Personal Finance Management System User Manual

1. System Overview

The Personal Finance Management System is a comprehensive financial software designed to help users record, analyze, and manage personal income and expenses. The system is developed using Java Swing technology, providing an intuitive graphical user interface, supporting multiple user account management, intelligent financial analysis, AI financial advisor, and other advanced features.

2. Core Functions:

(1) Transaction Management : Add, import, edit, and delete transaction records

(2) Statistical Analysis : View monthly expense statistics and budget recommendations

(3) Festival Detection : Automatically identify and tag consumption during Chinese New Year

(4) Data Persistence : Securely store data using CSV files

(5) User Authentication : Support for multiple user accounts

(6) AI Financial Advisor : Integrated intelligent AI assistant providing personalized financial advice

(7) Expense Alerts : Monitor unusual spending patterns and provide alerts

(8) Localized Financial Analysis : Analyze consumption patterns based on geographic location

(9) Budget Calculator : Provide intelligent budget suggestions and analysis

(10) Data Visualization : Interactive charts and graphs to visualize spending patterns

3. System Requirements

a. Hardware Requirements

(1) Processor : Intel Core i3 or equivalent

(2) Memory : Minimum 4GB RAM (8GB recommended)

(3) Storage Space : At least 500MB free disk space

(4) Display : Resolution at least 1024x768 (1920x1080 recommended)

b. Software Requirements

(1) Operating System : Windows 10/11, macOS 10.14+, Linux (Ubuntu 18.04+)

(2) Java Runtime : Java 21 LTS version

(3) Dependencies :

Swing GUI library (part of Java standard library)

JUnit 5 (for running tests)

org.json (JSON processing)

FlatLaf (modern UI theme)

4. Installation and Launch

a. Method 1: Using Batch File (Recommended))

(1) Download Project: Download project files to local directory

(2) Run Start Script: Double-click run.bat file in project root directory

(3) Automatic Build: System will automatically compile all Java source files and start the application

b. Method 2: Maven Build

(1) Install Maven : Ensure Apache Maven 3.6+ is installed

(2) Build Project :mvn clean package

(3) Run Application：

java -jar target/finance-app-1.0-SNAPSHOT-jar-with-dependencies.jar

c. Method 3: Manual Compilation

(1) Create Directory: ： mkdir bin

(2) Compile Sourc： javac -d bin -cp "lib/*" src/main/java/com/financeapp/**/*.java

(3) Run Program： java -cp "bin;lib/*" com.financeapp.view.MainFrame

5. User Interface Navigation

a. Login System

(1) New User Registration

1. Launch Application : Login interface displays after running program

2. Click Register : Click "Register New Account" button

3. Fill Information :

    Username : Enter unique username (cannot be empty)

    Password : Enter password at least 6 characters

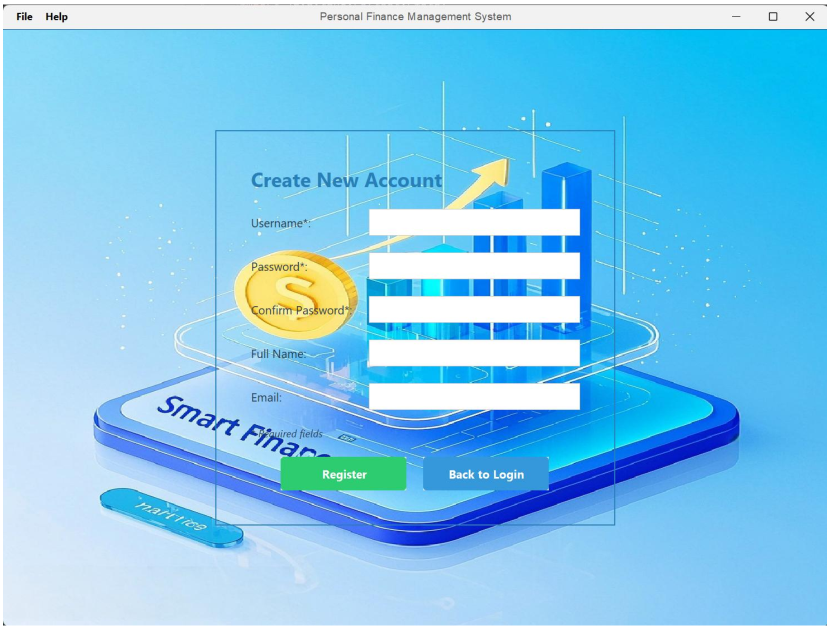
    Confirm Password : Re-enter password to confirm

