Project Title:

STUDENT FINANCE MANAGEMENT SYSTEM

Course: B.Tech – Computer Science Engineering
Subject: C Programming Major Project
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1. ABSTRACT

Managing money wisely is one of the biggest challenges for students today. Most of us receive pocket money, stipends, or part-time earnings, but due to a lack of proper planning, we often end up overspending without realizing where the money went. To solve this problem, I have developed a **Student Finance Management System** in C language.

This project allows a student to create an account, track income, record expenses, and allocate a percentage of their balance towards savings. The data is saved permanently using file storage, so even after closing the program, the student's financial details remain intact. The system is fully menu-driven and easy to use, making it a practical tool for students to learn basic financial discipline and understand the importance of budgeting.

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2. PROBLEM DEFINITION

Many students today do not track their personal finances. They forget how much they spent, how much they saved, or how much balance remains. Without a proper system, it becomes difficult to build good spending habits and financial awareness at a young age.

Identified Problems

- Students have no organized place to track finances
- Manual tracking leads to calculation errors
- There is no habit of planned saving
- Students lack financial awareness and discipline
- No proper tool exists that is simple and student-friendly

Objective of this Project

To design a simple and user-friendly system that helps students:

- Create an account with login authentication
- Add income and record expenses
- Automatically calculate savings based on a chosen percentage
- View updated balance anytime
- Store all financial details permanently even after program exit

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3. INTRODUCTION

Financial management is an essential life skill that students often ignore. Most students receive some amount of money every month, yet they are never taught how to record or manage it properly. Because of this, they overspend, fail to save, and remain unaware of their financial condition.

Technology provides an opportunity to solve this problem by creating smart systems that reduce human effort, prevent errors, and automate calculations. A digital finance management system allows students to develop controlled spending habits, promotes savings, and helps them understand that even small amounts, when saved regularly, can grow significantly.

The **Student Finance Management System** is a C-based console application created to simplify personal finance for students. It allows the user to sign up, log in securely, manage income and expenses, and set a saving percentage, all while storing the data permanently using file handling in C. It demonstrates strong programming concepts such as modularity, structures, control statements, and persistent storage.

This project not only addresses a real-world problem but also helps students develop a disciplined approach towards money.

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4. EXISTING SYSTEM

Before computerized solutions, students relied on outdated and inefficient methods for managing money. These existing systems have major limitations:

1. Manual Notebook Entry

Students write expenses in diaries.
Disadvantages:

- No automatic balance update
- Prone to damage or loss
- Tedious and error-prone
- No savings mechanism

2. Mobile Calculator

Used only for basic arithmetic.
Disadvantages:

- Cannot store past records
- No data categorization
- No financial history

3. Memory-Based Tracking

Students mentally remember expenses.
Disadvantages:

- Inaccurate and risky
- Encourages overspending
- No accountability

4. Excel Sheets

Only a few technically sound students use them.
Disadvantages:

- Requires knowledge of formulas
- No authentication
- Not user-friendly for beginners

Conclusion:
The existing systems lack automation, security, financial guidance, and permanent record keeping. Hence, a digital student-friendly finance management system is necessary.

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5. SYSTEM DESIGN

5.1 How the System Works

The program starts with a home screen where the user can sign up or log in. Once logged in, the student enters a dashboard where they can add income, record expenses, or save a percentage of their balance. Every operation is reflected instantly and stored permanently.

5.2 Flowchart

```
START
  |
  |--> Home Page (1 Login / 2 Signup / 0 Exit)
  |
  |--> If Signup → Create Account → Save Details
  |
  |--> If Login → Verify Credentials
  |          |
  |          v
  |     Finance Dashboard
  |     1 Income
  |     2 Expense
  |     3 Savings %
  |     0 Logout
  |
  |--> Save Data → Exit Program
  |
END
```

5.3 System Components

Component	Description
Login / Signup	Handles account creation and authentication
Finance Module	Adds income, expenses, and manages savings logic
Storage Module	Saves and loads user financial records
Helper Module	Manages input validation and utilities

5.4 Advantages of the Proposed System

Advantage	Benefit
Easy Interface	Simple and user-friendly
Secure Access	Only valid users can log in
Persistent Storage	Data remains stored even after exit
Real-Time Updates	Instant balance and savings calculation
Encourages Saving	Builds healthy money habits
Modular Design	Easier to maintain and upgrade

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6. IMPLEMENTATION DETAILS

The project is implemented in C language using a modular programming approach. Each feature is placed in a separate `.c` file with a corresponding `.h` header file.

