DAILY EXPENSE CRUD MANAGER

PROJECT BY SHRIYA MISTRY

INTRODUCTION

The Daily Expense CRUD Manager is a Python-based application designed to help users track and manage their daily expenses efficiently. This system addresses the growing need for personal financial management tools that are simple, accessible, and effective.

The application implements core CRUD (Create, Read, Update, Delete) operations while incorporating advanced features like multi-level categorization, budget analysis, and spending insights. Built entirely in Python, it demonstrates practical application of programming fundamentals in solving real-world problems.

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PROBLEM STATEMENT

Individuals and households struggle with effective daily expense tracking and financial management. The existing manual methods of recording expenses in notebooks or scattered digital notes lead to poor financial visibility, inefficient categorization, lack of budgeting and no historical analysis. My project builds a basic expense tracking system, through which user can categorize there expenses.

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FUNCTIONAL REQUIREMENTS

- Expense Management
- Categorization System
- Budget Management
- Reporting and Analytics

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EXPENSE MANAGEMENT

- **Create**: Add new expense entries with detailed categorization
- **Read**: View all expenses with filtering and search capabilities
- **Update**: Modify existing expense records
- **Delete**: Remove incorrect or duplicate entries

CATEGORIZATION SYSTEM

- **Two-level categorization** : Primary (Needs/Wants) and Secondary (Food, Entertainment, etc.)
- **Flexible category management** : Ability to add/modify categories
- **Automatic categorization** : Smart suggestions based on expense patterns

BUDGET MANAGEMENT

- **Monthly budget setting** : Define overall spending limits
- **Real-time tracking** : Monitor budget utilization
- **Daily budget calculation** : Automatic computation of daily spending limits
- **Overspending alerts** : Notifications when approaching budget limits

REPORTING AND ANALYTICS

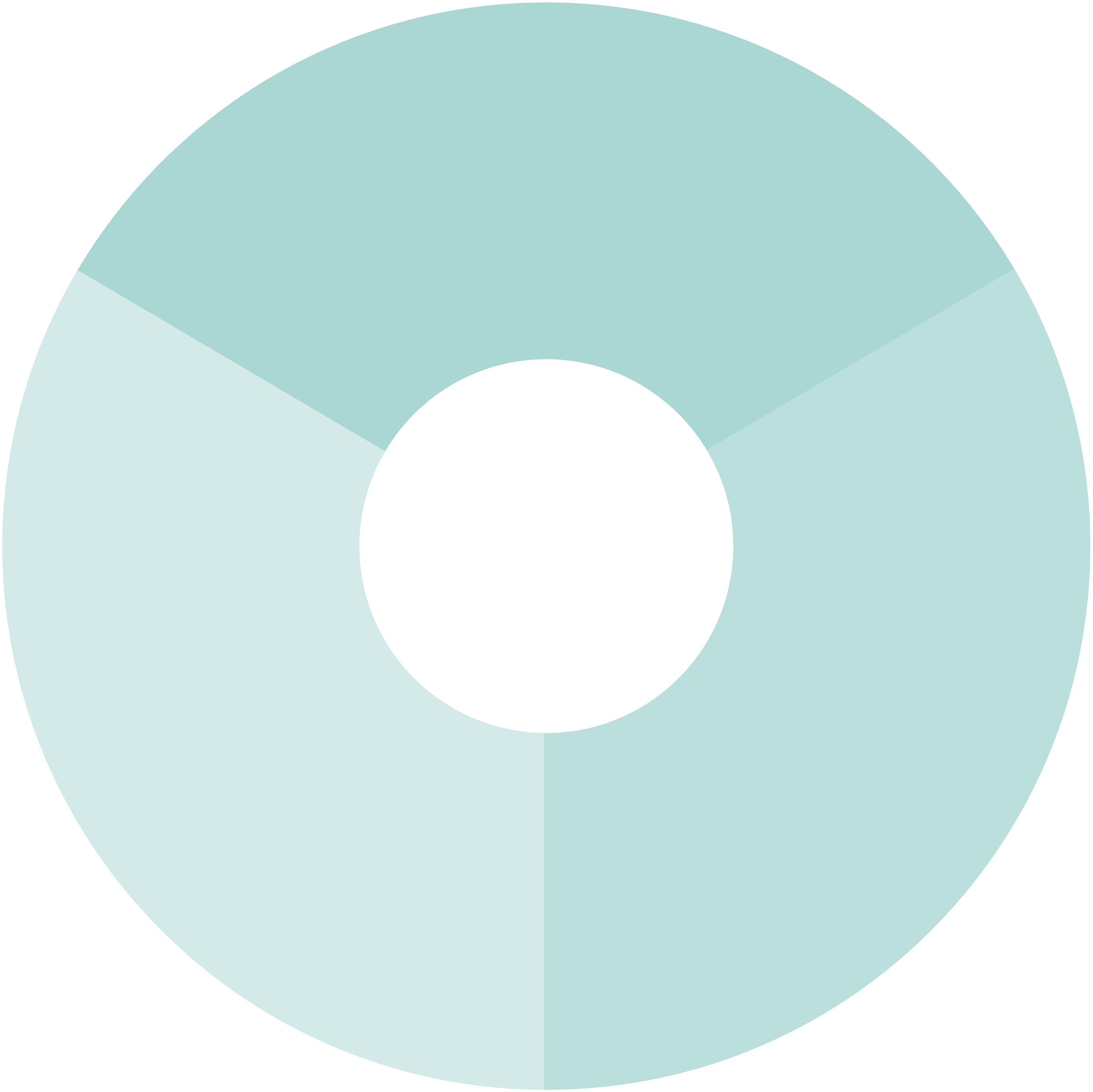
- **Category-wise spending analysis**: Breakdown of expenses by categories
- **Monthly summaries**: Comprehensive spending overview
- **Trend analysis**: Comparison with previous months
- **Remaining days calculation**: Projected spending capacity