    Full Name : Enter your real name

    Email : Enter valid email address

4. Complete Registration :

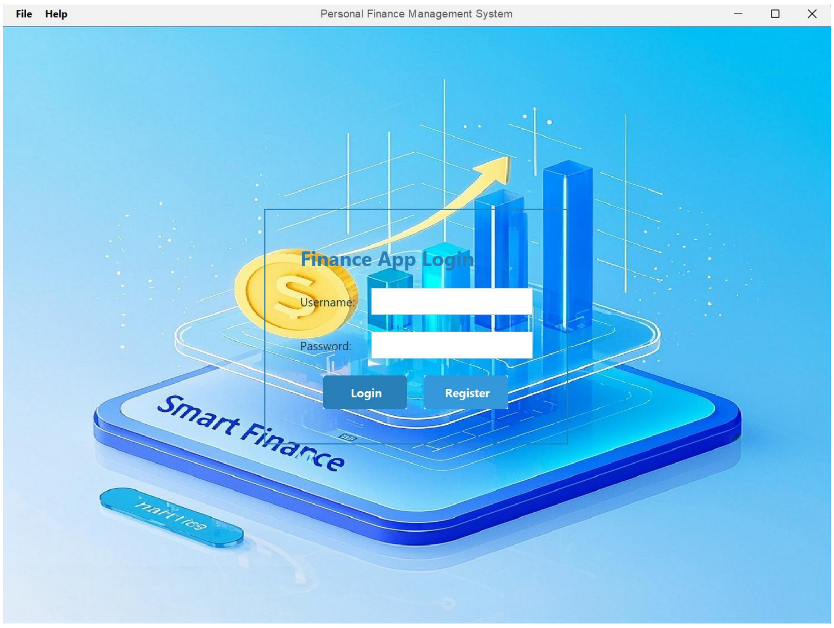
    Click "Register" button to create account User Login



5. Enter Credentials : Enter username and password on login interface

6. Click Login : Click "Login" button to enter system

7. Remember Login : System automatically updates last login time



b. Main Interface Layout

Main interface uses tab design, including following function modules:

1. Dashboard : System homepage, displays financial overview
2. Transactions : Record and manage income and expenses
3. Categories : Manage expense categories
4. Statistics : View financial statistics charts
5. Alerts : Set and view expense alerts
6. Local : Local consumption analysis
7. AI Chat : Intelligent financial advisor dialogue

c. Detailed Function Description

(1) Dashboard Panel

Dashboard is the main page after user login, providing comprehensive overview of financial status. **Main Functions:**

1. Financial Overview Cards :

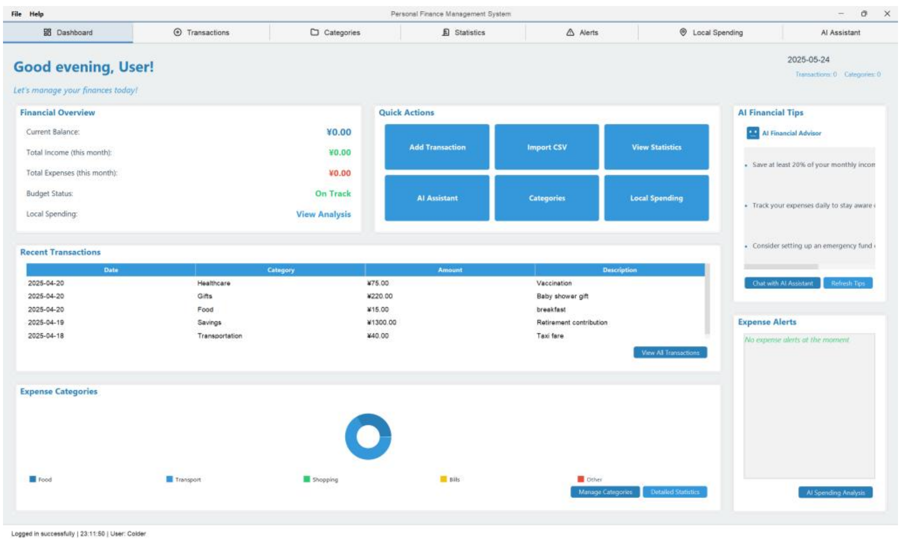
    Total Expenses: Shows total expenses for current month

