

Portfolio Management System

Submitted in partial fulfillment of the requirements

of the degree of

Bachelor of Engineering

by

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Servesh Khade 26

Omkar Gotawde 21

Rakesh Chaudhary 13

Supervisor:

Asst. Prof. Tayyabali Sayyad



UNIVERSITY OF MUMBAI

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Department of Information Technology

Don Bosco Institute of Technology
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2024-2025

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CERTIFICATE

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Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea / data / fact / source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Abstract

This project presents the design and development of a desktop application for portfolio management, with a focus on facilitating the management of Systematic Investment Plans (SIPs) and mutual funds for individual users. The application aims to provide a seamless and efficient solution for users to monitor and manage their financial portfolios. Key functionalities include the ability to add and sell investments, view comprehensive portfolio summaries, and update user profiles. Users can track their investments in real-time, making the platform useful for both beginners and experienced investors alike.

The application employs JavaFX and Scene Builder for the user interface, offering a responsive and visually appealing design. For the back-end, MySQL Workbench is used to handle data storage and retrieval, ensuring secure and efficient management of user and investment data. The system architecture is designed to be scalable and flexible, allowing for future enhancements such as integrating more financial products or providing advanced data analytics.

Overall, this project aims to simplify portfolio management, providing users with the tools they need to make informed investment decisions and achieve their financial goals with greater convenience and control.

Keywords: Portfolio Management, SIPs, Desktop Application, Mutual Funds

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Chapter 1

Introduction

1.1 Problem Statement

Individual investors often struggle to manage their investment portfolios, particularly Systematic Investment Plans (SIPs) and mutual funds, due to the complexity and lack of user-friendly solutions. Existing applications may not provide essential features or real-time data, making it difficult for users to track their investments and make informed decisions.

This project addresses the need for a comprehensive desktop application that simplifies portfolio management. The application will empower users to easily add, track, and sell their investments while offering insights into portfolio performance, ultimately enhancing their financial planning and decision-making capabilities.

1.2 Scope of the Project

The scope of this project encompasses the design, development, and deployment of a desktop application tailored for managing investment portfolios, specifically focusing on Systematic Investment Plans (SIPs) and mutual funds. The key components of the project include:

- User Management
- Investment Management
- Portfolio Tracking
- Data Storage and Management
- User Interface

1.3 Current Scenario

In today's financial landscape, individual investors are increasingly seeking effective ways to manage their investment portfolios, especially as the popularity of Systematic Investment Plans (SIPs) and mutual funds rises. Despite the growth of investment opportunities, many investors face significant challenges. For instance, platforms like Zerodha and Groww offer stock trading but often lack comprehensive tools for managing SIPs and mutual funds effectively. Users of these platforms may find themselves juggling multiple apps to track their various investments, leading to inefficiencies and confusion.

Additionally, applications such as Paytm Money provide some investment management features; however, they often fail to deliver real-time performance tracking or insightful analytics that would help users make informed decisions. Users might rely on spreadsheets or manual tracking methods to calculate their returns, which can be cumbersome and prone to errors.

Furthermore, existing solutions like Moneycontrol primarily focus on stock trading and market analysis but offer limited functionalities for mutual fund management. As a result, novice investors may feel overwhelmed by the complexity of investment management and may not engage fully with their portfolios. There is a growing demand for user-friendly tools that simplify the investment process while educating users about effective financial strategies, highlighting the need for a dedicated desktop application that addresses these gaps in the current market.

1.4 Need for the Proposed System

The proposed portfolio management desktop application addresses several critical needs in the current investment landscape. As individual investors increasingly seek ways to manage their portfolios effectively, the following reasons highlight the necessity of this system:

- **Simplification of Investment Management:** The system aims to streamline the management of SIPs and mutual funds, providing an intuitive interface that consolidates multiple functions into a single platform, reducing user complexity.

- **Real-Time Data Access:** With rapid market fluctuations, access to real-time data is essential for informed decision-making. The application will offer up-to-date information on portfolios, enabling users to react quickly to market changes.
- **Comprehensive Investment Tracking:** Unlike existing solutions that focus primarily on stock trading, this system will provide robust features for managing SIPs and mutual funds, allowing users to monitor performance and analyze trends effectively.

1.5 Summary of the results and task completed

This project involved the successful development of a desktop application for managing investment portfolios, specifically focusing on Systematic Investment Plans (SIPs) and mutual funds. The following modules were planned and achieved during the course of the project:

1. **User Management Module:** Implemented user registration, login, and profile management features, allowing users to securely create and update their personal details.
2. **Investment Management Module:** Developed functionality for adding, selling, and tracking investments in SIPs and mutual funds. Users can view transaction history and current portfolio status in real-time.
3. **Portfolio Tracking Module:** Enabled real-time tracking of portfolio performance with detailed insights on investment growth, performance analysis, and trend visualization to help users make informed decisions.
4. **Database Integration:** Integrated a MySQL database to store and manage user and investment data efficiently, ensuring data accuracy and security.
5. **User Interface (UI) Module:** Designed and developed a user-friendly interface using JavaFX and Scene Builder, providing intuitive navigation and an enhanced user experience.

Chapter 2

Review

The review section of the Portfolio Management System explores existing tools and software that assist users in managing their investments, including mutual funds and Systematic Investment Plans (SIPs). Popular platforms such as Zerodha Coin, Groww, and traditional spreadsheets like Excel are commonly used for tracking and analyzing investment portfolios. These tools offer essential features like portfolio tracking, transaction history, and performance analysis, yet they also come with limitations. For example, automated platforms like Groww provide real-time updates and easy tracking of mutual fund investments, but they may lack advanced analytics for in-depth financial decision-making or fail to provide personalized insights tailored to individual financial goals. In contrast, spreadsheets offer higher customization for tracking and analysis but demand substantial manual effort and are prone to errors.