Non-Functional Requirement

01

Performance

All operations gets complete within 2 seconds and it can handle upto 10,000 records efficiently



02

Usability

New Users can become proficient within 15 minutes. It has single line interface with clear menus.

03

Reliability

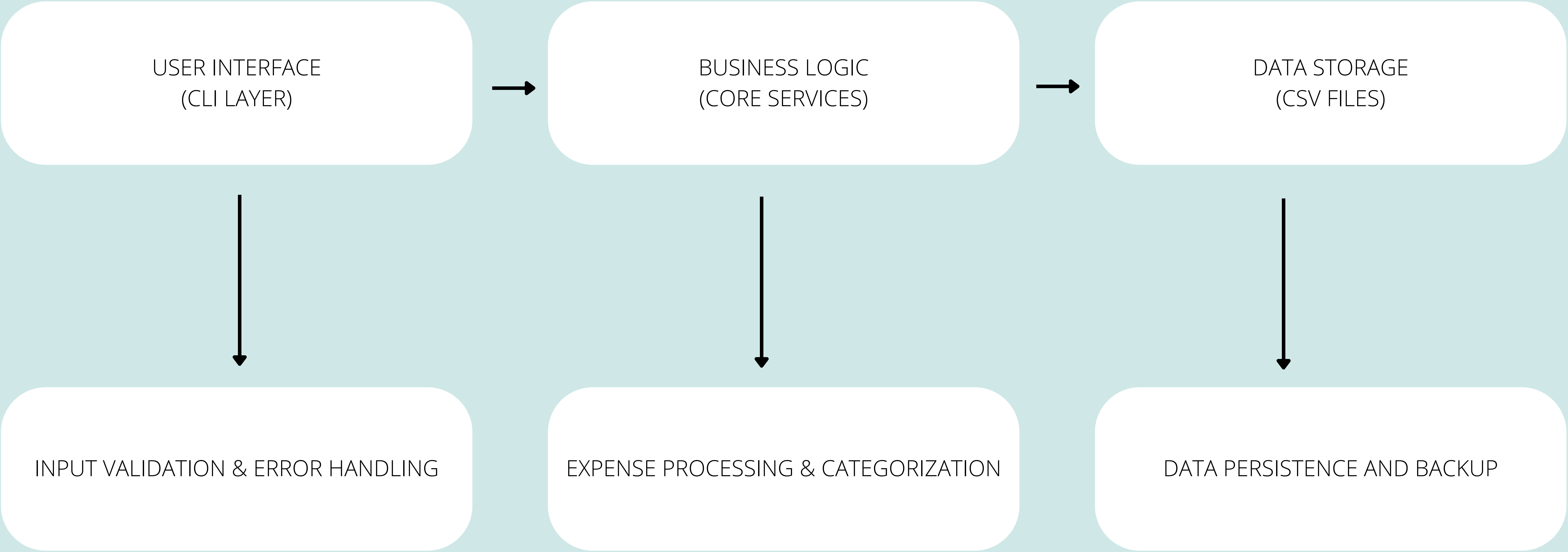
Application is available for record 24/7. It has 99.9% accuracy in data storage and retrieval.

04

Maintainability

It has well-structured and documented codebase. New Features and categories can be easily added.

SYSTEM ARCHITECTURE



USER INTERFACE
(CLI LAYER)

BUSINESS LOGIC
(CORE SERVICES)

