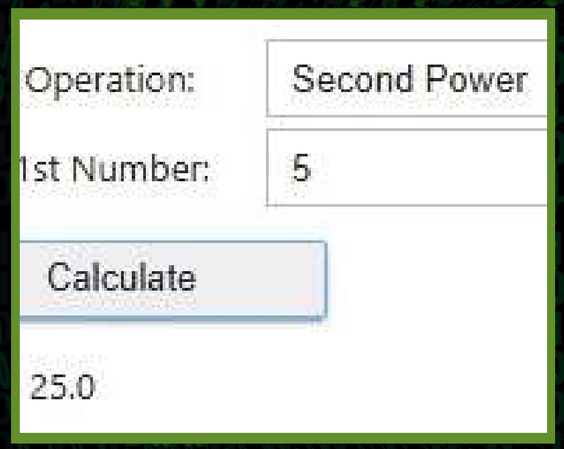




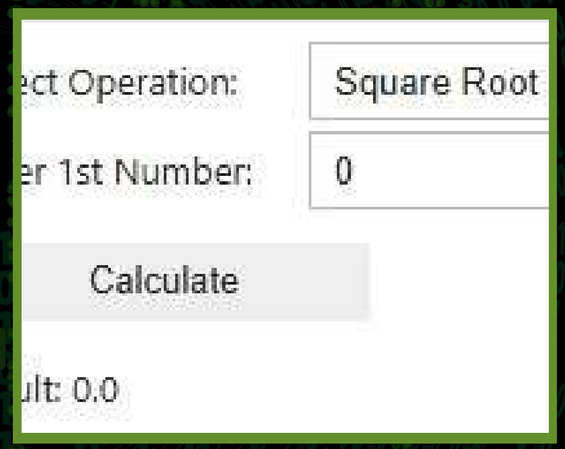
Division

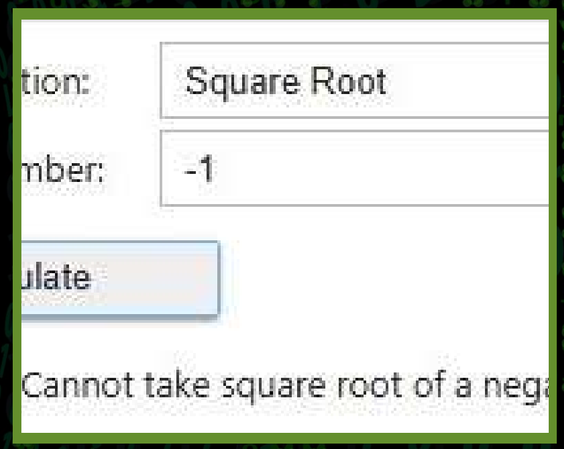
OUR PROJECT DEMO





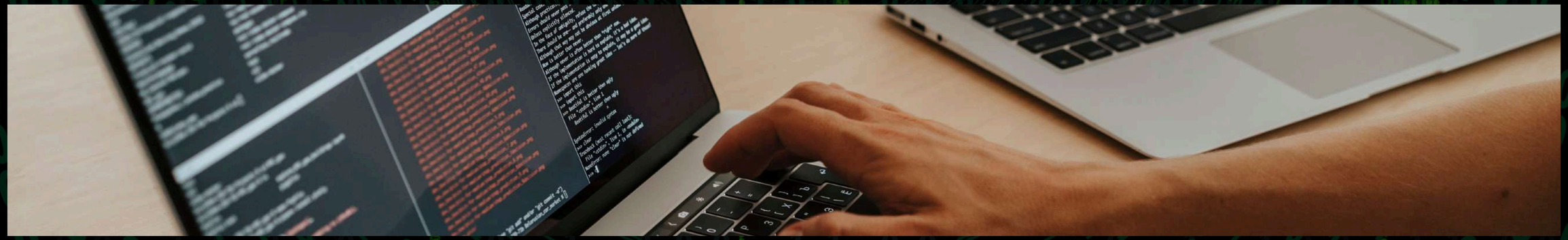
Second Power





Square Root

ANY QUESTIONS?



THANK YOU

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