

Productivity Suite - Project Documentation

Overview

The Productivity Suite is a Python-based desktop application built using Tkinter. It combines four essential utilities into a single user-friendly interface: a Calculator, Notes Manager, File Organizer, and Timer (Countdown + Stopwatch).

This documentation provides an overview of features, functionality, and internal workflow.

1. Calculator

The calculator supports safe arithmetic operations using a custom AST-based evaluator. It includes buttons for digits, operators, and a real-time evaluation triggered using '=' or Enter key. Supported operations: +, -, *, /, %, **, and unary + and -.

2. Notes Manager

A simple note-taking system that stores notes as .txt files inside a dedicated 'notes' directory. Features include creating, saving, loading, deleting, and exporting notes. The system also sanitizes filenames for safety and compatibility.

3. File Organizer

This tool organizes files inside a chosen directory by automatically sorting them into subfolders based on file extensions. For example: .png → png_files/, .pdf → pdf_files/. It uses Python's `shutil.move()` for file operations.

4. Timer (Countdown + Stopwatch)

The timer module includes: • Countdown Timer – Users can input minutes and seconds; the timer updates every second using Tkinter's `after()` loop. • Stopwatch – Tracks elapsed time with start, stop, and reset. Internally uses timestamps for accurate measurement. Both timers run without freezing the UI thanks to Tkinter's asynchronous scheduling.

5. Application Structure

The GUI is built using Tkinter's Tk, Frame, Label, Entry, Button, Text, Notebook, and Spinbox widgets. Tabs are created using `tk.Notebook`. Internal functionalities are separated into dedicated builder methods: `build_calculator()`, `build_notes()`, `build_file_organizer()`, `build_timer()`. The `safe_eval()` function ensures only valid arithmetic expressions are processed.

Conclusion

This Productivity Suite demonstrates modular GUI design, safe computation handling, organized file management, and responsive real-time timers — making it a practical and extendable desktop

utility.