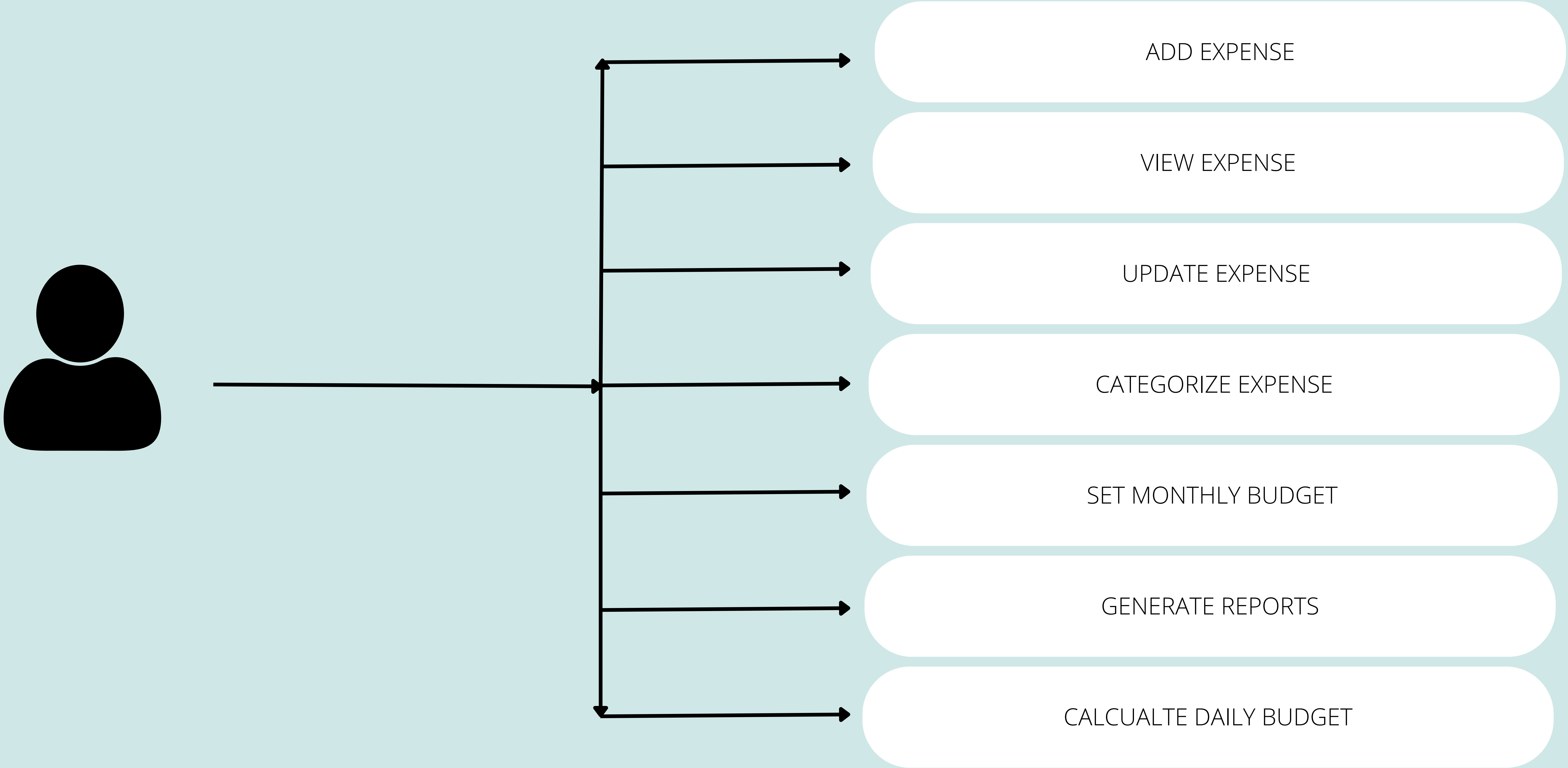
DATA STORAGE
(CSV FILES)