    Total Income: Shows total income for current month

    Balance: Shows income-expense difference

    Monthly Budget: Shows budget usage

2. Recent Transactions : Shows latest 10 transaction records
3. Quick Action Buttons :Add Transaction,View Statistics,Set Alerts,AI Consultation
4. Expense Category Pie Chart : Visualizes proportion of each expense category
5. Financial Tips : Shows personalized financial advice Usage Method



1. View Overview :Automatically shows current month financial overview after login
2. Quick Add : Click "Add Transaction" button to quickly record new transaction
3. View Details : Click transaction record to view detailed information
4. Navigate Functions : Use quick action buttons to jump to corresponding function modules

(2) Transaction Management

Transaction management is core function of system, used for recording, editing, and managing all income and expenses.

Add Transaction:

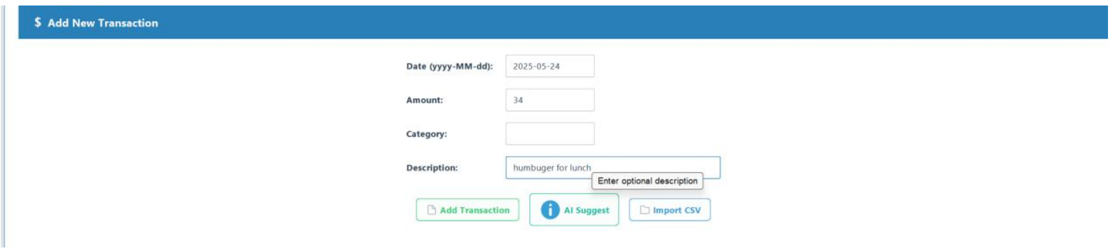
1. Fill Transaction Information :

Date : Select transaction date (default today)

Amount : Enter transaction amount (positive for expense, negative for income)