Moreover, while existing platforms offer basic portfolio overviews and growth tracking, they often fall short in areas such as intuitive data visualization, goal-oriented progress tracking, and comprehensive risk assessment. Another gap in current systems is the lack of seamless integration between investment analysis and user-friendly interfaces, especially for beginners. Security and privacy concerns also arise when dealing with sensitive financial data across various platforms.

This review underscores the need for a more comprehensive portfolio management solution that combines automation, ease of use, advanced financial analytics, and better security features. Such a system would help investors make more informed decisions, track their financial goals more effectively, and manage their portfolios with minimal manual effort.

Chapter 3

Analysis and Design

3.1 Entity Relation Diagram

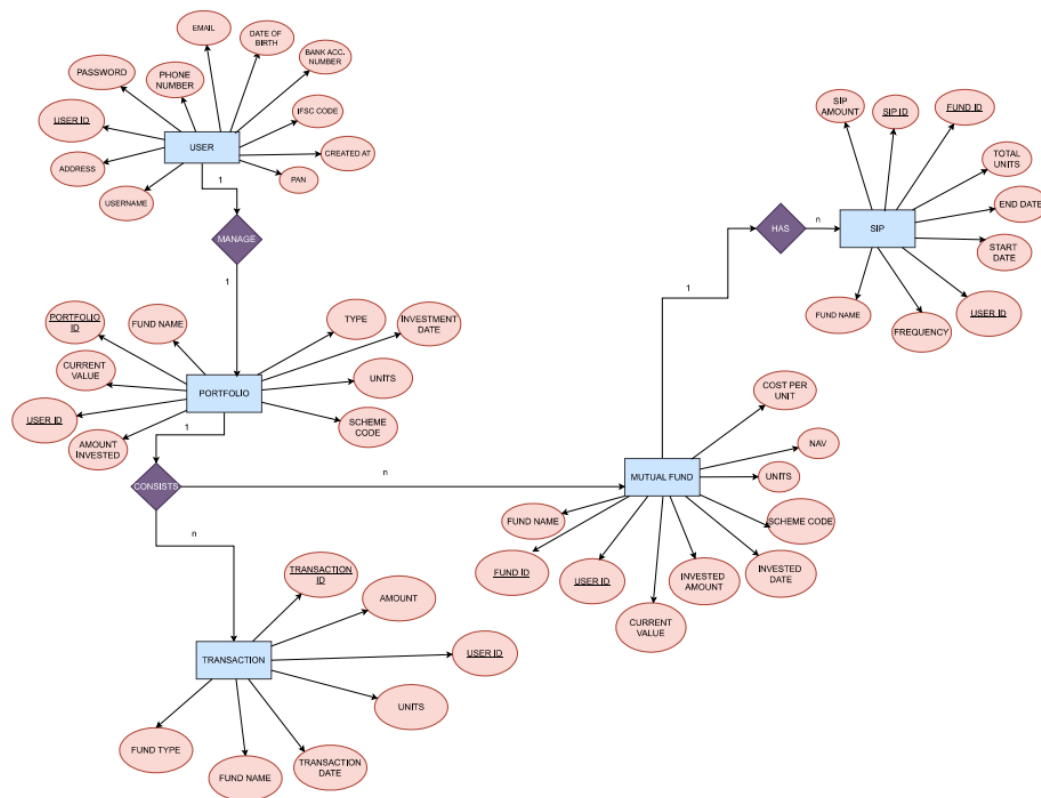


Figure 3.1: Entity Relation Diagram

3.2 Methodology / Procedure adopted

The development of the portfolio management desktop application follows the Agile methodology, a flexible and iterative approach that allows for continuous feedback and adaptation throughout the project lifecycle. This methodology was chosen due to its ability to accommodate evolving user requirements, deliver features incrementally, and allow for ongoing improvement based on user

feedback.

3.3 Analysis

The analysis phase of the portfolio management application project involved conducting a feasibility study based on the requirements gathered during the initial stages. The objective of the feasibility study was to assess the technical, economic, and operational viability of the project to ensure its successful completion within the defined scope and resources.

3.4 System Architecture / Design

The architecture of the portfolio management application is designed to ensure scalability, data security, and user-friendly interaction. The system follows a layered architecture, which includes the following components

1. **User Interface Layer (UI):** The UI is developed using JavaFX and Scene Builder, offering a desktop-based graphical interface for end users. This layer allows users to interact with the system, performing tasks such as adding, tracking, and managing their investments. The interface is designed to be intuitive, providing easy navigation between portfolio
2. **Application Layer:** This is the core logic of the system, handling all user requests and application functions. It processes actions such as:
 - Investment transactions (add, sell, update)
 - Portfolio tracking and performance calculation
 - Data validation and error handling

The application layer also communicates with the database to fetch and store user data and investments. It integrates periodic updates on financial market trends (based on predefined data pulls).

3. **Database Layer:** The MySQL database is the foundation of the data layer, where user information, investment details, and transaction histories are stored. The database is structured with proper relationships between users and their investment portfolios to ensure data integrity and security. Key tables include:
 - User Table: Storing user details (ID, name, contact, etc.)
 - Portfolio Table: Storing portfolio details such as mutual funds, SIPs, and investment transactions
 - Transaction Table: Recording all buy/sell actions taken by the user

The database layer ensures secure and efficient storage and retrieval of user and portfolio data.