INPUT VALIDATION & ERROR HANDLING

EXPENSE PROCESSING & CATEGORIZATION

DATA PERSISTENCE AND BACKUP

USE -CASE DIAGRAM



ADD EXPENSE

VIEW EXPENSE

UPDATE EXPENSE

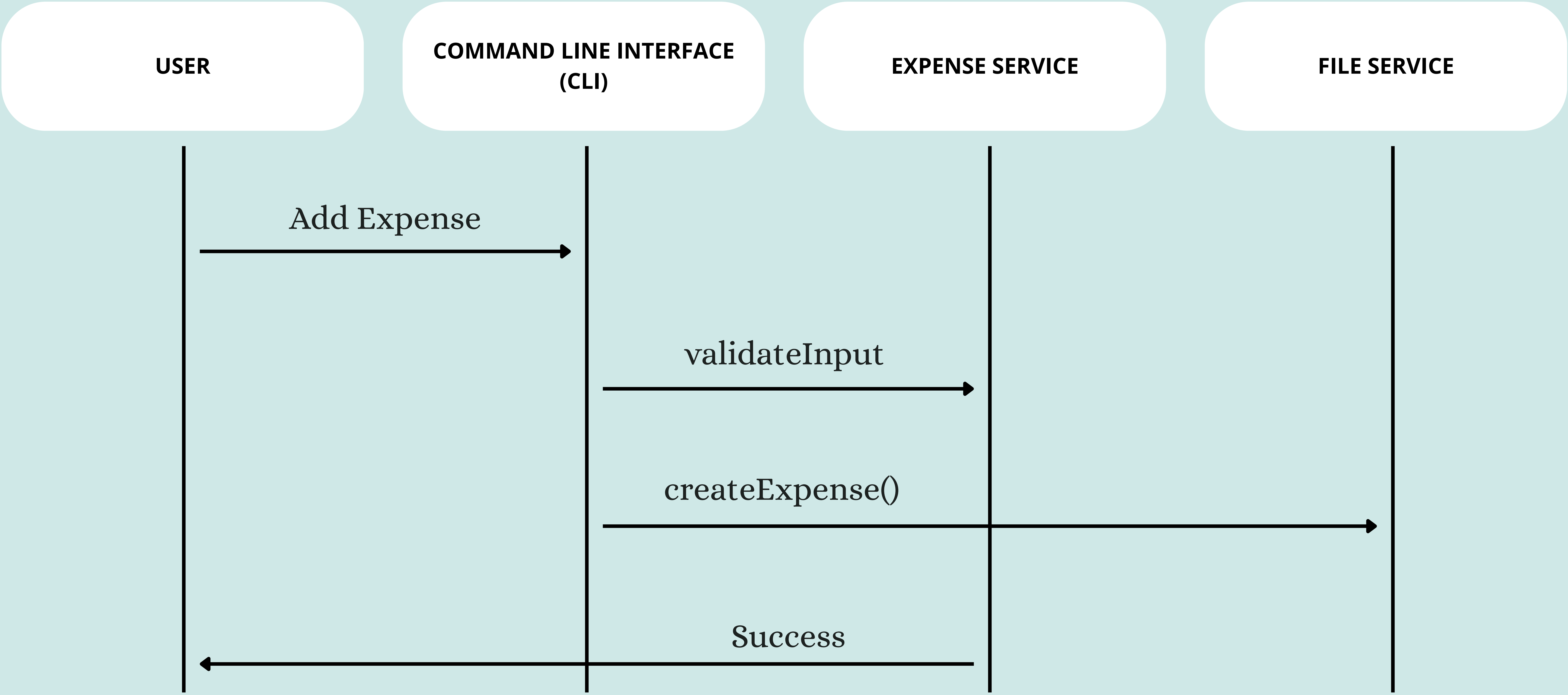
CATEGORIZE EXPENSE

SET MONTHLY BUDGET

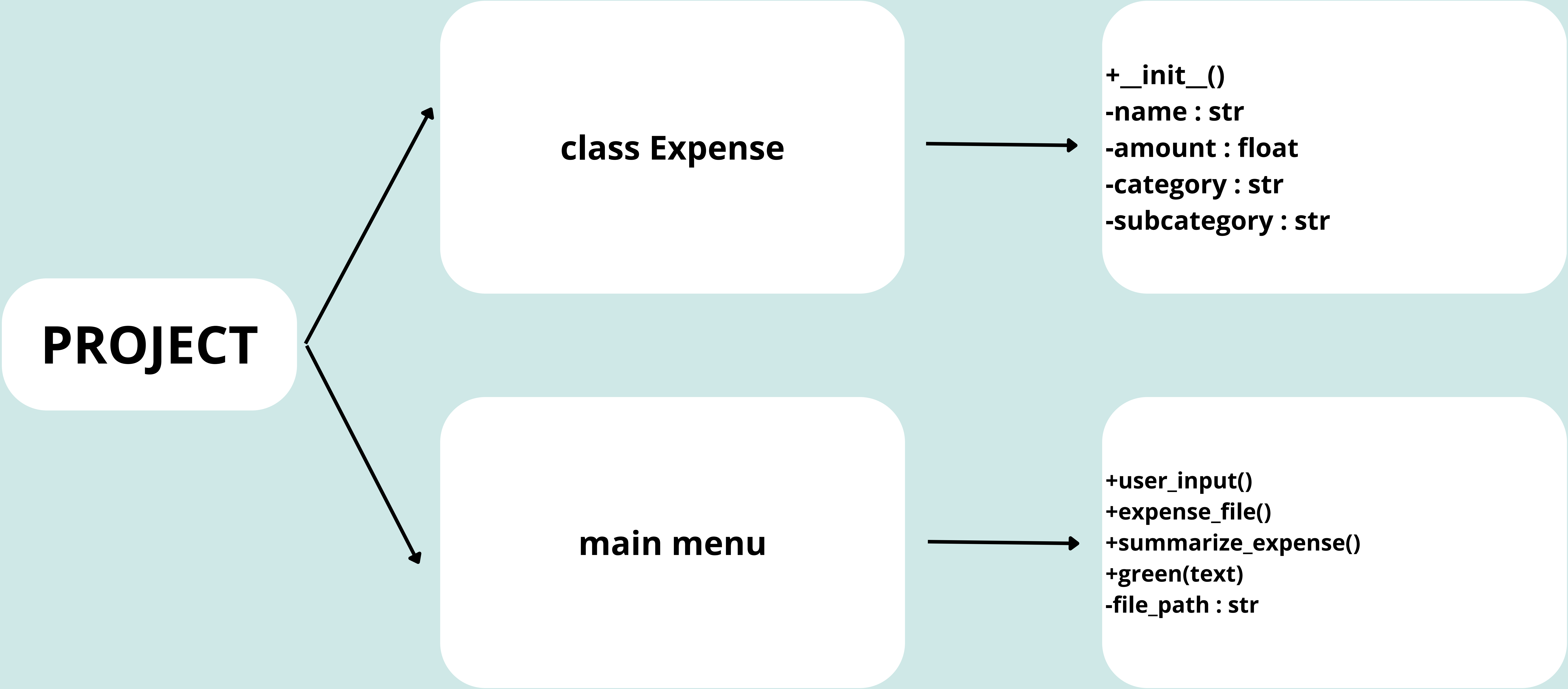
GENERATE REPORTS

CALCUALTE DAILY BUDGET

SEQUENCE DIAGRAM



CLASS DIAGRAM



PROJECT

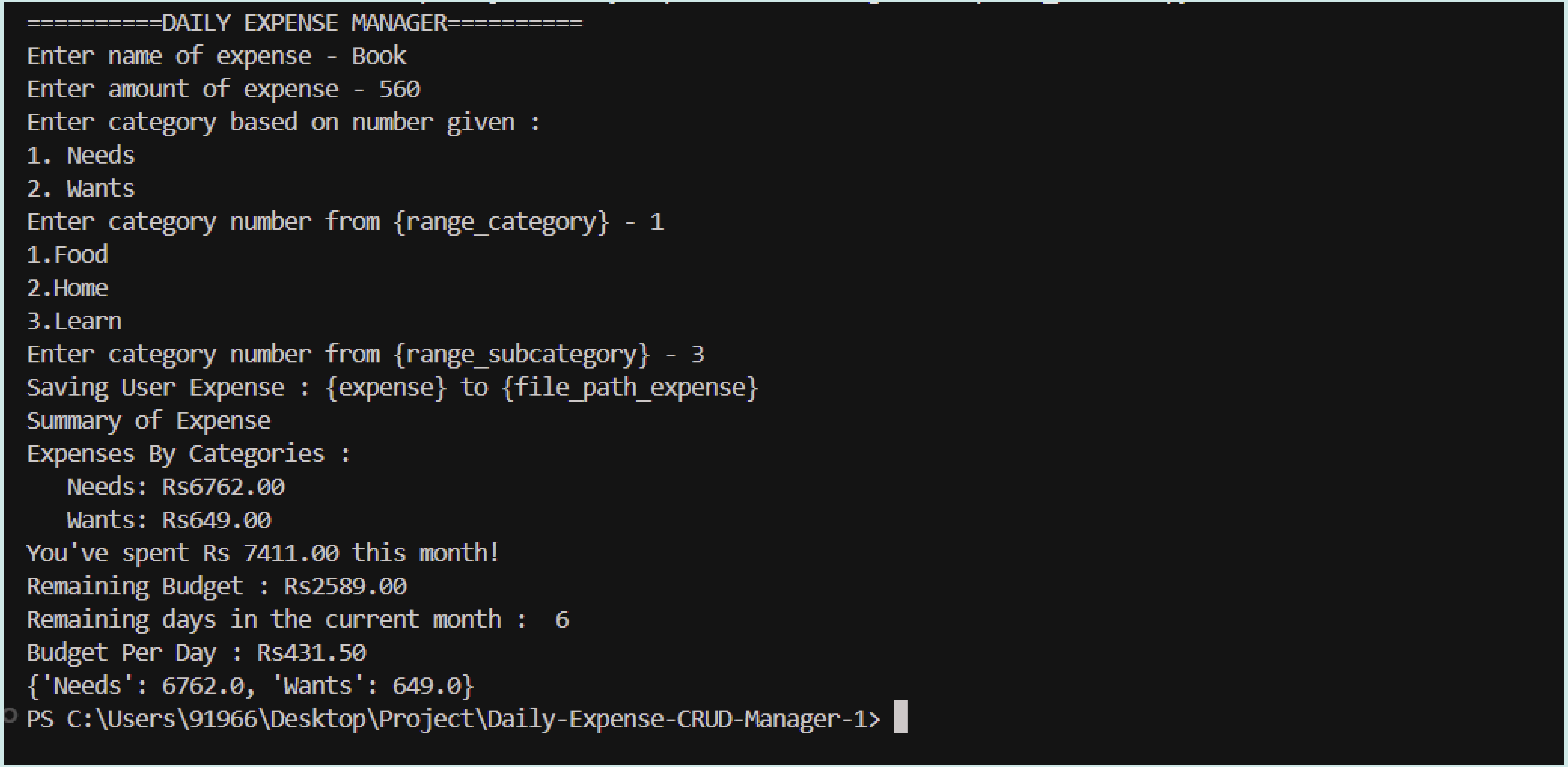
class Expense

+__init__()
-name : str
-amount : float
-category : str
-subcategory : str

main menu

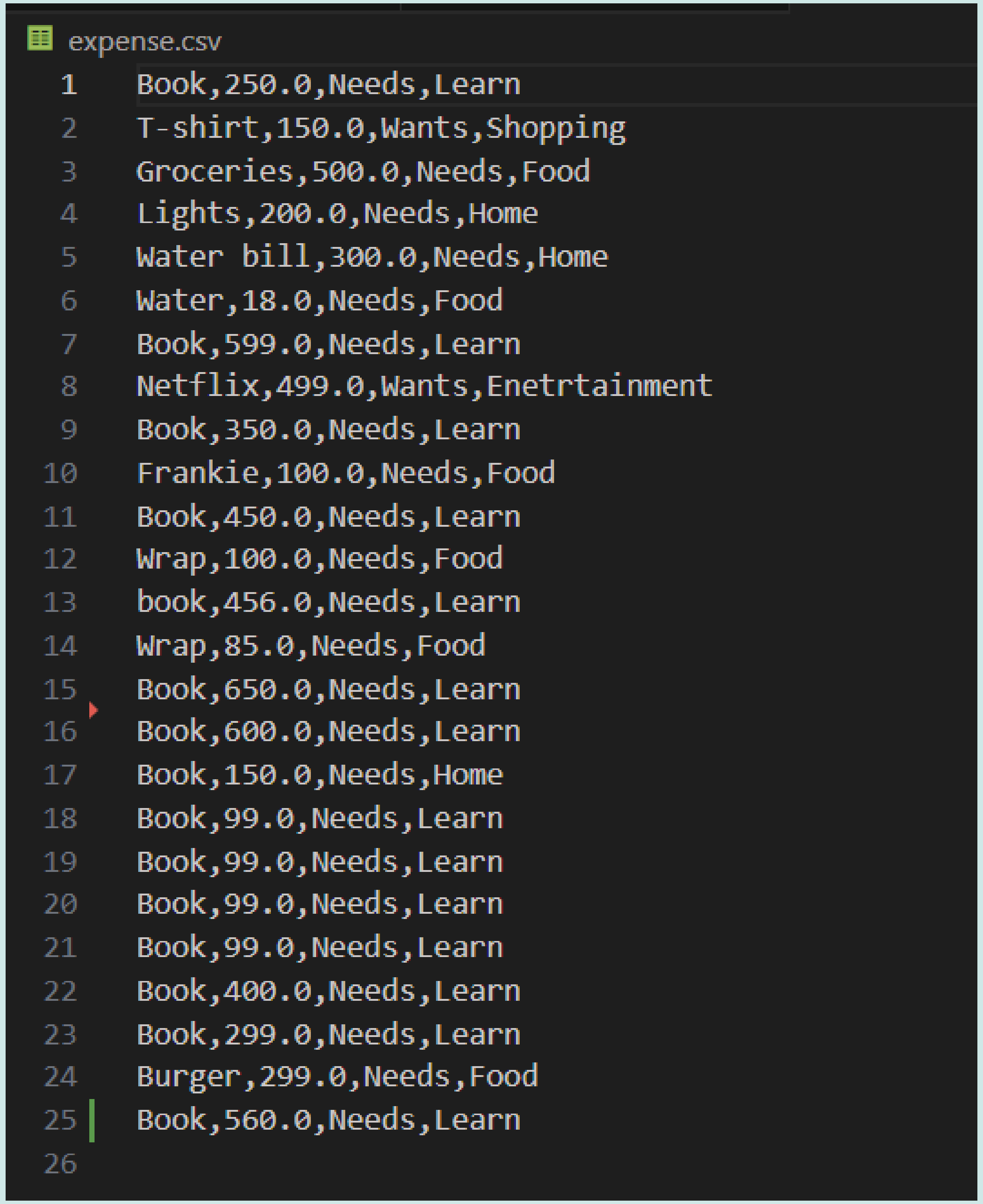
+user_input()
+expense_file()
+summarize_expense()
+green(text)
-file_path : str

SAMPLE OF ONE ENTRY



