Advanced Calculator App - Documentation

# 1. Introduction

The Advanced Calculator App is a modular Python application designed to perform various arithmetic operations. The project will be built incrementally, starting with basic operations and expanding to advanced features such as scientific functions and a graphical user interface (GUI) using Tkinter.

# 2. Objectives

• Develop a modular calculator using Python functions.

• Implement core operations: addition, subtraction, multiplication, division.

• Handle errors such as division by zero and invalid inputs.

• Expand the calculator to include scientific operations (square root, power, etc.).

• Add a Tkinter GUI for a user-friendly experience.

• Integrate Git for version control and documentation.

# 3. Features (Planned)

• Basic arithmetic operations: +, -, \*, /

• Scientific functions: sqrt, power, trigonometric functions

• History of previous calculations

• Error handling for invalid inputs

• Tkinter GUI with buttons and display area

• Dark mode and light mode (optional)

# 4. Project Structure

The project will be organized as follows:  
 ├── calculator\_project/  
 │ ├── main.py # Entry point for the application  
 │ ├── modules/  
 │ │ ├── \_\_init\_\_.py  
 │ │ ├── mat\_utils.py # Contains mathematical functions  
 │ │ └── sci\_utils.py # Contains scientific functions (future)  
 │ └── gui/  
 │ └── interface.py # Tkinter GUI implementation (future)

# 5. Development Roadmap

• Phase 1: Implement core operations in mat\_utils.py

• Phase 2: Create main.py to call these operations

• Phase 3: Add error handling and unit tests

• Phase 4: Expand with scientific functions (sci\_utils.py)

• Phase 5: Build Tkinter GUI for the calculator

• Phase 6: Polish the app with themes and documentation