



INTERNATIONAL SCHOOL

APPLICATION DEVELOPMENT PRACTICE

CMU-CS 246 NIS

PROJECT PLAN DOCUMENT

Version: 1.1

Java Calculator Application

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PROJECT PLAN DOCUMENT

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I. INTRODUCTION

1. PURPOSE

- Build the user interface for the Calculator application using Java.
- Support users in performing basic and advanced arithmetic operations.
- Design a simple, user-friendly interface suitable for users.

2. SCOPE

- A desktop application written in Java Swing.
- Supports basic operations (addition, subtraction, multiplication, division) and advanced operations (exponentiation, square root, percentage).
- Allows character deletion, refreshing, and saving calculation history within the session.

3. SCOPE

This document is intended for the following audiences:

- Technical reviewers including:
 - Scrum Master
 - Product owner
- Implementers, including:
 - Developers.
 - Testers.

II. LIST OF USER INTERFACE

1. Functional Diagram

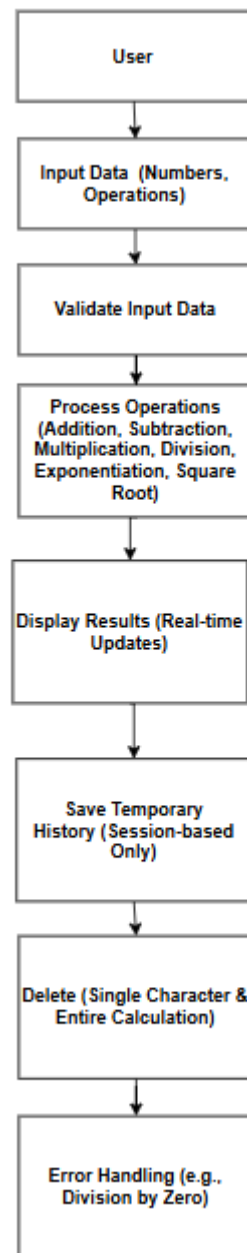


Figure 1 Calculator Function diagram

2. Application interface

The main interface consists of:

- Display area for input and results.
- Numeric buttons (0-9).

- Operation buttons (+, -, *, /, x^y , \sqrt{x} , %).
- Control buttons (C, Backspace, =).
- History panel to view past calculations.

III. Describe user interface

1. Main screen

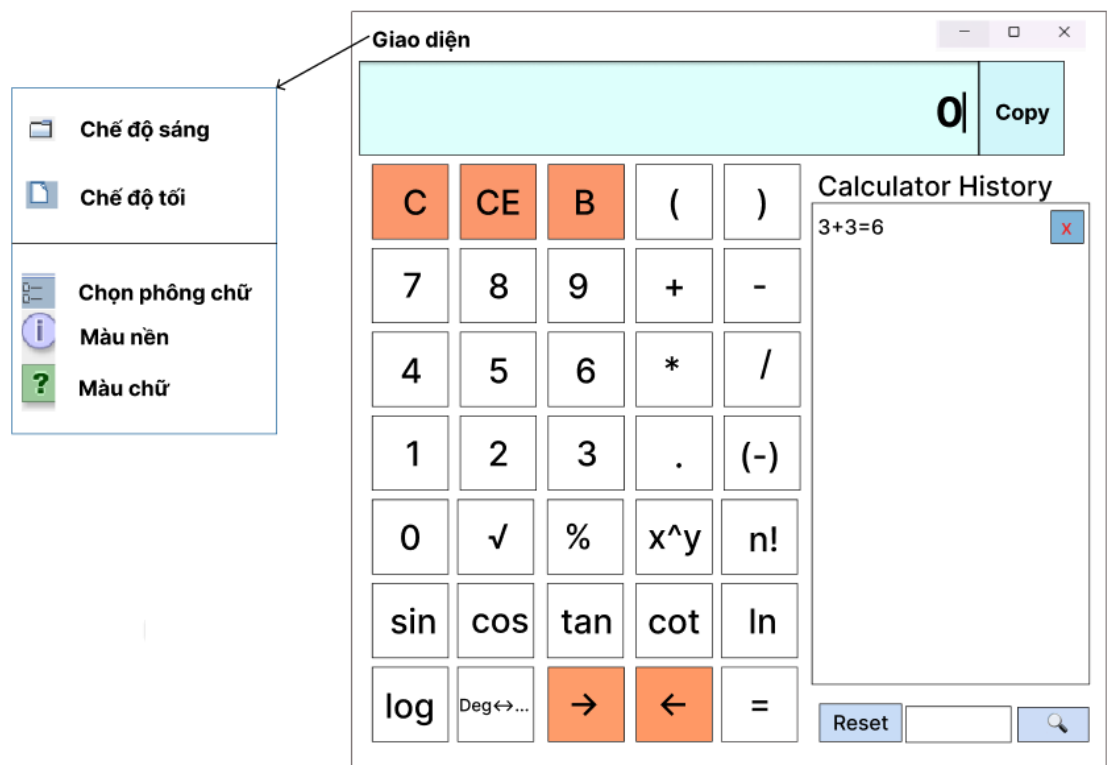


Figure 2 Main Screen Interface

ID	Element	Type	Function
1	Text Display	JLabel	Shows input & results

2	Number Button	JButton	Enters digits (0-9)
3	Operator Button	JButton	Performs arithmetic
4	Power Button	JButton	Computes exponentiation
5	Square Root Button	JButton	Computes square root
6	Percentage Button	JButton	Computes percentage
7	Backspace Button	JButton	Deletes last input
8	Clear Button	JButton	Clears all input
9	Equal Button	JButton	Perform the calculation.
10	Decimal Button	JButton.	Enter the decimal point in the real number
11	History Box	JTextArea	Displays calculation history
12	Parenthesis Button	JButton	Used to group expressions in calculations, ensuring the correct order of operations.
13	Parenthesis Button	JButton	Used to close grouped expressions in calculations, maintaining mathematical

14	Negation Button	JButton	Used to toggle the sign of a number (switching between positive and negative).
15	sin Button	JButton	Calculates sine of an angle
16	cos Button	JButton	Calculates cosine of an angle
17	cot Button	JButton	Calculates cotangent of an angle
18	tan Button	JButton	Calculates tangent of an angle
19	log Button	JButton	Calculates logarithm (base 10)
20	n! Button	JButton	Calculates factorial of a number
21	-> Button	JButton	Moves cursor right
22	<- Button	JButton	Moves cursor left
23	Deg<->Rad Button	JButton	Switches between Degree and Radian modes
24	Search History Button	JButton	Searches history entries
25	Delete History Line Button	JButton	Deletes a selected line from calculator history
26	Reset Search Button	JButton	Clears search results and resets the history view

27	Text Color Button	JMenuItem	Changes the text color
28	Bright Mode Button	JMenuItem	Switches to bright (light) mode
29	Dark Mode Button	JMenuItem	Switches to dark mode
30	Font Picker Button	JMenuItem	Allows choosing a custom font
31	Background Color Button	JMenuItem	Changes the background color
32	Copy Button	JButton	Copies the current result to clipboard

Table 1 Describe User Interface Main Screen