```
==========DAILY EXPENSE MANAGER==========
Enter name of expense - Book
Enter amount of expense - 560
Enter category based on number given :
1. Needs
2. Wants
Enter category number from {range_category} - 1
1.Food
2.Home
3.Learn
Enter category number from {range_subcategory} - 3
Saving User Expense : {expense} to {file_path_expense}
Summary of Expense
Expenses By Categories :
   Needs: Rs6762.00
   Wants: Rs649.00
You've spent Rs 7411.00 this month!
Remaining Budget : Rs2589.00
Remaining days in the current month :  6
Budget Per Day : Rs431.50
{'Needs': 6762.0, 'Wants': 649.0}
PS C:\Users\91966\Desktop\Project\Daily-Expense-CRUD-Manager-1>
```

CSV FILE OF EXPENSE RECORDS



expense.csv

```
Book,250.0,Needs,Learn
T-shirt,150.0,Wants,Shopping
Groceries,500.0,Needs,Food
Lights,200.0,Needs,Home
Water bill,300.0,Needs,Home
Water,18.0,Needs,Food
Book,599.0,Needs,Learn
Netflix,499.0,Wants,Enetrtainment
Book,350.0,Needs,Learn
Frankie,100.0,Needs,Food
Book,450.0,Needs,Learn
Wrap,100.0,Needs,Food
book,456.0,Needs,Learn
Wrap,85.0,Needs,Food
Book,650.0,Needs,Learn
Book,600.0,Needs,Learn
Book,150.0,Needs,Home
Book,99.0,Needs,Learn
Book,99.0,Needs,Learn
Book,99.0,Needs,Learn
Book,99.0,Needs,Learn
Book,400.0,Needs,Learn
Book,299.0,Needs,Learn
Burger,299.0,Needs,Food
Book,560.0,Needs,Learn
```

