Finance Management App

Usage Instructions:

Refer to github README.md for set-up instructions.
https://github.com/TazRJ/CSharp-Financial-Tracker

Introduction:

Our Income and Expense Budgeting Tracker is a Windows Form application developed using C# .NET that addresses a common problem shared amongst students in overspending and a lack of financial awareness. It provides an aesthetic and easy-to-use platform to allow students to effectively manage their income and expenses, enabling them to make well-informed financial decisions.

Project Brief:

The Income and Expense Budgeting Tracker is a feature-rich Windows Form application designed to help students take control of their finances. It provides a comprehensive solution for tracking income sources, expenses, and budgeting to promote financial responsibility. Key features of this application include:

1. User-Friendly Interface: The intuitive and user-friendly interface ensures that students can quickly start managing their finances, even without prior financial software experience.

2. Income Tracking: Users can input and track their sources of income, such as salary, businesses, or bonuses. The application calculates the total income and provides insights into their financial inflow.

3. Expense Categories: The application allows users to categorise their expenses, including food related costs, household costs, travel, and more. This categorisation helps students identify areas where they may be overspending.

4. Expense Tracking: Users can log their expenses and assign them to specific categories. The application dashboard provides insights into the user's highest income source and expense categories.

5. Financial Insights: The app offers real-time feedback on popular stock exchange prices by integrating an API, delivering users with immediate updates on stock market price fluctuations.

6. Reports and Analytics: The project offers detailed reports and analytics, allowing students to review their financial performance over time. It helps in making informed decisions regarding future expenses.

7. Security: The application ensures the security of financial data, with user authentication,password masking and data encryption in the registration and login processes.

The Income and Expense Budgeting Tracker is a practical tool for students to develop financial discipline, reduce overspending, and increase awareness of their financial status. By using this application, students can embark on a journey towards financial stability and responsible budget management, preparing them for a more secure and informed future.

Functions:
- Create an Account (User)
- Add expenses
- Add Income
- View Balance
- See performance metrics of financial market (Using API)
- Can view income and expense logs

Use Case Diagram:
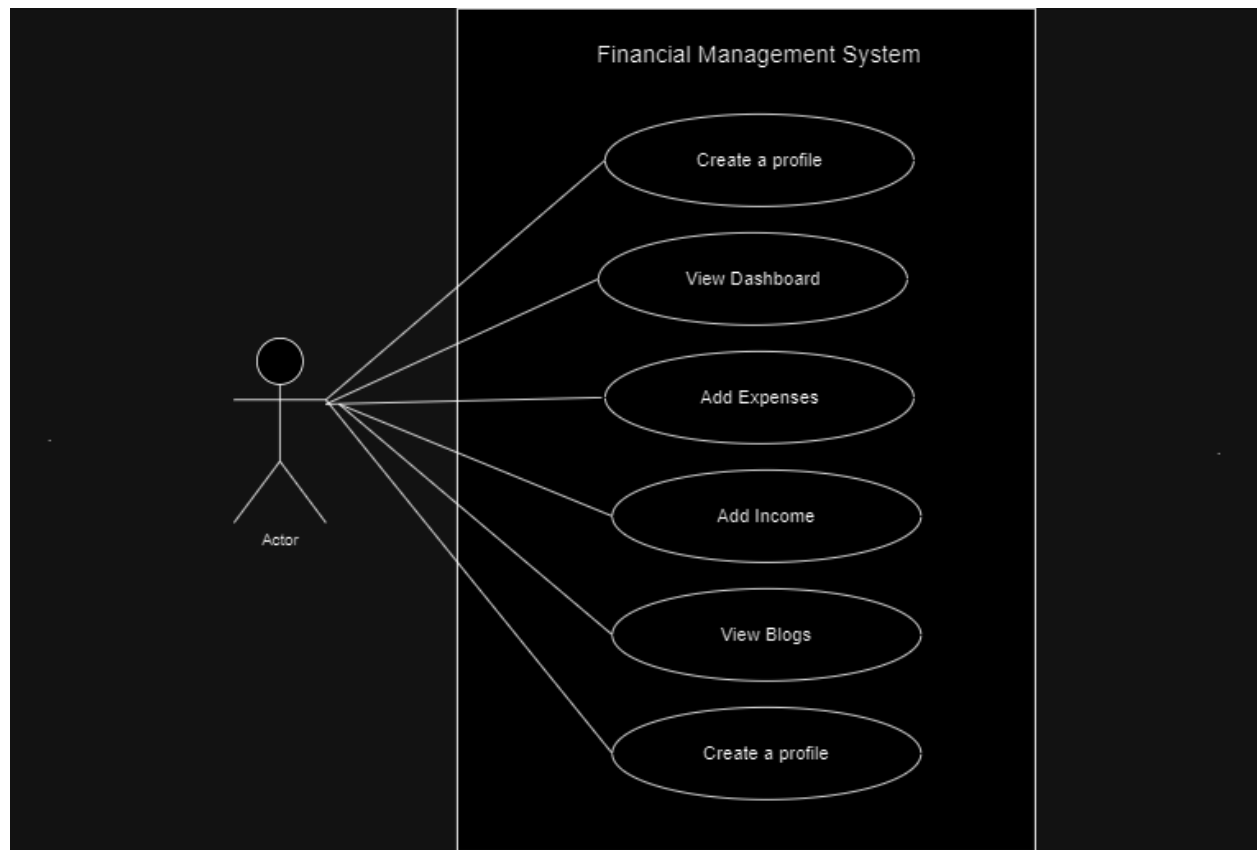
Development Approach:

We designed the program with a focus on high cohesion and low coupling by organising similar properties and their respective values and methods into three separate entities:

- ExpenseTbl
- IncomeTbl
- UserTbl

Users are identified with a primary key user id, username, date of birth, password, phone number, and address.

The Income Database contains an income ID as the primary key, a user ID as a foreign key, income name, amount, category, date, and description.

Similarly, the Expenses entity comprises fields analogous to the Income entity, including an expense ID as the primary key and a user ID as a foreign key.

This structure ensures that each logged income is linked to the respective user who is logged in and registered. The databases for these entities are stored on a Azure SQL server and

database, allowing access without requiring manual modification of the connection string locally, to allow for multiple user access.

Through the use of LINQ methods, we were able to perform a wide range of database operations, involving querying data based on filtering, updating, and deleting records.

To address error handling, the implementation uses try-catch blocks wherever appropriate. For example, during the login process, if either the username or password fields were left empty, the application displays a specific error message explaining this. Similarly, if the entered credentials were incorrect, a different error message is shown.

For the registration process, error messages were shown if any of the fields were missing and this same error handling was extended to when adding income or expense records, showing the users if the required fields were incomplete or if the input format was incorrect.

 The user interface features placeholder text within text boxes, indicating the type of input required, which guides users toward providing the required information format.

In addition to these core features, there is a View Stocks function which incorporates an API into the program to provide users with real-time view of stock price fluctuations of select stocks. Alpha Vantage API has been used which is known as one of the most popular for stock data.

Overall, the program architecture and user interface were constructed with a strong emphasis on maintaining data integrity and security with additional password masking upon log-in, providing robust error handling methods, and ensuring a user-friendly experience through clear indications of required inputs.

Contribution:

Name	Contribution
Tarun Raja	Introduction, Project Brief/Summary, Functions, Developmental Approach, Program coding
Nasif	Use Case Diagram, Requirements, API implementation and overall UI of Windows Forms, Program Coding