4. **Security and Data Encryption:** Only authorized users can access and modify their portfolios, ensuring data privacy and security.

3.5 Advantages of the Proposed System

Compared to existing portfolio management solutions, the proposed system offers several key advantages:

1. **Tailored for SIP and Mutual Fund Management:** Unlike existing platforms like Zerodha, which are more focused on stock trading, this system is specifically designed to manage SIPs and mutual funds, making it easier for users to track these investments.
2. **User-Friendly Interface:** The UI is designed for simplicity, catering to both novice and experienced investors. The straightforward design ensures ease of navigation and usability, reducing the complexity often found in existing financial platforms.
3. **Comprehensive Portfolio Tracking:** The proposed system offers detailed insights into the performance of SIPs and mutual funds, with features for tracking real-time portfolio performance, historical growth trends, and visual representations, which many basic platforms do not offer.
4. **Periodic Market Data Updates:** While some platforms lack real-time data updates, the proposed system integrates periodic data pulls, ensuring that users have relatively current information on market trends without the need for complex and expensive real-time data feeds.

3.6 Database

3.6.1 User Database

The table below represents a sample of user data stored in the MySQL database for the portfolio management application. This table includes details such as user ID, username, password, email, phone number, address, date of birth, bank account information, IFSC code, and PAN details. This data is crucial for identifying users, managing login credentials, and linking them to their respective portfolios and financial transactions.

The table also captures the creation date of each user account, allowing administrators to track when a user was registered. Sensitive data like passwords and bank information is stored securely, and best practices such as encryption and hashing are applied to ensure data privacy and integrity.

| userid | username | password | email | phone_number | address |
|--------|-----------|------------|---------------------|--------------|------------|
| 2 | Servesh | Servesh#21 | Servesh21@gmail.com | 9988756654 | Santa Cruz |
| 3 | Servesh26 | Servesh#26 | Servesh26@gmail.com | 1255323323 | Mumbai |
| 4 | Vedant | Vedant#20 | vedant20@gmail.com | 8976346781 | Kalyan |
| 5 | Omkar | Omkar#21 | omkar21@gmail.com | 8861799467 | Ghatkopar |
| 6 | Vedant20 | Vedant#20 | vedant@gmail.com | 7859589698 | Kalyan |
| 7 | Rakesh | Rakesh#13 | rakesh13@gmail.com | 9649785409 | Mulund |
| 8 | Rakesh13 | Rakesh#13 | rakesh@gmail.com | 8877094567 | Mulund |

Table 3.1: User Data - Part 1

The second part of the table includes the bank account number, IFSC code, creation date, and PAN details.

| userid | bank_account_number | ifsc_code | created_at | pan | date_of_birth |
|--------|---------------------|-----------|---------------------|------------|---------------|
| 2 | 104678235678 | abc120056 | 2024-10-01 20:47:51 | abcde12345 | 2024-10-01 |
| 3 | 104678235619 | def120044 | 2024-10-01 23:11:37 | abcgh67890 | 2024-10-31 |
| 4 | 916678235678 | xyz177056 | 2024-10-01 23:14:59 | wxyzo91654 | 2009-10-29 |
| 5 | 916677735678 | xyz109056 | 2024-10-01 23:14:59 | wbyzr91654 | 2009-10-29 |
| 6 | 956443235678 | uyl977056 | 2024-10-01 23:14:59 | rbies91754 | 2009-10-29 |
| 7 | 916905639678 | bdz176056 | 2024-10-01 23:14:59 | okrbi91654 | 2009-10-29 |
| 8 | 916678238888 | xyz177444 | 2024-10-01 23:14:59 | sebir90004 | 2009-10-29 |

Table 3.2: User Data - Part 2

This table represents a fundamental part of the system architecture, ensuring that the correct user information is recorded and managed effectively. Each user is uniquely identified by their user ID ('userid'), and sensitive information such as bank account details and PAN numbers are handled with a focus on security and privacy. Passwords will be stored in encrypted form in the database to protect against unauthorized access.

3.6.2 Portfolio Database

The following table presents a sample of portfolio data associated with the users, including investment type, amount, and transaction date.

| userid | fundid | fund_name | invested_amount | current_amount | |
|--------|--------|-----------------------------|-----------------|----------------|--|
| 2 | 6 | Motilal Oswal Mid cap.. | 5000 | 4900 | |
| 3 | 7 | HDFC Mid cap.. | 4000 | 4200 | |
| 4 | 8 | HDFC Large cap.. | 6000 | 5990 | |
| 5 | 9 | Motilal Oswal Mid cap.. | 5000 | 4900 | |
| 6 | 10 | DSP Flexi Cap Fund-Dividend | 10000 | 10500 | |
| 7 | 11 | HDFC Balanced Advantage.. | 5000 | 4900 | |
| 8 | 12 | ICICI Mutual Fund.. | 5000 | 4900 | |

Table 3.3: Portfolio Data - Part 1

The second part of the table includes the userid, investment date, type, units, scheme code.

| userid | investment_date | type | units | Scheme_code |
|--------|-----------------|--------------|-----------|-------------|
| 2 | null | SIP | 4,770,000 | 100085 |
| 3 | null | SIP | 4,170,000 | 191685 |
| 4 | null | Mutual Funds | 4,70,000 | 109885 |
| 5 | null | Mutual FUnds | 2,850,000 | 619085 |
| 6 | null | SIP | 4,467,900 | 107025 |
| 7 | null | Mutual Funds | 8,444,000 | 100845 |
| 8 | null | SIP | 6,770,780 | 997085 |