Category : Select or enter transaction category

Note : Add transaction description

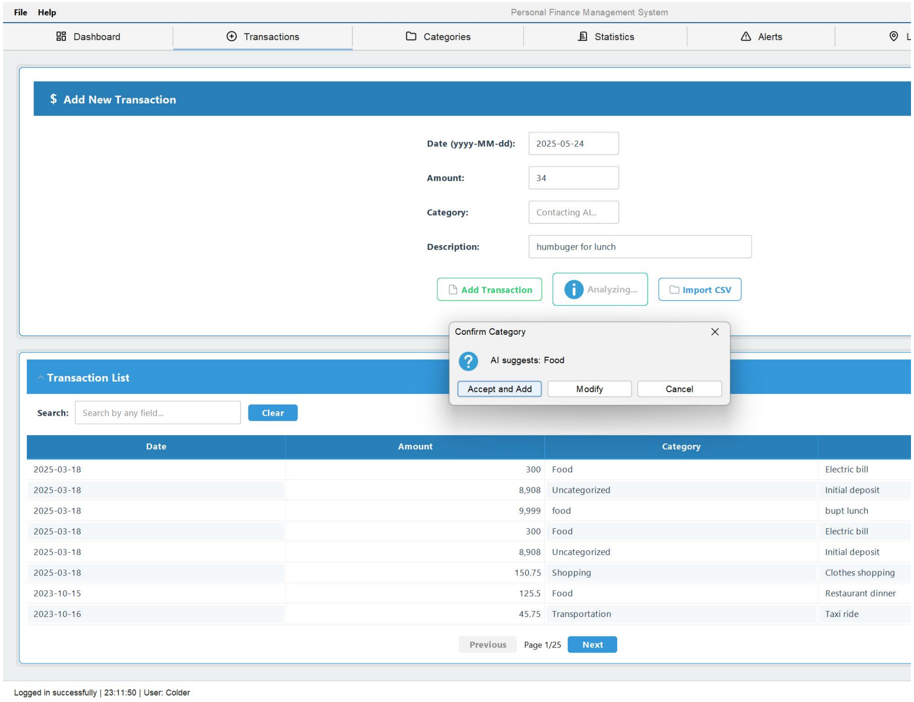


2. AI Category Suggestion :

Click "AI Suggest" button

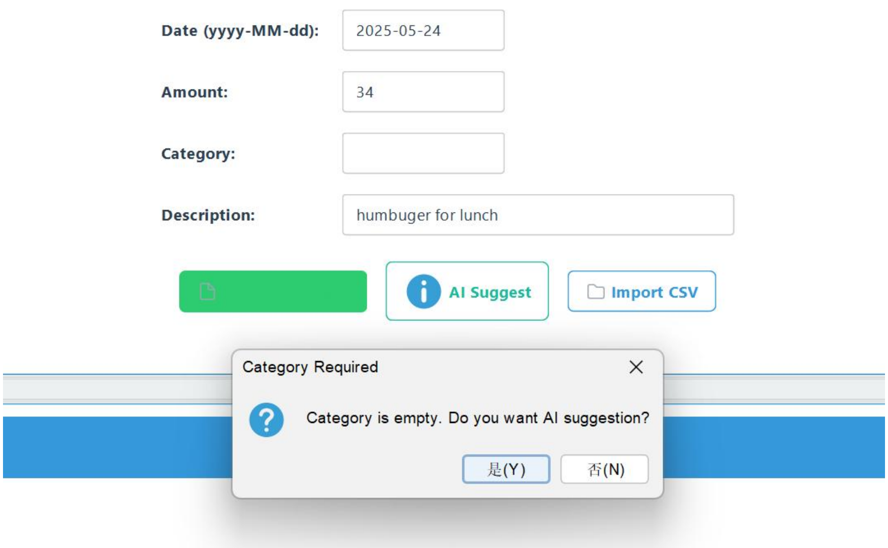
System intelligently recommends category based on note content

User can accept suggestion or manually modify



3. Save Transaction : Click "Add Transaction" button to save record

Batch Import



Add Transaction From CSV File:

1. Prepare CSV File :

Format: Date,Category,Amount,Note

Date Format: yyyy-MM-dd

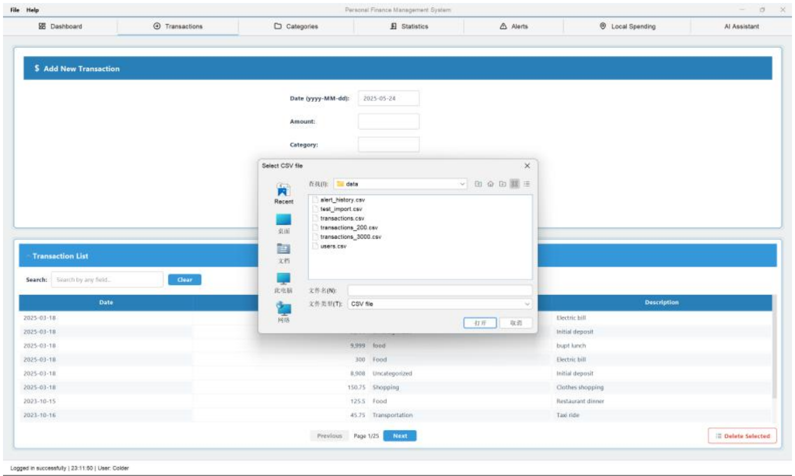
Example: 2024-01-15,Food,25.50,Lunch

2. Import Operation :

Click "Import CSV" button

Select prepared CSV file

System automatically validates and imports data



Transaction List Management:

View Transactions : Table displays all transaction records

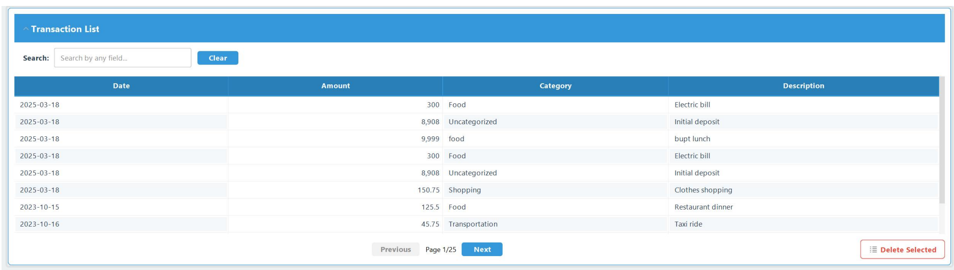
Search Filter : Use search box to filter transactions by keyword

Sort Function : Click column header to sort by date, amount, etc.

