Maharshi Karve Stree Shikshan Samstha's

Cummins College of Engineering for Women, Pune

(An autonomous Institute affiliated to Savitribai Phule Pune University)

Department of Computer Engineering

## 23VSECCE401 - Programming Skills Development Laboratory

# Synopsis

## 1. Group Members:

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## 2.Problem Statement:

Event Planning and Expense Splitting Application

## 3.Keywords:

- Event Management
- Expense Splitting
- CustomTkinter
- Data Visualization
- Debt Settlement
- PDF Report Generation
- Financial Planning
- Group Expense Tracking
- Python GUI
- Matplotlib Charts

## 4. Abstract

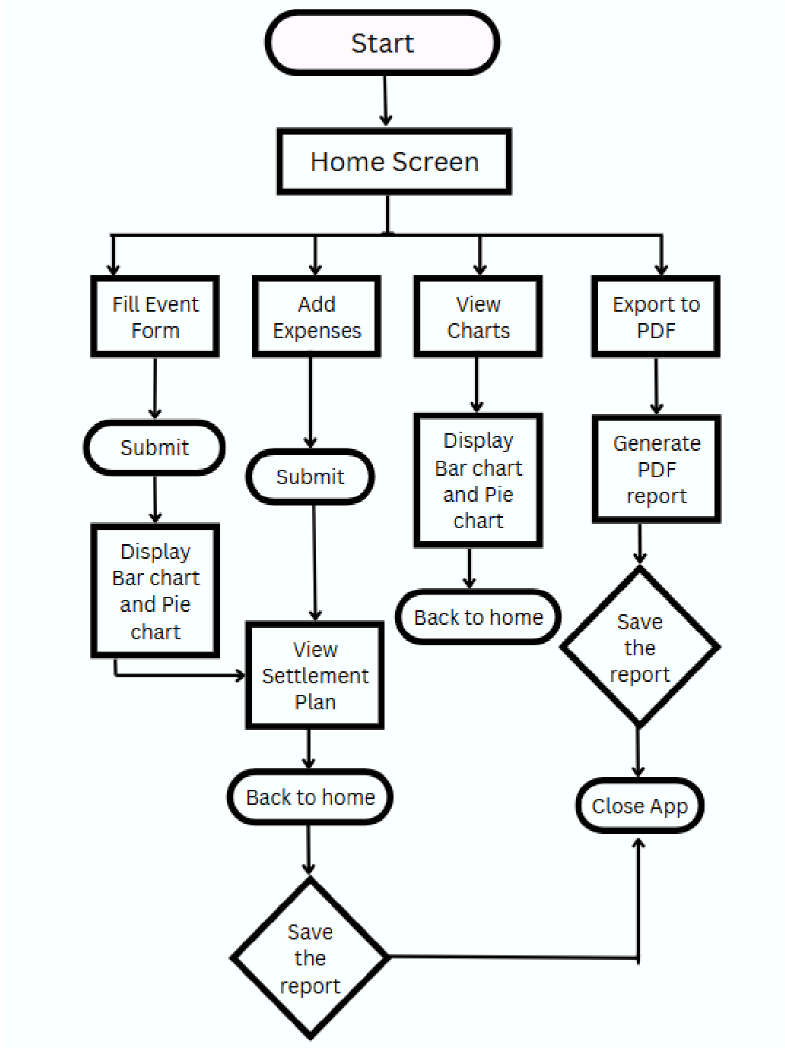
The Event Planning and Expense Splitting Application is a Python-based desktop tool designed to facilitate seamless event management and equitable cost-sharing among participants. Built using `CustomTkinter` for a modern GUI, the application allows users to create events, add multiple expenses, allocate payments among participants, and automatically calculate who owes whom. It also features visual insights through bar and pie charts using `Matplotlib` and supports exporting comprehensive event reports in PDF format via `FPDF`. The solution simplifies group expense management, making it ideal for events, trips, and collaborative projects.

## 5. Module-wise Description

| **Module** | **Description** |
|---|---|
| Home Screen | Displays welcome message, list of created events, and current event details. |
| Event Creation Module | Enables users to create new events by inputting event name, date, and participants. |
| Add Expense Module | Users can log expenses by selecting type, amount, payer, and involved participants. |
| Debt Calculation Module | Calculates net balances for each participant and provides a simplified settlement plan. |
| Charts and Visualization Module | Generates bar and pie charts of expense distribution for analytical insights. |

| | |
|---|---|
| PDF Export Module | Exports event details, expenses, debt settlements, and payment plans into a structured PDF file. |
| Navigation Panel | Provides quick access to all functionalities: Home, Create Event, Add Expense, View Charts, Calculate Debts, Export to PDF, and Exit. |

## WorkFlow:



## 6. Technology Selected and Technology Features Covered

- **Python**
  - Used as the core programming language.
  - Features used: Object-oriented programming (OOP) concepts, and modular function design.

- **CustomTkinter (ctk)**
  - Used for creating a modern, stylish GUI.
  - Features used: Frames, Labels, Buttons, OptionMenus, and Checkboxes for user interaction.

- **Matplotlib**
  - Used for creating graphical visualizations.
  - Features used: Bar Charts, Pie Charts, and embedding Matplotlib charts into the Tkinter app.

- **FPDF (for Python)**
  - Used to generate PDF files for event reports.
  - Features used: Adding pages, setting fonts, creating tables, and formatting cells.

- **Tkinter (Core)**
  - Used for basic GUI functions like pop-up messages and file dialogs.
  - Features used: `filedialog.asksaveasfilename()` for saving files and `messagebox` for alerts.

- **OOP Concepts**
  - Applied to organize the code efficiently.
  - Helped modularize the project by creating separate functions for each screen and feature.

## 7. References

- https://docs.python.org/3/ — Python Programming Language
- https://customtkinter.tomschimansky.com/ — CustomTkinter Documentation
- https://matplotlib.org/stable/contents.html — Matplotlib (Visualization Library)
- https://pyfpdf.github.io/fpdf2/ — FPDF2 Documentation (Python Version)
- https://docs.python.org/3/library/tkinter.html — Tkinter Tutorial (Python Docs)
- https://stackoverflow.com/ — Stack Overflow