Table 3.4: Portfolio Data - Part 2

3.6.3 Transaction Database

The following table presents a sample of Transaction data associated with the users, including transaction type, units, amount, and transaction date.

| transaction_id | userid | amount | units | fund_name | type | transaction_date |
|----------------|--------|--------|-------|------------------------|------|------------------|
| 1 | 2 | 10,000 | 500 | HDFC mid cap.. | Buy | 2024-10-01 |
| 2 | 3 | 10,000 | 700 | ICICI large cap.. | Buy | 2024-10-01 |
| 3 | 2 | 20,000 | 300 | Motilal Oswal.. | Sell | 2024-10-01 |
| 4 | 3 | 17,000 | 780 | DSP Git FUnd | Sell | 2024-10-06 |
| 5 | 5 | 92,800 | 666 | Aditya Birla Sunlife.. | Buy | 2024-10-12 |

Table 3.5: Transaction Data

3.6.4 Mutual Fund

This report provides an overview of the portfolio management system designed to manage mutual funds and Systematic Investment Plans (SIPs). The system allows users to invest in various mutual funds, track their investments, and view detailed performance metrics.

In this section, we focus on the mutual fund investments, detailing the basic information about each fund and providing insights into individual investment details.

| Fund ID | User ID | Fund Name | Amount Invested | Current Value |
|---------|---------|-----------|-----------------|---------------|
| 1 | 2 | Fund A | 10,000 | 12,000 |
| 2 | 3 | Fund B | 5,000 | 6,500 |
| 3 | 4 | Fund C | 7,500 | 9,000 |
| 4 | 5 | Fund D | 15,000 | 18,000 |
| 5 | 6 | Fund E | 8,000 | 9,500 |

Table 3.6: Basic Fund Information

| Fund ID | Investment Date | Scheme Code | NAV | Cost per Unit | Units |
|---------|-----------------|-------------|-------|---------------|--------|
| 1 | 2024-01-15 | SCHEME01 | 50.00 | 45.00 | 222.22 |
| 2 | 2024-02-20 | SCHEME02 | 60.00 | 58.00 | 86.21 |
| 3 | 2024-03-10 | SCHEME03 | 40.00 | 38.00 | 197.37 |
| 4 | 2024-04-25 | SCHEME04 | 80.00 | 75.00 | 200.00 |
| 5 | 2024-05-30 | SCHEME05 | 70.00 | 65.00 | 123.08 |

Table 3.7: Detailed Investment Information

3.6.5 Systematic Investment Plan (SIP)

A Systematic Investment Plan (SIP) allows an investor to invest a fixed amount in a mutual fund scheme periodically. The investor can choose the amount and frequency (weekly, monthly, or quarterly) for investing. SIP provides a disciplined approach to investing and helps mitigate market volatility by averaging the purchase cost over time. Additionally, SIP encourages the habit of saving and wealth creation over the long term.

Below is the structure of the SIP data represented in two parts:

| SIP Amount | Fund ID | SIP ID | User ID | Frequency |
|------------|---------|--------|---------|-----------|
| 5000 | F101 | S001 | U001 | Monthly |
| 2000 | F102 | S002 | U002 | Weekly |
| 3000 | F103 | S003 | U001 | Quarterly |
| 1500 | F104 | S004 | U003 | Monthly |
| 4000 | F105 | S005 | U004 | Weekly |

Table 3.8: SIP Table (Part 1): Basic Information

| Fund Name | Total Units | Start Date | End Date |
|---------------------------------|-------------|------------|------------|
| HDFC Equity Fund | 200 | 2024-01-01 | 2026-01-01 |
| SBI Bluechip Fund | 100 | 2024-02-15 | 2025-02-15 |
| ICICI Prudential Balanced Fund | 150 | 2024-03-10 | 2026-03-10 |
| Aditya Birla Sun Life Debt Fund | 50 | 2024-04-20 | 2025-04-20 |
| Franklin India Growth Fund | 180 | 2024-05-01 | 2027-05-01 |

Table 3.9: SIP Table (Part 2): Fund Details

Chapter 4

Implementation

This chapter explains the implementation of the core functionalities provided by the portfolio management application. The application is designed to help users efficiently manage their mutual funds and SIPs, offering seamless user experiences from registration to portfolio analysis.

4.1 User Registration

During registration, users provide the following details: username, date of birth, email ID, phone number, password, confirm password, PAN number, IFSC code, bank account number, and address. The system validates these inputs and stores the data securely.

The screenshot displays the 'Register in InvestMATE' form. The form fields are as follows:

- Username :** Enter Username
- Password :** Enter Password
- Confirm Password :** Reenter Password
- Email :** Enter Your Email
- Mobile Number :** Enter Your Mobile Number
- Date of Birth :** Enter your Birth Date

At the top left of the form area, there is a link 'Back to Login'. At the top right, it says 'WELCOME!'. At the bottom right, there is a 'Get Started!' button.

Figure 4.1: User Registration Page

Figure 4.2: User Registration Page

4.2 Login and Forgot Password

The login page enables users to securely enter their credentials (username and password) to access the system. Passwords are encrypted and stored securely in the database. If a user forgets their password, the "Forgot Password" option can be used. This feature asks the user for their *username* and *date of birth*, cross-checking the information with the stored data. If the details match, the user is allowed to reset their password, which must meet the system's security requirements.