Pagination : Support pagination browsing of large transaction records

Edit Transaction : Double-click transaction record to edit

Delete Transaction : Click delete button after selecting record



(3) Statistical Analysis

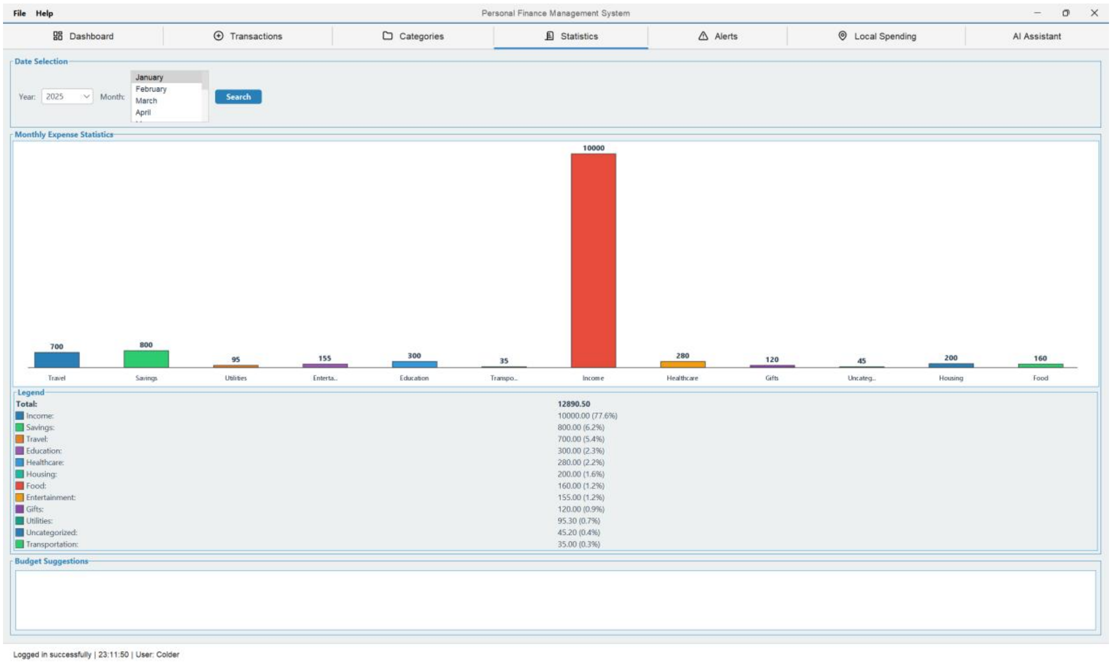
Statistical analysis module provides powerful data analysis and visualization functions.

1.Time Range Selection:

Year Selection : Select year to analyze

Month Selection : Support multiple month selection for comparison

Custom Range : Set custom date range Chart Types



2.Budget Suggestions

System generates intelligent budget suggestions based on historical data and current spending patterns:

Expense Analysis : Identifies high expense categories

Trend Alert : Discovers abnormal spending patterns

Saving Suggestions : Provides specific saving measures

Goal Setting : Suggests reasonable budget targets

(4) Expense Alerts

Expense alert system helps users monitor and control spending, avoid over-budget.

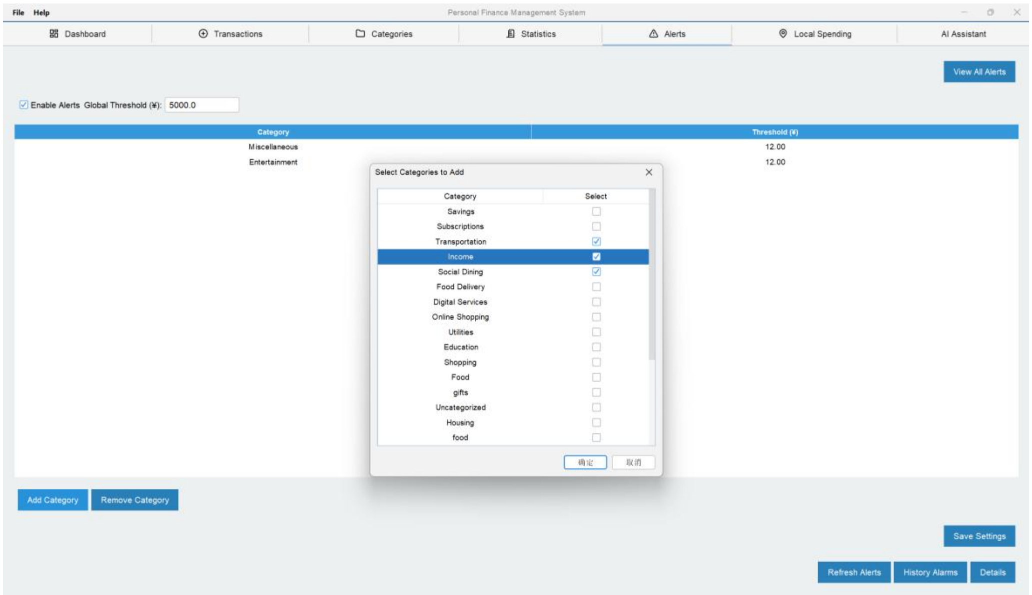
Alert Settings:

