Java Console Calculator

A simple command-line calculator application built with Java that performs basic arithmetic operations.

Project Overview

This project implements a console-based calculator that allows users to perform addition, subtraction, multiplication, and division operations. The program runs in a continuous loop until the user decides to exit.

Features

- Addition of two numbers
- Subtraction of two numbers
- Multiplication of two numbers
- Division of two numbers with zero-division protection
- Interactive menu system
- Input validation for numeric values
- Continuous operation until user exits
- Error handling for invalid inputs

Technical Implementation

The calculator uses several Java programming concepts:

- **Methods**: Separate functions for each mathematical operation
- **Scanner Class**: Handles user input from console
- **Loops**: Main program loop and input validation loops
- **Exception Handling**: Manages division by zero scenarios
- **Conditionals**: Switch statements for operation selection

How to Run

1. Ensure Java Development Kit (JDK) is installed on your system
2. Save the code as `ConsoleCalculator.java`
3. Open terminal/command prompt in the project directory
4. Compile the program:

```
javac ConsoleCalculator.java
```

5. Run the compiled program:

```
java ConsoleCalculator
```

Usage Instructions

1. Launch the program
2. Select an operation from the menu (1-5)
3. Enter the first number when prompted
4. Enter the second number when prompted
5. View the calculation result
6. Choose whether to perform another calculation
7. Select option 5 to exit the program

Input Requirements

- Menu choices: Integer values 1-5
- Numbers: Any valid decimal or whole numbers
- Continuation prompt: 'y' or 'yes' to continue, any other input to return to menu

Error Handling

The program handles several error scenarios:

- Division by zero attempts
- Invalid numeric input
- Invalid menu selections
- Non-numeric input validation

Development Environment

- **Language**: Java
- **IDE**: Any Java-compatible IDE (VS Code, IntelliJ, Eclipse)
- **Java Version**: Compatible with Java 8 and above
- **Dependencies**: None (uses standard Java libraries)

Project Structure

```
project-folder/
├── ConsoleCalculator.java
```

Learning Outcomes

This project demonstrates understanding of:

- Basic Java syntax and structure

- Object-oriented programming principles

- User input handling

- Program flow control

- Error management

- Method creation and usage