Figure 4.3: Forgot Password Page

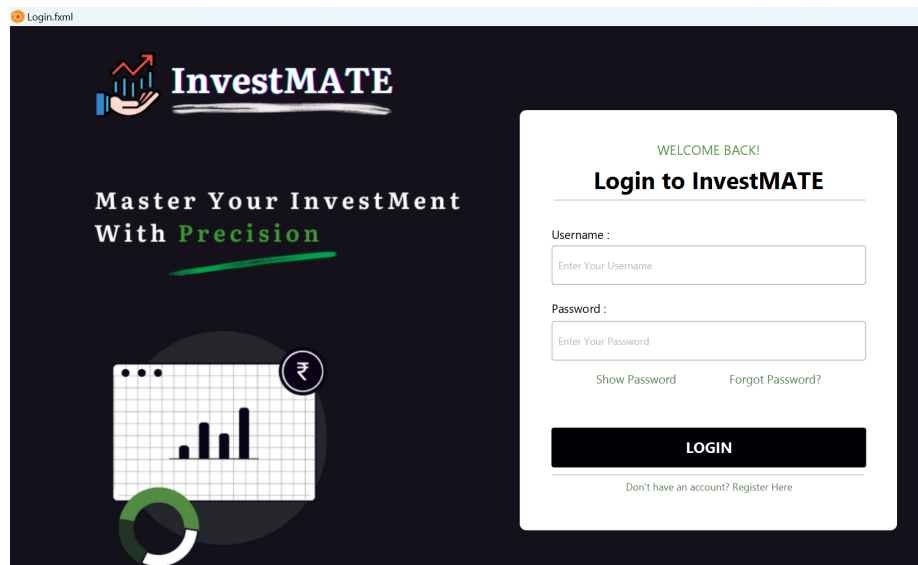


Figure 4.4: Login Page

4.3 Portfolio Overview

Once logged in, users are taken to the **Portfolio Overview** page. This page serves as the main dashboard for users to view their current investment holdings. The page provides essential details such as:

- **Current Holdings:** A breakdown of all mutual funds and SIPs the user has invested in.
- **Invested Amount:** The total amount the user has invested in mutual funds and SIPs.
- **Market Value:** The current market value of the user's investments, allowing users to track growth or depreciation.

This overview helps users quickly gauge their portfolio's performance without needing to navigate multiple pages.

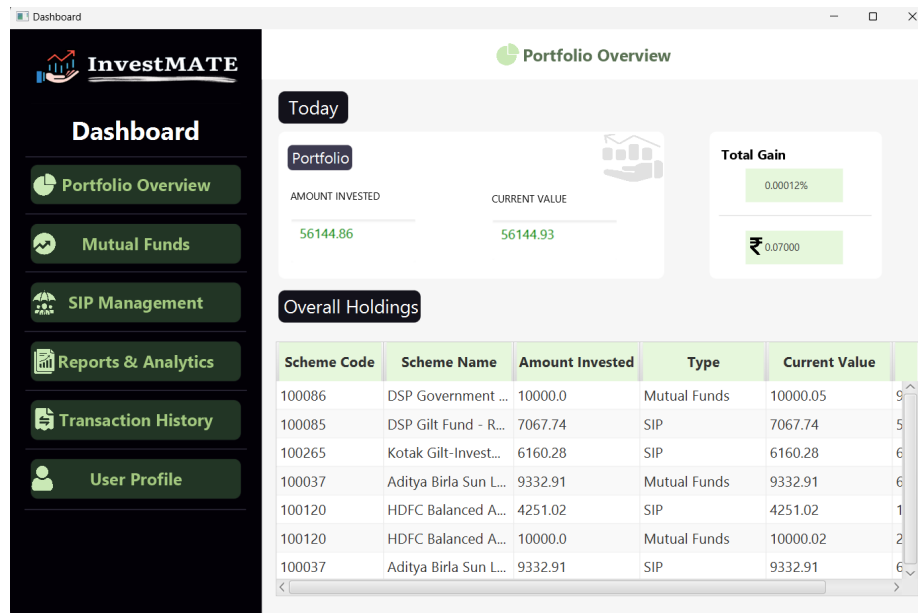


Figure 4.5: Portfolio Overview

4.4 Mutual Funds Page

The **Mutual Funds** page provides users with real-time data on various mutual fund schemes. Users can:

- Search for funds by name or scheme code.
- View relevant data such as fund category, performance over time, and risk level.
- Add new investments directly from this page by selecting a fund and entering the desired amount.

The page also features a table that displays the user's current mutual fund investments, showing important information such as units held, invested amount, and current value.