1. Global Threshold :

Set monthly total expense limit

Trigger alert when exceeding threshold

Default value: 5000



2. Category Threshold :

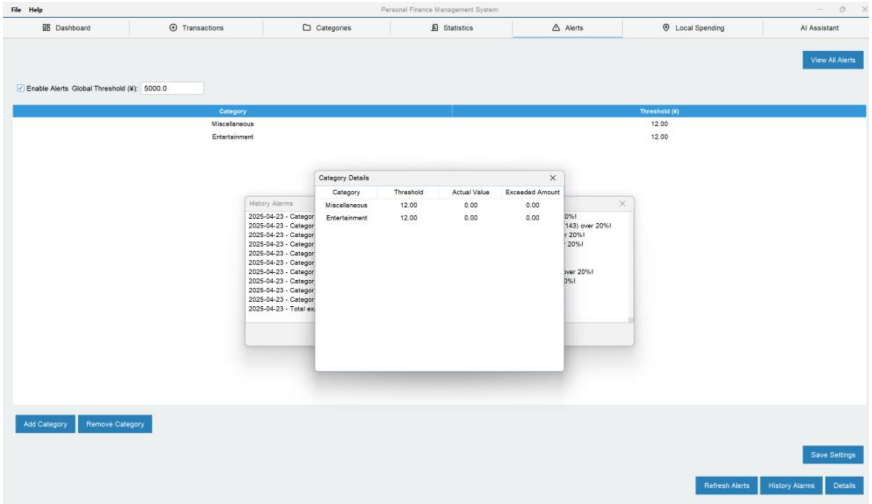
Set independent threshold for each expense category

Support add, modify, delete category thresholds

Common categories: Food, Transportation, Shopping, Entertainment, etc.

Alert Levels:

