

**Fall Semester 2025-26**

**Vityarthi Project**

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# Introduction

- Python program to analyze credit card spendings.
- Reads data from CSV file.
- Calculates total spending and category-wise expenses.
- Computes minimum amount to be paid basis of 3% rule.

# Problem Statement

- Users require an easy and automated way to analyse credit card spendings.
- Need to categorize expenses automatically.
- Need quick insights into spending patterns and minimum payment.

# Functional Requirements

- Read CSV transaction file.
- Group spending by category.
- Calculate total spending.
- Compute minimum amount to be paid.
- Display summary report.

# Non-functional Requirements

- Should use lightweight resources.
- Error handling for missing data.
- Easy to read and maintain code.
- Fast execution for small datasets.

# System Architecture

- Input: CSV file containing spending details.
- Processing: Python script processes data.
- Output: Terminal summary report.

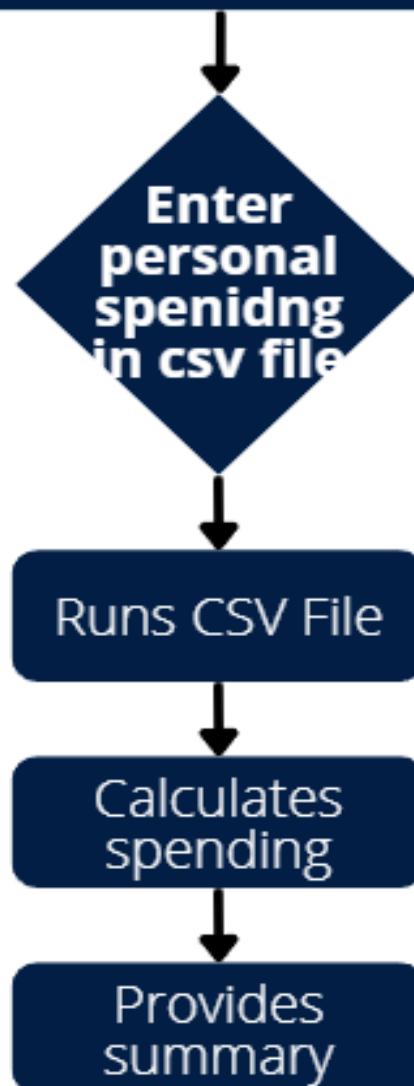
# Use Case Diagram

- Actor: User.
- Use Case: Analyze transactions and view summary.

# Workflow Diagram

- Read CSV file.
- Process transactions.
- Calculates total spending and minimum payment.
- Display results.

# SEQUENCE FLOW



# Class/Component Diagram

- Main component: Analyzer function
- Data structures: defaultdict, list of transactions

# Design Decisions

- Used Python for simplicity and readability
- Used CSV for easy data handling
- Used defaultdict for efficient category grouping
- Terminal output for quick results

# Implementation Details

- Uses csv, datetime, and collections modules
- Iterates through each transaction
- Calculates totals and percentages
- Handles errors gracefully

# Testing Approach

- Test with valid CSV file
- Test with missing columns
- Test with invalid amount values
- Test with empty file

# Challenges Faced

- Handling inconsistent CSV formats
- Ensuring correct data types
- Error handling for edge cases

# Learnings & Key Takeaways

- Gained experience with file handling
- Improved understanding of data processing
- Learned to design modular and readable code

# Future Enhancements

- Add interest calculation
- Generate graphical reports
- Export results to PDF or CSV
- Add a user interface

# Output

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## CREDIT CARD SPENDING ANALYSIS

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Analysis Date: 2025-11-24

Total Transactions: 4

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### SPENDING BY CATEGORY

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shopping..... ₹ 3500.00 ( 53.0%)

bills..... ₹ 2000.00 ( 30.3%)

food..... ₹ 850.00 ( 12.9%)

travel..... ₹ 250.00 ( 3.8%)

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TOTAL SPENDING..... ₹ 6600.00

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MINIMUM PAYMENT DUE (3%): ₹198.00

FULL BALANCE: ₹6600.00

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# References

- Python Documentation
- csv module reference
- collections module reference