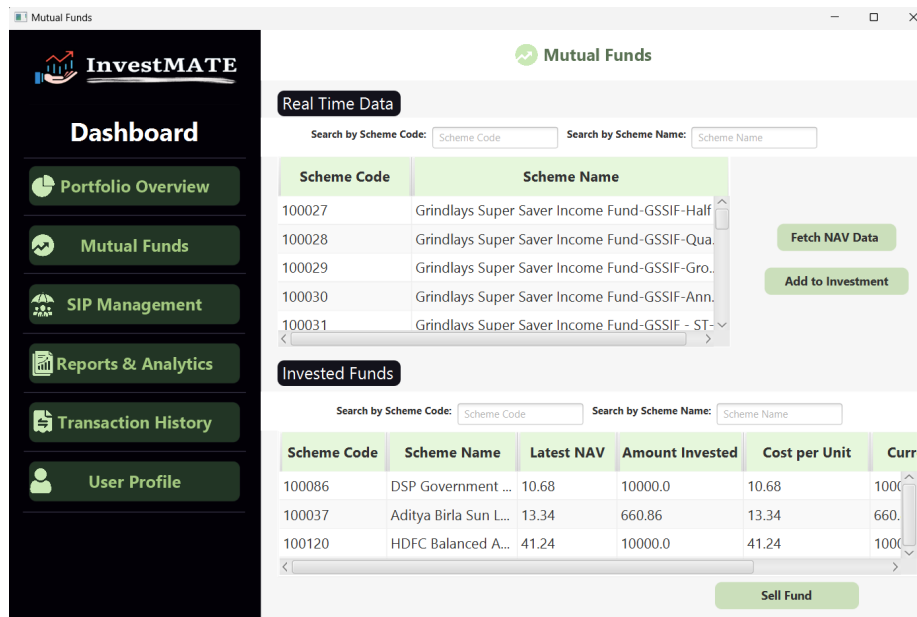


Figure 4.6: Mutual Funds Page

4.5 Reports and Analysis

In the **Reports and Analysis** section, users can generate detailed reports to analyze their portfolio performance. This section includes:

- A pie chart that shows the allocation between mutual funds and SIPs.
- Line graphs that depict investment growth over time for both mutual funds and SIPs.
- A breakdown of returns, allowing users to assess which funds are performing well.

These visual tools offer users insights into their investments, helping them make informed decisions.

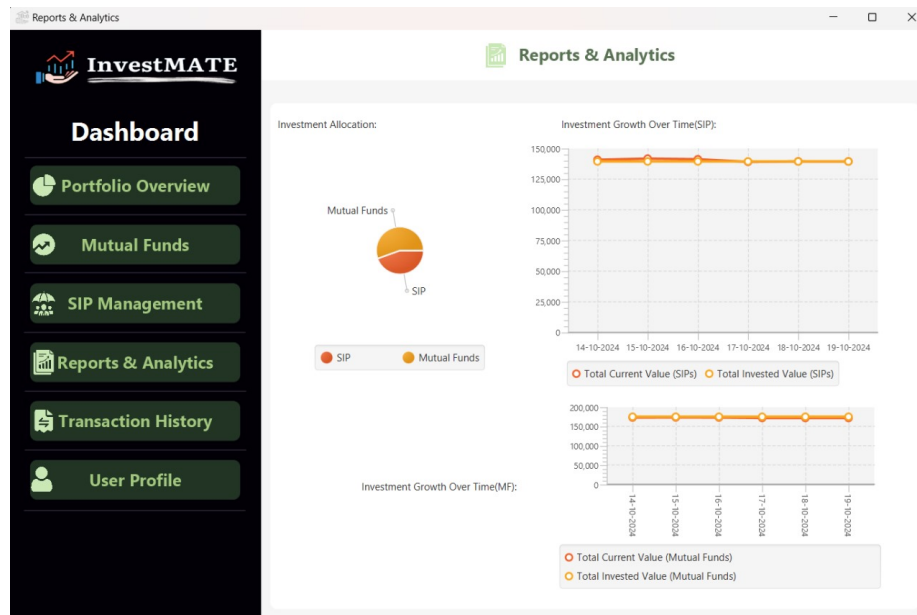


Figure 4.7: Reports and Analysis Page

4.6 SIP Management

The **SIP Management** page allows users to manage their existing SIPs and set up new ones. For each SIP, users can view:

- **Frequency:** The periodicity of the SIP (e.g., monthly, quarterly).
- **Invested Amount:** The total amount invested so far.
- **Current Value:** The current market value of the SIP.
- **Period:** The duration of the SIP.
- **Total Units:** The number of units purchased through the SIP.
- **Returns:** The percentage gain or loss on the SIP.

This page also provides options for selling or modifying SIPs.

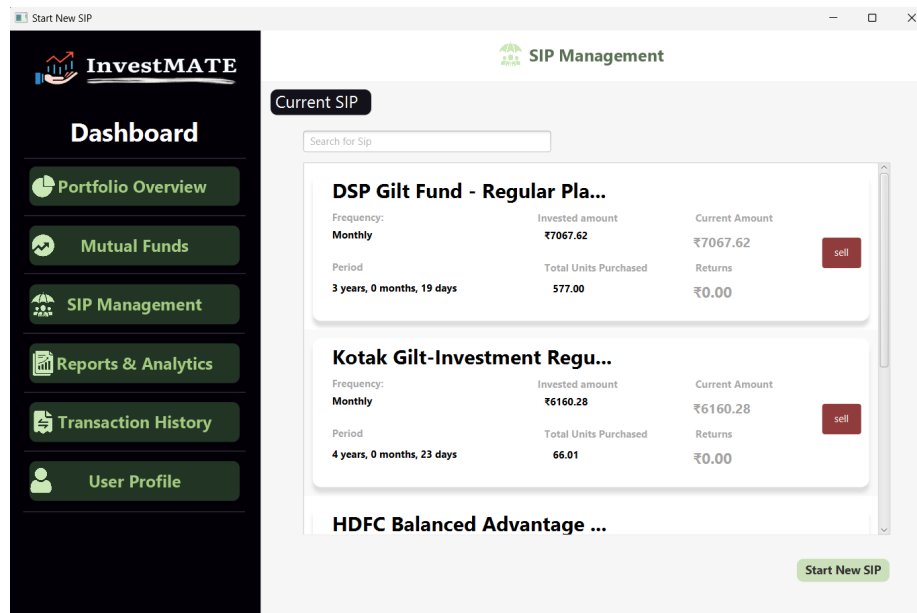


Figure 4.8: SIP Management Page

4.7 Transaction History

The **Transaction History** page provides a complete log of all user transactions. Every time a user adds or sells investments, it is recorded with details such as:

- Transaction type (buy/sell).
- Fund or SIP name.
- Date of transaction.
- Transaction amount.

