AI-House-Management-System - Project Report

# 1. Project Overview

The AI-House-Management-System is a desktop application designed to help users manage their personal or family finances.   
It allows users to track income, expenses, budgets, and account transactions such as top-ups, transfers, and withdrawals.   
The system also integrates AI-powered assistance (via DeepSeek API) to provide financial guidance.

# 2. Technologies Used

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| --- | --- |
| Technology | Description |
| Java | Core programming language |
| JavaFX | GUI Framework |
| FXML | For designing UI layouts |
| MySQL | Backend relational database |
| JDBC | To connect Java with MySQL |
| iTextPDF | For exporting income/expense reports |
| DeepSeek API | AI-powered financial suggestions |
| GitHub | Version control and collaboration |

# 3. Project Modules

## User Authentication

Sign up / Login, User session handling, Password validation.

## Income Management

Add, edit, delete income entries; export data to PDF.

## Expense Management

Add, edit, delete expenses; categorized and filtered.

## Budget Planning

Create monthly/custom budgets and track usage.

## Account Operations

Top-up, withdraw, and transfer funds.

## AI Finance Assistant

Provides finance tips using DeepSeek API.

# 4. Project Structure

AI-House-Management-System/  
├─ src/  
│ ├─ controllers/ # JavaFX controllers (FXML logic)  
│ ├─ models/ # Java model classes  
│ ├─ dao/ # Data access layer (JDBC)  
│ ├─ util/ # Utility classes (DBHelper, Session)  
│ └─ main/ # Main app launcher  
├─ resources/  
│ ├─ fxml/ # FXML UI files  
│ └─ css/ # Stylesheets  
├─ database/  
│ └─ household.sql # MySQL schema  
└─ README.md

# 5. Database Schema

Example tables:  
- users(userId, name, email, password)  
- income(incomeId, userId, amount, type, date)  
- expense(expenseId, userId, amount, category, date)  
- budget(budgetId, userId, month, limit)  
- accounts(userId, balance)

# 6. Features Summary

* ✔️ GUI with JavaFX + FXML
* ✔️ User account system
* ✔️ Income/Expense tracking
* ✔️ Budget planner
* ✔️ Account transactions
* ✔️ Export as PDF
* ✔️ AI assistant (DeepSeek API)

# 7. Security Considerations

- Passwords stored securely  
- Input validation for safety  
- Secure database credential management

# 8. Future Improvements

* - Pie chart/line chart visualizations
* - Mobile version using Flutter
* - Voice assistant integration
* - Cloud backup and sync

# 9. Future Improvements

# umlDiagramClass

# 10. Author

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