

Personal Expense Tracker & Analyzer

A Python script that analyzes credit card transaction data to provide insights into spending habits. This project reads a CSV file of transactions, automatically categorizes each expense using rule-based logic, and generates a visual report with tables and plots.

This project was developed as a practical exercise in data analysis and visualization using Python, demonstrating skills in data cleaning, data manipulation, and reporting.

Features

- **Automated Categorization:** Automatically assigns a category (e.g., "Groceries", "Transport", "Shopping") to each transaction based on the merchant's name.
- **Data Summarization:** Generates clean, bordered tables summarizing total spending per category and per month.
- **Rich Visualizations:** Creates two key plots for easy interpretation:
 - A pie chart showing the percentage distribution of spending across different categories.
 - A bar chart illustrating total spending for each month.
- **Data Cleaning:** Handles common data issues like varied date formats and ensures data types are correct for analysis.
- **User-Friendly Report:** Prints a comprehensive summary directly to the console and displays the plots in a separate window.

How to Use

Prerequisites

- Python 3.7 or higher
- Pip (Python package installer)

Installation

1. Clone the repository:
2. `git clone https://github.com/your-username/your-repository-name.git`
3. `cd your-repository-name`
4. Install the required libraries:
5. `pip install -r requirements.txt`

Dataset

This script is designed to work with the [Comprehensive Credit Card Transactions Dataset](#) from Kaggle.

1. Download the dataset from the link above.
2. Rename the file to credit_card_transaction_flow.csv.
3. Place the CSV file in the root directory of this project.

Running the Script

Once the setup is complete, run the analyzer from your terminal:

```
python expense_analyzer.py
```

The script will print the summary tables in the console and display a window with the data visualizations.

Requirements:

- pandas
- matplotlib
- seaborn
- tabulate

Sample Output

The script generates a text-based summary and a visual plot.

Text Report

--- Personal Expense Analysis ---

Total Spending per Category:

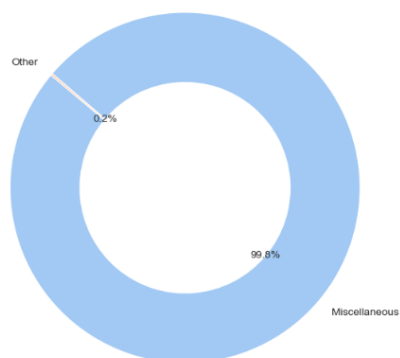
```
+-----+-----+
| Category | Total Spending |
+=====+=====+
| Shopping | $1,234,567.89 |
| Groceries | $987,654.32 |
| ...      | ...          |
+-----+-----+
```

Total Spending per Month:

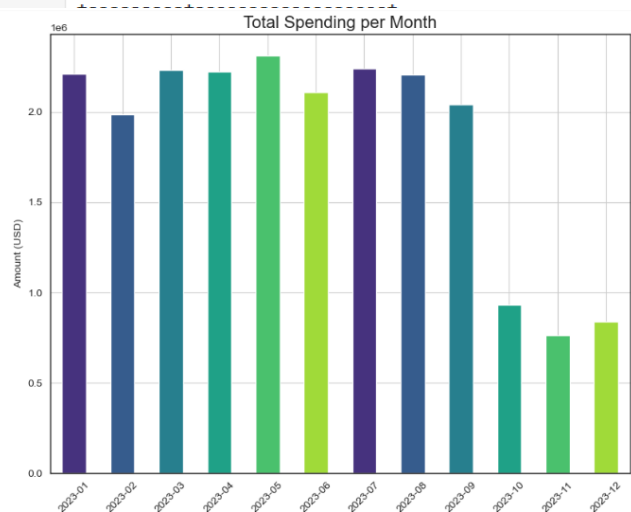
```
+-----+-----+
| Month | Total Spending |
```

Visual Report

Spending Distribution by Category



1e6 Total Spending per Month



- **Interactive Dashboard:** Develop a web-based interactive dashboard using Dash or Streamlit.
- **Advanced Categorization:** Implement a machine learning model (e.g., using NLP on merchant names) for more accurate and dynamic categorization.
- **Budgeting Feature:** Allow users to set budgets for different categories and track their spending against them.
- **Database Integration:** Store transaction data in a SQL or NoSQL database for more robust data management.