This history allows users to track their financial activities and monitor changes in their portfolio.

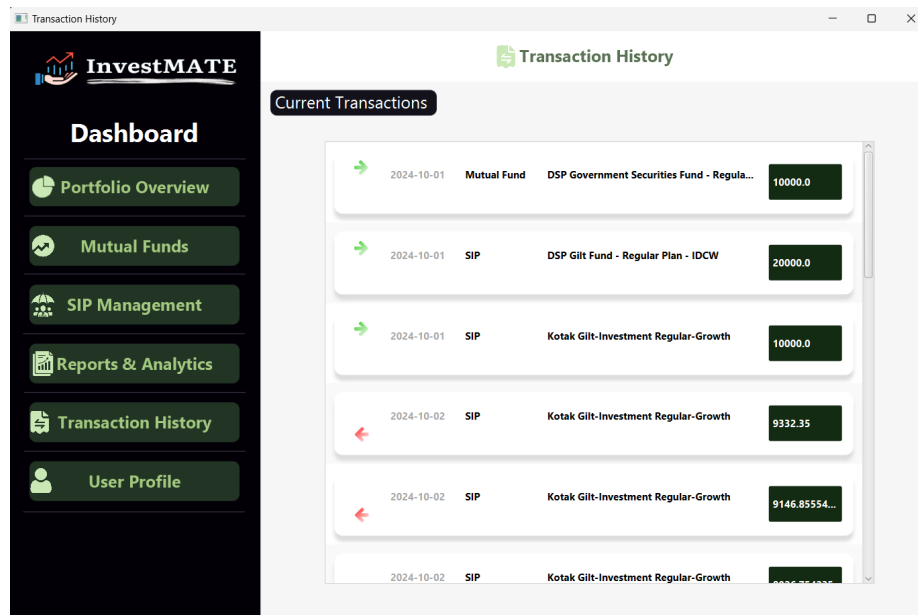


Figure 4.9: Transaction History Page

4.8 User Profile

The **User Profile** page allows users to view and update their personal information. Fields that can be edited include:

- Address.
- Phone number.
- Email address.

Changes made in this section are securely saved to the database. Additionally, users can log out of the system by clicking the "Log Out" button, ensuring a secure exit from the application.

The screenshot displays the 'User Profile' page of the InvestMATE application. On the left is a dark sidebar with the 'InvestMATE' logo and a 'Dashboard' section containing links to Portfolio Overview, Mutual Funds, SIP Management, Reports & Analytics, Transaction History, and the active User Profile. The main content area is titled 'User Profile' and contains a form with two columns of input fields. The left column includes fields for Username (Servesesh), Email (ser@gmail.com), Phone Number (7039514809), Date Of Birth (21/05/2006), and Password (masked with dots). The right column includes fields for Address (WQW), Pan (QWWQ), Bank Account Number (CZCZXC), and IFSC Code (11223). Below the form are two green buttons: 'Edit Profile' and 'Save Profile'. A 'LogOut' button is located at the bottom right of the page.

| Field | Value |
|---------------------|---------------|
| Username | Servesesh |
| Email | ser@gmail.com |
| Phone Number | 7039514809 |
| Date Of Birth | 21/05/2006 |
| Password | ***** |
| Address | WQW |
| Pan | QWWQ |
| Bank Account Number | CZCZXC |
| IFSC Code | 11223 |

Figure 4.10: User Profile Page

Chapter 5

Results and Discussion

This chapter presents the intermediate and final results of the Portfolio Management System's development and analyzes its effectiveness. A brief comparison between our application and existing alternatives is also included to highlight its unique features and benefits.

5.1 Results and Discussion

This section provides an in-depth analysis of the results obtained during the development of the Portfolio Management System. The analysis focuses on the system's performance, usability, and its overall contribution to effective portfolio management.

5.1.1 Intermediate Results

Throughout the development process, several intermediate milestones were achieved, providing valuable insights into the application's functionality and areas for improvement. Key intermediate results include:

- **User Login Module:** The user authentication mechanism was successfully implemented. Testing demonstrated that multiple users could log in simultaneously without issues, and comprehensive error handling was established. Invalid inputs resulted in clear, informative error messages, guiding users to rectify their mistakes, thereby enhancing user experience.
- **Portfolio Data Management:** The portfolio management module was designed to efficiently retrieve and display users' investments, including detailed insights into each investment's performance. Calculations for gains and losses were accurately executed across multiple test scenarios, demonstrating the module's reliability. The system was capable of generating reports that detailed the overall performance, helping users understand their

investment progress and make informed decisions.

- **SIP Management:** The implementation of SIP (Systematic Investment Plan) features allowed users to create, edit, and delete SIPs seamlessly. The changes made to SIPs automatically updated the overall portfolio performance, reflecting real-time impacts of users' investment strategies. This dynamic capability empowered users to adjust their investments quickly in response to market changes.

The intermediate tests indicated that the system was capable of handling typical user actions efficiently and without major issues. The initial feedback from testing sessions highlighted the system's stability and responsiveness, ensuring a solid foundation for further development.