6.1 Data Structure Used

```
typedef struct {
    char username[50];
    int password;
    float totalBalance;
    float savings;
    int isActive;
} User;
```

6.2 Savings Logic (Human Explanation)

If a user has ₹2000 and chooses to save 10%:

- 10% of 2000 = 200
- Balance reduces to 1800
- Savings increase by 200
- Updated values are saved in the database

This encourages students to understand the value of systematic savings.

6.3 Modular Design

File	Responsibility
main.c	Controls menu and program flow
auth.c	Signup and login
finance.c	Income, expense, and savings logic
storage.c	Reads and writes data to files
delete.c	Deletes user account
utils.c	Input handling

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7. TESTING & RESULTS

Multiple test cases were performed to check system functionality:

Action Tested	Result
Signup	Creates new user successfully
Login	Works only with correct credentials
Income	Increases total balance correctly
Expense	Deducts balance and prevents negative values
Savings	Transfers percentage to savings
Restart Program	Loads previous data successfully

The program performed accurately during all tests.

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8. ADDITIONAL OBSERVATIONS

- Students enjoyed seeing financial updates instantly
- The savings feature motivated users to reduce unnecessary spending
- File storage helped maintain records reliably
- Error handling reduced invalid entries

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9. CONCLUSION & FUTURE WORK

The **Student Finance Management System** successfully provides a platform for students to manage their finances digitally. It demonstrates how programming concepts in C can solve real-world problems. The project improves self-discipline, encourages better financial decision-making, and creates awareness about saving habits.

Future Scope

- Password encryption
- Monthly and yearly spending graphs
- Mobile/desktop GUI version
- Expense categorization
- Cloud backup for multi-device access

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10. REFERENCES

- *The C Programming Language* by Dennis Ritchie
- Classroom notes and lab guidance
- StackOverflow community discussions
- C programming documentation

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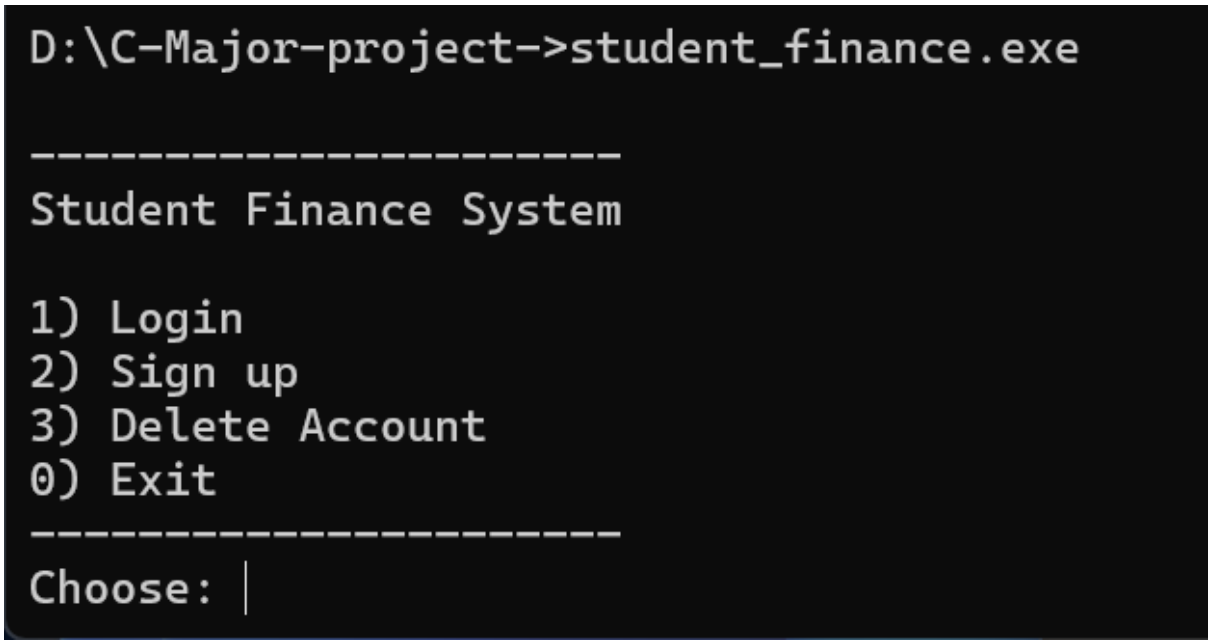
11. APPENDIX