CHALLENGES FACED

- Technical Challenges
- Design Challenges

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TECHNICAL CHALLENGES

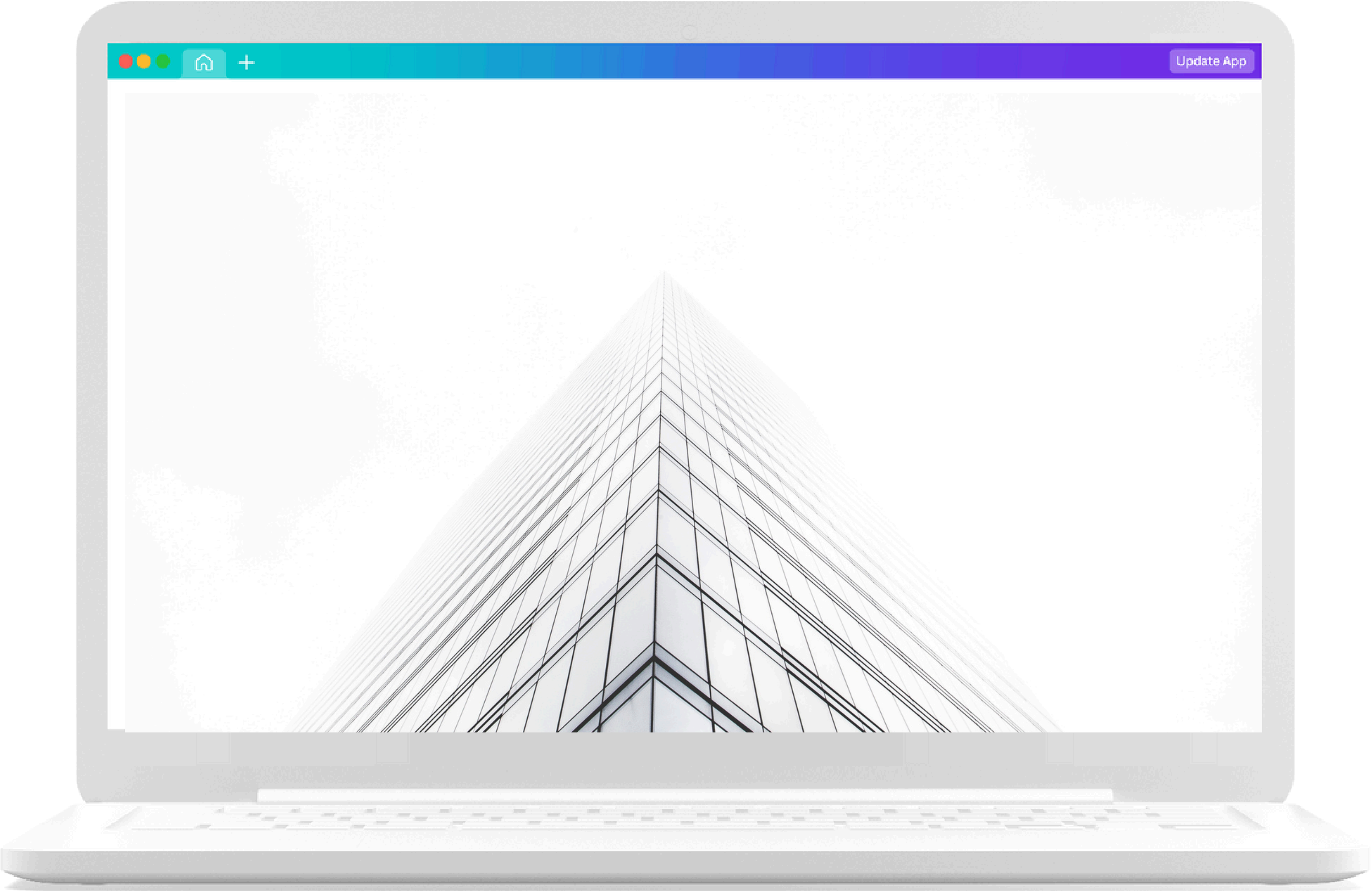
- **Data Validation** : Ensuring robust input validation for various edge cases
- **File Handling :** Managing CSV file corruption and recovery
- **Error Recovery** : Implementing graceful error handling without crashing
- **User Experience** : Creating intuitive CLI interface for non-technical users

DESIGN CHALLENGES

- **Categorization Logic** : Designing meaningful expense categories
- **Budget Algorithm** : Creating realistic daily budget calculations
- **Data Structure** : Choosing between lists, dictionaries, and classes
- **Modularity** : Balancing simplicity with proper separation of concerns

SOLUTION

- **Comprehensive Validation** : Multi-layer input validation
- **Defensive Programming** : Try-catch blocks and error logging
- **User Feedback** : Clear messages and recovery instructions
- **Incremental Development** : Step-by-step feature implementation



LEARNING & KEY TAKEAWAYS

TECHNICAL LEARNING

I mastered CSV operations and file I/O best practices. I learned to create reusable, maintainable code modules. In addition to that, practical application of lists, dictionaries, and custom classes are known now.

PROJECT MANAGEMENT LEARNING

Translating user needs to technical specifications, and building features step-by-step with testing are known. I learned the importance of a user-centric design.

