

**INTERNATIONAL SCHOOL**

**CAPSTONE PROJECT 1**

**CMU-CS 246**

**USER INTERFACE DESIGN DOCUMENT**

Version: 2.0

**CALCULATOR SYSTEM – CS**

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**PROJECT INFORMATION**

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**PROJECT PLAN DOCUMENT**

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# INTRODUCTION

## PURPOSE

* Document the design of user interface of functions of the Calculator System
* Be the primary document driving the implementation of the user interfaces.
* Introduce interface design for the reader. Including the background, content information display, buttons.

## SCOPE

* This document helps to better understand the interface of the System, detailed specification components and function of the System.
* With this document, the development team can understand the structure and composition to create a consistent and complete system.
* Overview of the stages and modules of the software and create a complete interface.

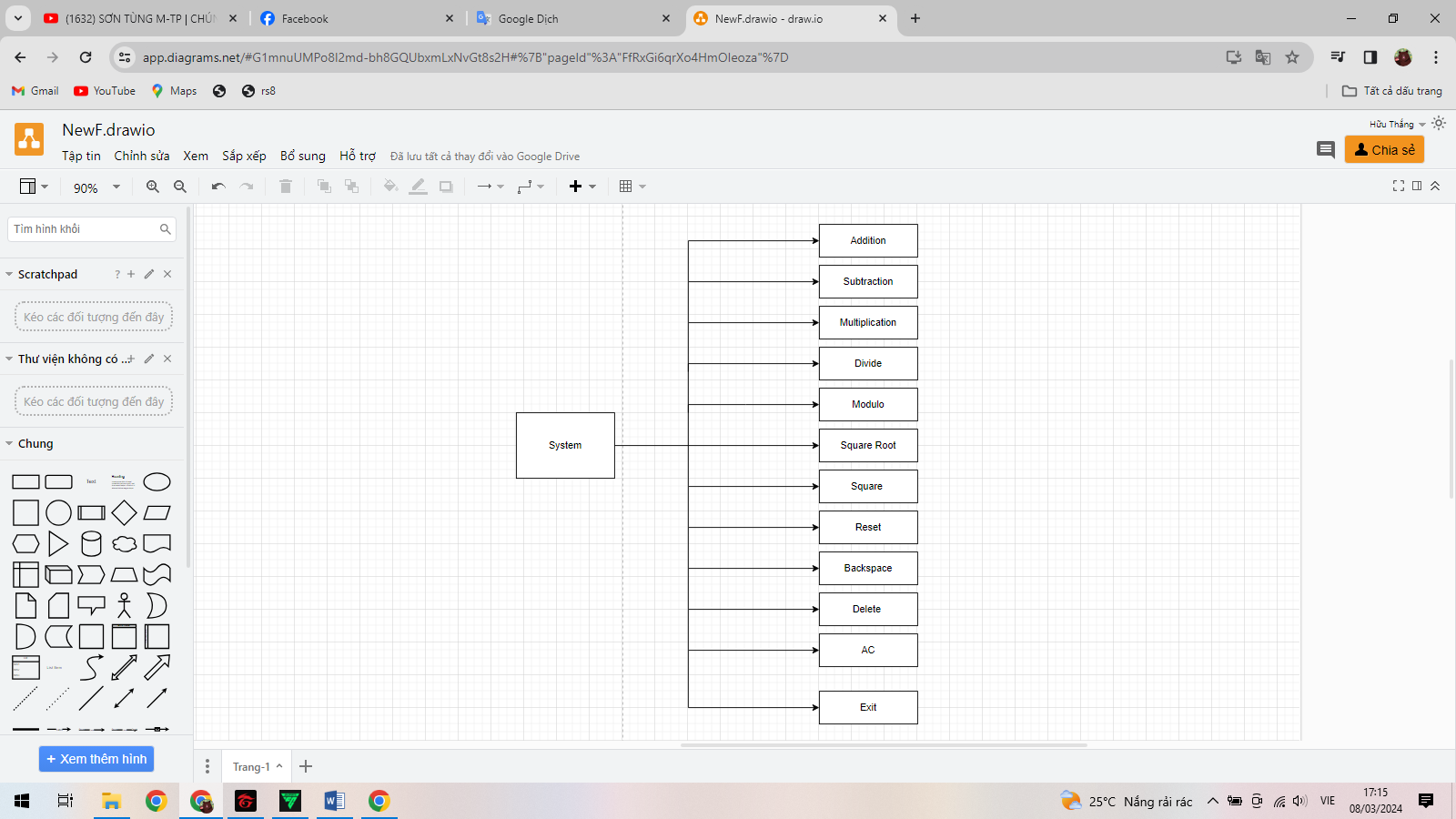
## SCOPE

This document is intended for the following audiences:

* Technical reviewers including:
* Project Management
* Product owner
* Implementers, including:
  + Developers.
  + Testers.

