Project Title: **Personal Finance Management Web Application**

Team: DBMS END GAME

Team members:

SL	Role	Name	Matrix ID
1	Team Leader	Md Arman	C231294
2	Co-Leader	Mohammed Wakil Uddin Chodhury	C231312
3	General Member	Haroon Roshid	C231295
4	General Member	Riyazul Arfaat	C231296

Abstract: This report details the development and functionality of a personal finance management application. The application, built using Python and Flask, enables users to log, track, and analyze their financial transactions effectively. This report provides an overview of the project's architecture, key features, and the technologies used.

1. Introduction: Managing personal finances is a critical skill in today's economic landscape. To assist users in monitoring their financial health, this application was developed as a lightweight, user-friendly tool. The project aims to simplify financial tracking by allowing users to record transactions and generate summary reports.

2. Project Objectives: The main objectives of the project are:

1. To provide a platform for logging income and expense transactions.
2. To enable users to categorize transactions for better analysis.
3. To generate monthly and customized financial reports.
4. To ensure data security and ease of use through a well-designed user interface.

3. Application Overview: The application is designed to function as a personal finance tracker with the following core features:

- User authentication and secure access.
- Transaction logging with categorization (e.g., income, expenses).
- Monthly and cumulative financial summaries.
- CSV export functionality for detailed analysis.
- Intuitive web-based interface.

4. Technologies Used: The project leverages modern technologies for its development:

- **Python:** The primary programming language for implementing application logic.
- **Flask:** A lightweight web framework used to build the application.
- **MySQL:** A relational database to store user data and transaction records.
- **HTML, CSS, JavaScript:** Front-end technologies to create a responsive and user-friendly interface.
- **Jinja2:** A templating engine for rendering dynamic content on web pages.

5. Application Architecture: The application follows a modular design for scalability and maintainability. Key components include:

1. **Backend:**
    - o Developed using Flask, providing RESTful routes for transaction management and user authentication.
    - o XAMP serves as the database for storing user and transaction information.
2. **Frontend:**
    - o Built using HTML, CSS, and JavaScript for an intuitive user interface.
    - o Jinja2 templates render dynamic web pages with data from the backend.
3. **File Structure:**
    - o Organized directories for templates, static assets (CSS, JS, images), and Python modules.

6. Key Features and Functionality:

- **User Authentication:** Ensures secure login and session management.
- **Transaction Logging:** Allows users to input income and expense details with categories.
- **Reports and Summaries:** Generates financial summaries with insights into spending habits.
- **Export Capability:** Provides options to download transaction data as CSV files for offline analysis.

7. Challenges and Solutions:

- **Data Validation:** Implemented input validation to ensure accuracy and completeness of user data.
- **Scalability:** Designed the database schema to accommodate growing user bases and data.
- **User Experience:** Focused on intuitive design to ensure ease of use for non-technical users.

8. Conclusion: The personal finance management application successfully achieves its objectives, providing users with a reliable tool to manage their finances. The use of Flask and SQLite ensures a robust and scalable architecture, while the intuitive interface enhances user experience. Future enhancements could include integration with external financial APIs and mobile app development for broader accessibility.

9. Future Work:

- Integration with bank APIs for automated transaction logging.
- Development of a mobile application for on-the-go financial tracking.
- Advanced analytics features for better financial insights.