5.1.2 Final Results

The final version of the Portfolio Management System was successfully integrated with all modules, including user profiles, portfolio management, SIPs, reports, and transaction history. Key outcomes from the final testing phase include:

- **System Efficiency:** The system demonstrated high efficiency in managing large datasets, including multiple users with extensive investment portfolios. Performance benchmarks indicated that the application maintained rapid response times even under heavy loads, ensuring users could access their information promptly without lag or downtime.
- **Accurate Calculations:** The accuracy of gain/loss percentages and total portfolio values was validated through rigorous testing. The system successfully provided real-time updates based on fluctuating market values, ensuring that users had the most current information at their fingertips. This capability is crucial for making timely investment decisions.
- **User Experience:** The application was designed with user experience in mind, providing intuitive navigation between various modules such as the portfolio overview, SIP management, and reports. Feedback from user testing indicated that users found the interface user-friendly, allowing them to efficiently access and analyze their investment data without feeling overwhelmed by complexity.
- **Robust Reporting Tools:** The reporting module offered users a comprehensive view of their investment performance, including visual represen-

tations of asset allocation and historical growth trends. These reports enable users to assess their portfolios easily and strategize future investments based on data-driven insights.

Overall, the system met all functional requirements and successfully passed both unit and integration tests, indicating readiness for deployment. The consistent performance across various test cases underscored the robustness of the system and its potential to serve as a reliable investment management tool.

5.1.3 Comparison with Existing Alternatives

In comparison to existing portfolio management applications, our system offers several advantages:

- **Real-Time Updates:** Unlike many competitors, which may update data at scheduled intervals, our application provides real-time updates based on market changes, allowing users to make informed decisions without delay.
- **Cost-Effectiveness:** The Portfolio Management System is designed to be accessible to individual investors without incurring high subscription costs typically associated with other platforms. This makes investment management more affordable for a wider audience.
- **Customization and Scalability:** The modular design of the application allows users to customize their investment experience according to their needs. As users' portfolios grow, the system can scale to accommodate increased data and additional features without compromising performance.
- **User-Centric Design:** The interface is tailored to facilitate ease of use, significantly reducing the learning curve for new users. This design approach contrasts with many existing solutions that can be complex and intimidating for novice investors.

5.1.4 Conclusion

The results of the development process indicate that the Portfolio Management System is a reliable, efficient, and customizable tool for individual users. Its performance has been validated through extensive testing, and it stands out from existing applications with its real-time updates and cost-effectiveness.

By providing an intuitive user interface and robust analytical tools, the system empowers users to manage their investments actively and effectively. As

financial markets evolve, continuous improvement and user feedback will be essential to maintain the system's relevance and effectiveness in serving its users' needs.

Chapter 6

Conclusion & Future Work

6.1 Conclusion

The Portfolio Management System project successfully achieved its objectives, providing users with an efficient platform to manage their mutual fund investments and SIPs. The system enables users to view and analyze their portfolios, track gains and losses, and manage transactions with ease.

Based on the results discussed in the previous chapter, the system's performance met expectations, demonstrating accuracy in financial calculations and delivering a smooth user experience. Real-time updates, seamless integration between modules, and a user-friendly interface are among the key accomplishments of this project.

Overall, the system provides a valuable tool for individual investors looking to manage their portfolios more effectively, and it holds its ground well in comparison to existing market alternatives.

6.2 Lessons Learned

Throughout the development of the project, several important lessons were learned, particularly in terms of project management and system development:

- **Time Management:** A clear lesson was the importance of managing time effectively. Some modules, such as SIP management, took longer to implement than initially planned due to unexpected complexities. Future projects should allocate more time for handling unforeseen challenges.
- **Modular Design:** The decision to adopt a modular approach to the system's development proved beneficial. Breaking the project into smaller, manageable components allowed for more focused testing and easier integration of features.
- **Error Handling and Debugging:** Early issues with database connections

and user input validation emphasized the importance of rigorous testing and error handling from the beginning. More attention should have been given to setting up extensive unit testing earlier in the development process.

- **Collaboration and Communication:** Effective communication within the development team was crucial for ensuring that different components of the system worked together seamlessly. Clear documentation and frequent progress check-ins were key to staying aligned with the project goals.

These lessons will serve as valuable guidance for future projects, ensuring a more efficient development process and reducing the risk of delays or errors.

6.3 Future Work

While the Portfolio Management System is fully functional, there are several areas where future improvements and additional features can enhance the system:

- **Mobile Application Version:** Developing a mobile version of the system would make it more accessible to users on the go, increasing its utility and user base.
- **Advanced Analytics:** Adding more detailed performance metrics, such as risk analysis, benchmarking against market indices, and projection tools, could help users make more informed investment decisions.
- **Multi-currency Support:** Expanding the system to handle portfolios with investments in different currencies would make it useful for global investors.
- **User Feedback System:** Implementing a feedback system would allow users to suggest improvements or report bugs, helping to keep the system user-friendly and adaptable to changing needs.

These future enhancements will further solidify the Portfolio Management System as a robust, user-centered investment management tool, meeting the needs of a broader audience and providing more sophisticated functionality.

6.4 Closing Remarks

In conclusion, the Portfolio Management System project has been a valuable learning experience and an important step in developing a practical tool for managing investments. The system's success has been grounded in effective teamwork, modular design, and continuous improvement. By addressing

the lessons learned and expanding on future work, the system can continue to evolve and provide even greater value to its users.

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