PERSONAL DEVELOPMENT

Effective technical work requires Problem-Solving, where complex issues are broken down into smaller, manageable parts. Success also demands Attention to Detail, which means carefully considering edge cases and potential error scenarios to ensure the system's stability. When facing inevitable setbacks and bugs, Perseverance is crucial for working through challenging debugging and technical difficulties. Ultimately, this detailed, persistent effort contributes to a strong Quality Focus, balancing the delivery of new features with high standards for code quality and overall reliability.

FUTURE ENHANCEMENTS

SHORT-TERM ENHANCEMENTS

- **Graphical Interface** : Tkinter-based GUI for better user experience
- **Advanced Reporting** : Visual charts and graphs for spending patterns
- **Data Export** : PDF and Excel export capabilities
- **Search & Filter** : Advanced expense search and filtering options

MEDIUM-TERM ENHANCEMENTS

- **Database Integration** : SQLite for better data management
- **Multi-user Support** : Family or small business expense tracking
- **Recurring Expenses** : Automated recurring expense management
- **Mobile Companion** : Basic mobile app for on-the-go expense tracking

LONG-TERM ENHANCEMENTS

- **Cloud Synchronization** : Cross-device data synchronization
- **AI Categorization** : Machine learning for automatic expense categorization
- **Bank Integration** : Direct bank statement import and matching
- **Investment Tracking** : Integrated investment and savings tracking

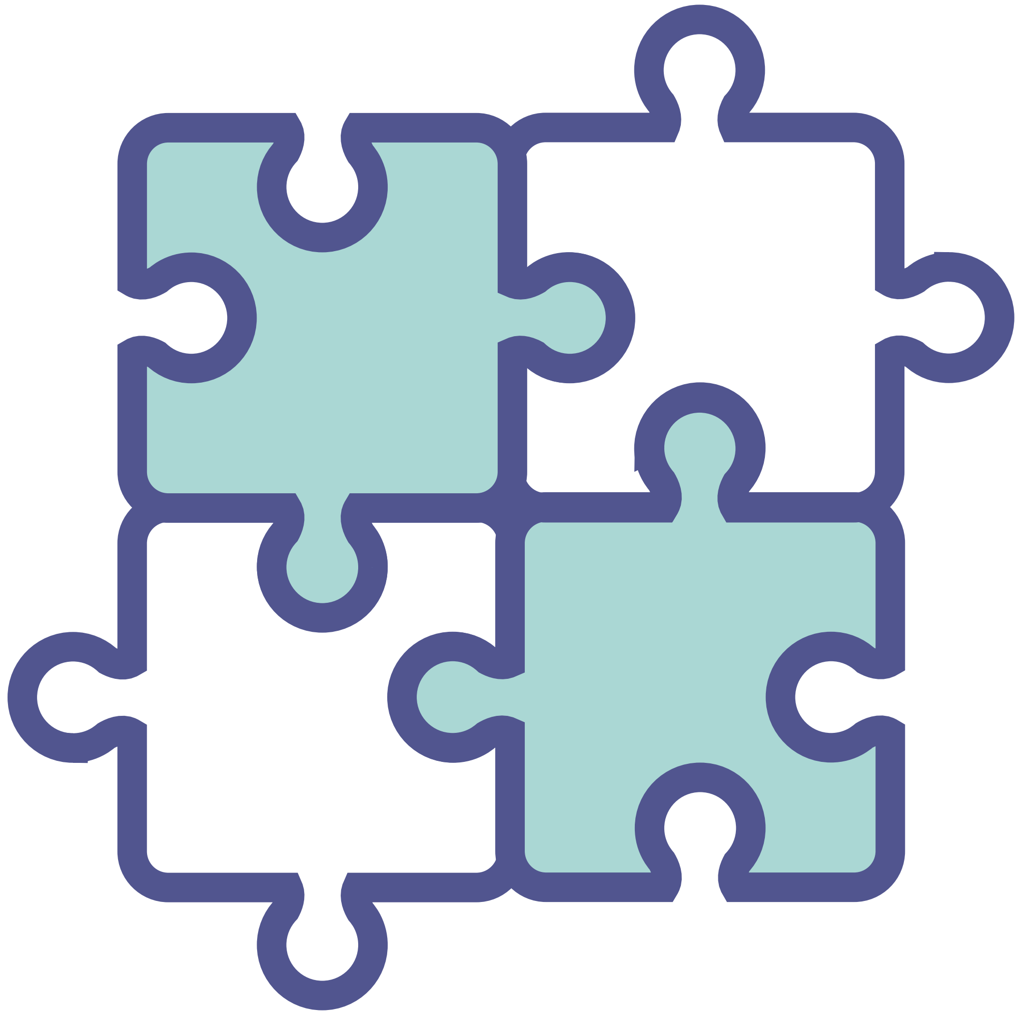
TOOLS AND SOFTWARE

P

Python 3.8

V

Visual Studio Code



G

Git for version control

C

Canva for Design

IMPLEMENTATION DETAILS

1. User input collection with validation
2. Expense object creation
3. CSV file append operation
4. Data aggregation and analysis
5. Budget calculations and reporting

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Thank you very much!

PRESENTED BY SHRIYA MISTRY