# LIST OF USER INTERFACE

## BUSINESS FUNCTION DIAGRAM:



## CACULATOR SYSTEM:

|  |  |  |
| --- | --- | --- |
| **User Interface ID** | **UI Name** | **Description** |
| UI-01 | Addition | This use case allows the user to perform an arithmetic "+" operation. |
| UI-02 | Subtraction | This use case allows the user to perform an arithmetic "-" operation. |
| UI-03 | Multiplication | This use case allows the user to perform an arithmetic "\*" operation. |
| UI-04 | Divide | This use case allows the user to perform an arithmetic "/" operation. |
| UI-05 | Modulo | This use case allows the user to perform an arithmetic "%" operation. |
| UI-06 | Square | This use case allows the user to perform an arithmetic " x²” " operation. |
| UI-07 | Square root | This use case allows the user to perform an arithmetic "√ x " operation. |
| UI-08 | Reset | This use case allows the user to perform an or reset operation. |
| UI-09 | Exit | This use case allows the user exit from calculator system |
| UI-10 | Backspace | This use case allows the user to perform a backspace operation. |
| UI-11 | Delete | This use case allows the user to perform a delete operation. |
| UI-12 | AC | This use case allows the user to delete all characters |

# DESCRIBE USER INTERFACE

## INTERFACE:

## 426262792_1596187591139936_8339966679057121393_n

## 2. DESCRIBE UI:

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Condition** | **Control Type** | **Target** |
| 1 | Press | Text field | Enter number A |
| 2 | Press | Text field | Enter number B |
| 3 | Press | Button | Click to “+” button to plus 2 number A and number B |
| 4 | Press | Button | Click to “-” button to subtract 2 number A and number B |
| 5 | Press | Button | Click to “\*” button to multiply 2 number A and number B |
| 6 | Press | Button | Click to “/” button to divide 2 number A and number B |
| 7 | Press | Button | Click to “%” button to modulo 2 number A and number B |
| 8 | None | Text field | Display the result of calculations |
| 9 | Press | Button | Click to “Reset” button to reset the calculation |
| 10 | Press | Button | Click to “Exit” button to exit calculator system |
| 11 | Press | Button | Click to “Backspace” button to delete a character from left to right |
| 12 | Press | Button | Click to “Delete” button to delete a character from right to left |
| 13 | Press | Button | Click the "x²" to calculate the square of A number |
| 14 | Press | Button | Click the "√x" to calculate the square root of A number |
| 15 | Press | Button | Click to “AC” button to reset the calculation |

## 3. Use case:

**3.1 Plus Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC01 | | | |
| Use Case Name: Plus | | | |
| Member Create: Le Thanh Nhat Minh, Le Trung Dung | | Member Last Update: Le Thanh Nhat Minh, Le Trung Dung | |
| Date Create: 26/01/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function produces the plus results of 2 numbers a,b | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Input number A in text field A, number B in text field B | | - If A is not A number the Result label display “A must a number”  - If B is not a number the Result label display “B must a number” |
| 3 | Click on “+” button | | The result will display on text field Result |

**3.2 Subtract Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC02 | | | |
| Use Case Name: Subtraction | | | |
| Member Create: Le Thanh Nhat Minh, Le Trung Dung | | Member Last Update: Le Thanh Nhat Minh, Le Trung Dung | |
| Date Create: 26/01/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function produces the subtract results of 2 numbers a,b | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Input number A in textfield A, number B in textfield B | | - If A is not a number the Result label display “A must a number”  - If B is not a number the Result label display “B must a number” |
| 3 | Click on “-“ button | | The result will display on textfield Result |

