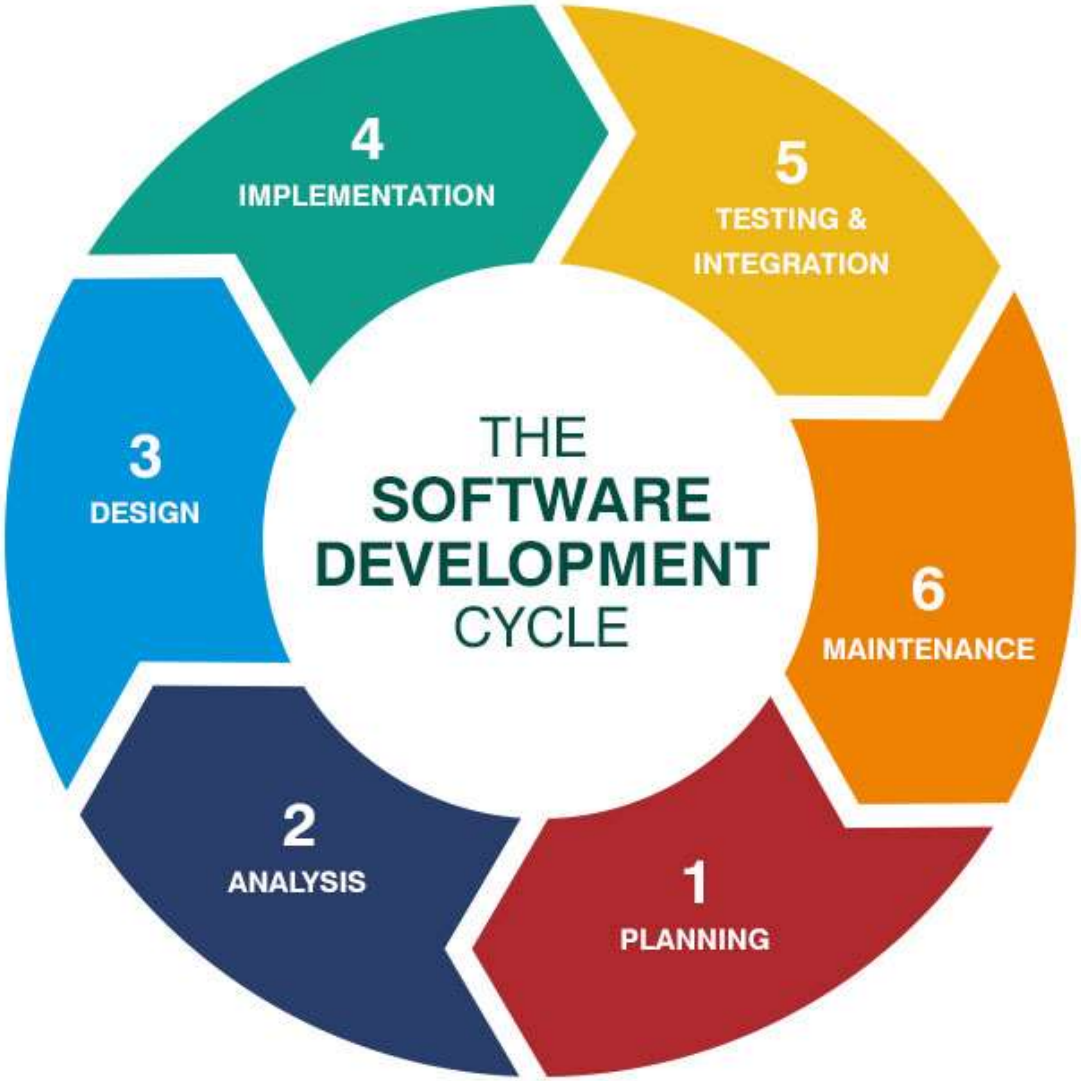

Report

Graphical Calculator

CS346 Assignment 1, Part-A

Ridhiman Kaur Dhindsa | 210101088 | 19 January 2024

Problem Description

We are required to make a graphical calculator software with the functionalities of addition, subtraction, multiplication and division. This requires the limits of inputs and outputs to be defined. We must also identify certain invalid cases (such as division by zero) and display the appropriate output for the same. There is also the issue of accuracy in floating point calculations and dealing with negative numbers.

Solution and Assumptions

Keeping the above in mind, the following assumptions are made:

1. User can enter numbers only to a certain limit of space in the calculator display.
2. There is no bracket support or BODMAS rule followed. If an operator button is pressed, the displayed number (might be the previous result or a number entered after pressing the clear button) will be operated upon, along with the next number entered.
3. User cannot enter arbitrary input such as characters or text. This will be ensured by the presence of only numerical buttons in the GUI.
4. The limit of calculation will be restricted to outputs between FLT_MAX and FLT_MIN, which will be specified in the final documentation.
5. Boundary cases such as division by zero or integer overflow shall display an error.

Features to be added

1. **Graphical User Interface (GUI):** Appropriate design and colour scheme will be followed. Prioritize user experience with large, clickable buttons and clear display.
2. **Utility buttons** will be added. Along with a clear button, = button, decimal point button, backspace button etc.
3. **Documentation:** Inline comments, User documentation and Technical Documentation. Document the codebase, including graphical components, for future maintenance and updates. Create user documentation to guide users through the application's features and functionalities.
4. **Operations supported:** +, *, -, /
5. **Data types supported:** Integers, Floating Point numbers, Negative numbers need to be dealt with.
6. **Corner cases:** Boundary cases such as division by zero or integer overflow shall be handled gracefully.

Tools to be used

Tools such as C++ shall be used for the functionality part and Visual Basic for the graphical representation. Visual Studio 2010 shall be used as the supporting platform for development.

Milestones

1. **Milestone 1:** Overall plan of the software to be made. Prepared a report.
2. **Milestone 2:** GUI and code would be implemented using best practices such as modularity, indentation etc. Testing and demonstration with certain fixed inputs.
3. **Milestone 3:** Final application would be implemented, covering boundary cases, GUI would be finalized, documentation would be ready. The software would be ready for use by any user.

Initial design

The following is a rough sketch of how the final application will look. Modifications might be made in terms of placement and size of buttons, color combinations etc.

The proposed colour scheme --->