- Signup screen



```
----------------------
Student Finance System

1) Login
2) Sign up
3) Delete Account
0) Exit
----------------------
Choose: 2

----------------------
Student Finance System - Signup

Choose a Username: abc
Create a Password (numbers only): 123
Confirm Password: 123
Signup Successful! You can now login.
Press ENTER to continue...
```

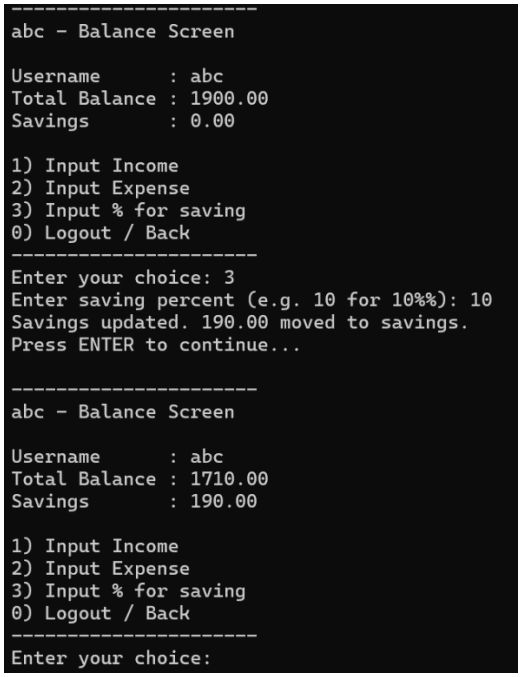
- Login screen and finance dashboard

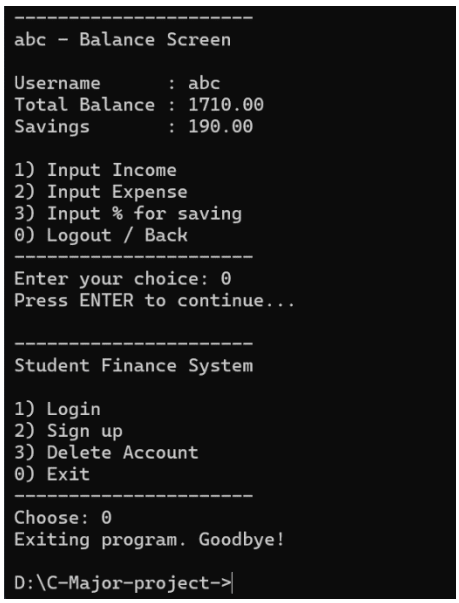
```
----------------------
Student Finance System

1) Login
2) Sign up
3) Delete Account
0) Exit
----------------------
Choose: 1

----------------------
Student Finance System - Login

Enter Username: abc
Enter Password: 123
abc! Login Successful

----------------------
abc - Balance Screen

Username      : abc
Total Balance : 0.00
Savings       : 0.00

1) Input Income
2) Input Expense
3) Input % for saving
0) Logout / Back
----------------------
Enter your choice: 1
```

- Income, Expense, Savings updates

```
abc - Balance Screen

Username      : abc
Total Balance : 0.00
Savings       : 0.00

1) Input Income
2) Input Expense
3) Input % for saving
0) Logout / Back
----------------------
Enter your choice: 1
Enter Income amount: 2000
Income added successfully.
Press ENTER to continue...

----------------------
abc - Balance Screen

Username      : abc
Total Balance : 2000.00
Savings       : 0.00

1) Input Income
2) Input Expense
3) Input % for saving
0) Logout / Back
----------------------
Enter your choice: 2
Enter Expense amount: 100
```

```
----------------------
Enter your choice: 2
Enter Expense amount: 100
Expense recorded successfully.
Press ENTER to continue...

----------------------
abc - Balance Screen

Username      : abc
Total Balance : 1900.00
Savings       : 0.00

1) Input Income
2) Input Expense
3) Input % for saving
0) Logout / Back
----------------------
Enter your choice: 3
Enter saving percent (e.g. 10 for 10%%): 10
Savings updated. 190.00 moved to savings.
Press ENTER to continue...
```





- Persistent data reload

END OF REPORT