**3.3 Multiply Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC03 | | | |
| Use Case Name: Multiplication | | | |
| Member Create: Le Thanh Nhat Minh, Le Trung Dung | | Member Last Update: Le Thanh Nhat Minh, Le Trung Dung | |
| Date Create: 26/01/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function produces the multiply results of 2 numbers a,b | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Input A, B in text field and click Multiply button | | - If A is not a number the Result label display “A must a number”  - If B is not a number the Result label display “B must a number” |
| 3 | Click “\*” function | | The result will display on textfield Result |

**3.4 Divide Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC04 | | | |
| Use Case Name: Division | | | |
| Member Create: Le Thanh Nhat Minh, Le Trung Dung | | Member Last Update: Le Thanh Nhat Minh, Le Trung Dung | |
| Date Create: 26/01/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function produces the divide results of 2 numbers a,b | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Input A, B in textfield and click Divide button | | - If A is not a number the Result label display “A must a number”  - If B is not a number the Result label display “B must a number” |
| 3 | Click “/” button | | The result will display on textfield Result |

**3.5 Modulo Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC05 | | | |
| Use Case Name: Modulo | | | |
| Member Create: Le Thanh Nhat Minh, Le Trung Dung | | Member Last Update: Le Thanh Nhat Minh, Le Trung Dung | |
| Date Create: 26/01/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function produces the remainder of the division results of 2 numbers a,b | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Input A, B in textfield and click Modulo button | | - If A is not a number the Result label display “A must a number”  - If B is not a number the Result label display “B must a number” |
| 3 | Click “%” button | | The result will display on textfield Result |

**3.6 square function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC06 | | | |
| Use Case Name: square | | | |
| Member Create: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | | Member Last Update: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | |
| Date Create: 07/03/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes a square function that can calculate the square of one or more numbers of A or B | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Enter A, B in the text field and click the x² button | | - If A is not a number the Result label display “A must a number”  - If B is not a number the Result label display “B must a number”  - only the square of A is entered |
| 3 | Click “x²” button | | The result will display on textfield Result |

**3.7 Square root function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC07 | | | |
| Use Case Name: square root | | | |
| Member Create: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | | Member Last Update: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | |
| Date Create: 07/03/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes a square root function that can calculate the square root of one or more numbers of A or B | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Enter A, B in the text field and click the √ x button | | - If A is not a number the Result label display “A must a number”  - If B is not a number the Result label display “B must a number”  - only the square root of the number A is entered |
| 3 | Click “√ x” button | | The result will display on textfield Result |

**3.8 Reset Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC08 | | | |
| Use Case Name: Reset | | | |
| Member Create: Le Thanh Nhat Minh, Le Trung Dung | | Member Last Update: Le Thanh Nhat Minh, Le Trung Dung | |
| Date Create: 26/01/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function will reset 2 number a, b to their initial value | | | |
| Pre-conditions: | | Enter A, B | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 2 | Click “Reset” button | | Text field A, text field B and text field result will reset |

**3.9 Exit Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC09 | | | |
| Use Case Name: Exit | | | |
| Member Create: Le Thanh Nhat Minh, Le Trung Dung | | Member Last Update: Le Thanh Nhat Minh, Le Trung Dung | |
| Date Create: 26/01/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function will exit | | | |
| Pre-conditions: | |  | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 3 | Click “Exit” button | | The system will shut down program |

**3.10 Backspace Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC10 | | | |
| Use Case Name: Backspace | | | |
| Member Create: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | | Member Last Update: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | |
| Date Create: 07/03/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function will backspace | | | |
| Pre-conditions: | |  | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 3 | Click “Backspace” button | | The system deletes 1 character from right to left |

**3.11 Delete Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC11 | | | |
| Use Case Name: Delete | | | |
| Member Create: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | | Member Last Update: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | |
| Date Create: 07/03/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function will Delete | | | |
| Pre-conditions: | |  | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 3 | Click “Delete” button | | The system deletes 1 character from left to right |

**2.12 AC Function**

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: UC12 | | | |
| Use Case Name: AC | | | |
| Member Create: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | | Member Last Update: Le Thanh Nhat Minh, Tran Thi Nhu Ngoc | |
| Date Create: 07/03/2024 | | | |
| Actor: User | | | |
| Describes: This use case describes function will AC | | | |
| Pre-conditions: | |  | |
| Post-conditions: | |  | |
| Priority: H/M/L | | High | |
| Use frequency: | | Low | |
| Standard processes: | | | |
| Step | Actor Action | | System Response |
| 1 | Run application | | The application run successful |
| 3 | Click “AC” button | | system Delete all characters on the screen |