Vysoké učení technické v Brně
Fakulta informačních technologií

Desktop Calculator Application

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Contents

1 Introduction

This desktop calculator application is designed for everyday PC users who need a reliable, simple, and powerful tool for basic and advanced calculations. With a clean interface and a variety of built-in mathematical functions, it offers an intuitive experience for users of all skill levels.

2 System Requirements

Based on the application's interface and behavior, the basic requirements are:

- Operating System: Windows, Linux or macOS

- Screen resolution: Minimum 300x500

- RAM: 512 MB or higher

- Input: Mouse and/or keyboard

- No internet connection required

3 Installation and Launch

This section will be completed later.

4 User Interface Overview

The calculator's layout is divided into several intuitive sections. Below is a labeled screenshot of the application:

4.1 Top Section

- **Help Icon ("?")**: Opens the help or user manual. This is useful if you need guidance on how to use the calculator.

- **Expression Field**: Displays the current mathematical expression you are entering.

- **Result Display**: Shows the calculated result in real-time.

4.2 Function Buttons

These are located in the top row of the button grid:

- x^2 – Square

- $\sqrt{2}$ – Square root

- ! – Factorial

- MOD – Modulo operation

Figure 1: Calculator interface

- x^n – Power
- $\sqrt[n]{x}$ – n-th root

4.3 Control Buttons

- `AC` – Clears the entire expression
- `DEL` – Deletes the last entered digit or symbol

4.4 Numeric and Operator Pad

- Standard number keys (0–9)
- Arithmetic operators: $+, -, \times, \div$
- `=` – Evaluates the entered expression

5 Features

This calculator supports:

- Basic arithmetic operations: addition, subtraction, multiplication, division
- Advanced math functions: power, square, square root, factorial, modulo, and n-th roots
- Real-time expression evaluation
- Keyboard or mouse input

6   Example Usage

6.1   Simple Example

Expression: $5 + 3 \times 2$

   Steps:

   1. Press: 5, +, 3, *, 2

   2. Press: =

Result: 11

6.2   Advanced Example

Expression: $\dfrac{(5! + \sqrt{81})}{2^3} + 7 \times 3^2 - 6$

   This expression uses factorial, square root, exponentiation, multiplication, and division.

   Steps:

   1. Press: 5, ! $\rightarrow$ (result: 120)

   2. Press: +, $\sqrt{\ }$, 9, = $\rightarrow$ (result: 9), full expression: $120 + 9$

   3. Press: /, 2, ^, 3 $\rightarrow$ denominator: $2^3 = 8$

   4. Press: +, 7, *, 3, ^, 2 $\rightarrow$ $7 \cdot 9$

   5. Press: -, 6

   6. Press: =

   Result:

$$\frac{120 + 9}{8} + 7 \cdot 9 - 6 = \frac{129}{8} + 63 - 6 = 16.125 + 57 = \boxed{73.125}$$

7   Project Authors

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