Information : Reminder when approaching threshold

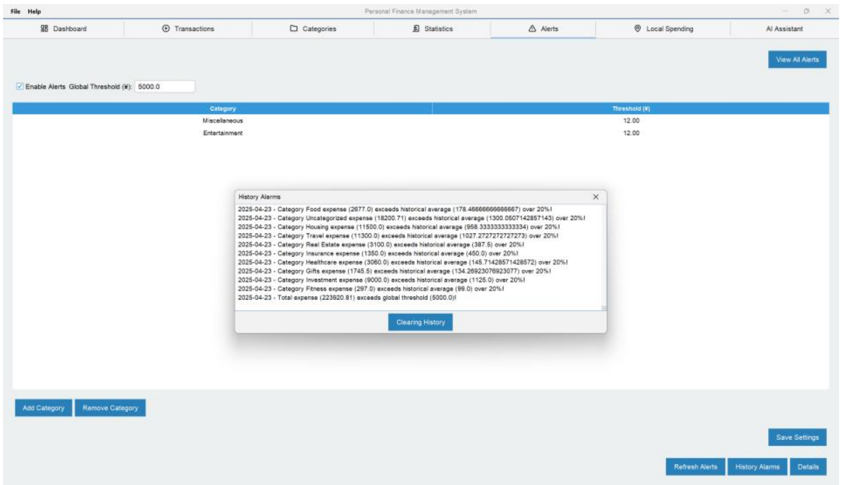


Warning : Warning when exceeding threshold by 10-20%

Severe : Severe alert when exceeding threshold by more than 20% Alert

History

View History : Browse all historical alert records

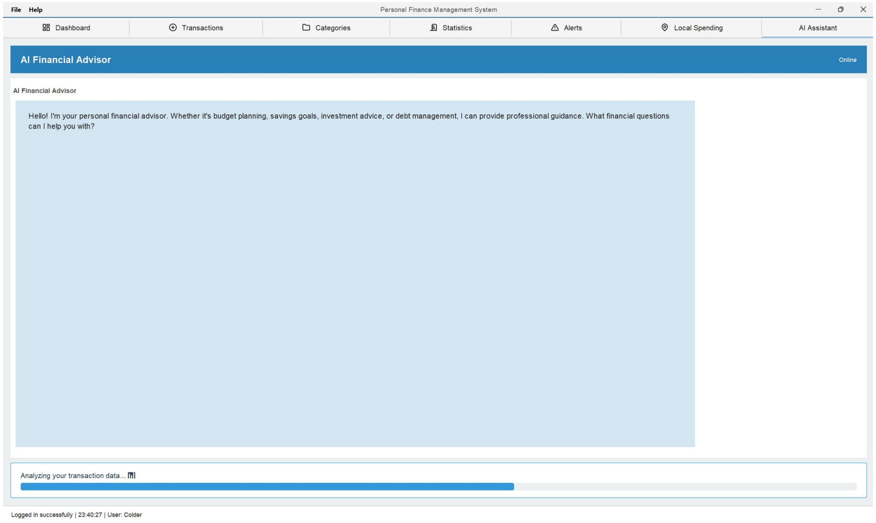


Alert Details : View specific alert reasons and suggestions

Export Report : Export alert records to CSV file

(5) AI Financial Advisor

AI financial advisor is highlight feature of system, providing intelligent financial consultation service.



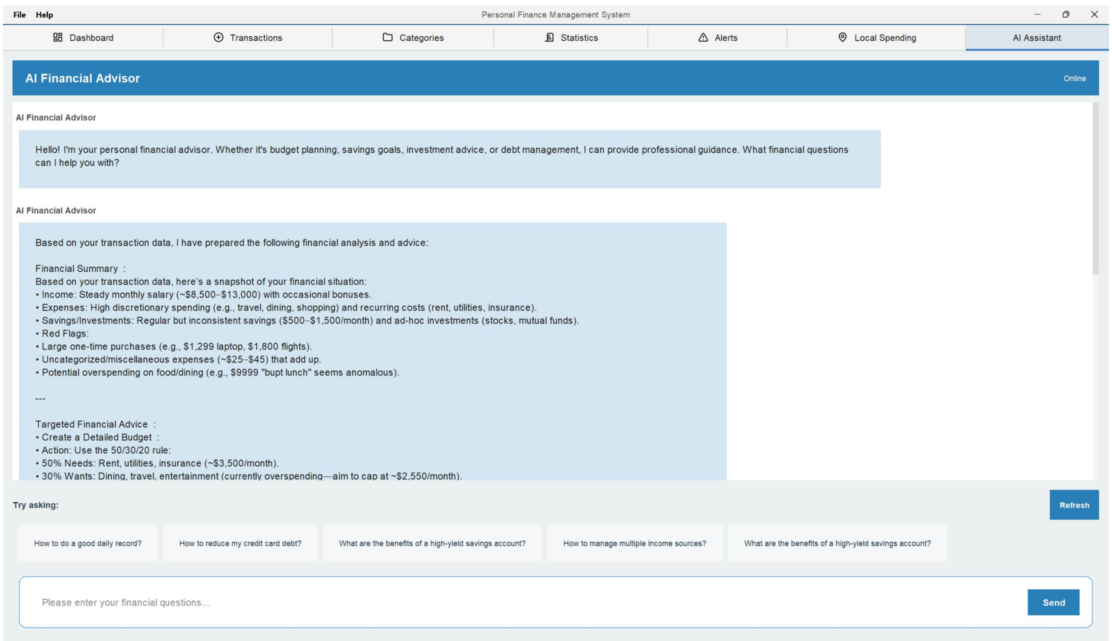
Feature Characteristics:

- Professional Knowledge : Covers budget planning, debt management, investment advice, etc.

- Personalized Advice : Provides customized suggestions based on user's actual financial data

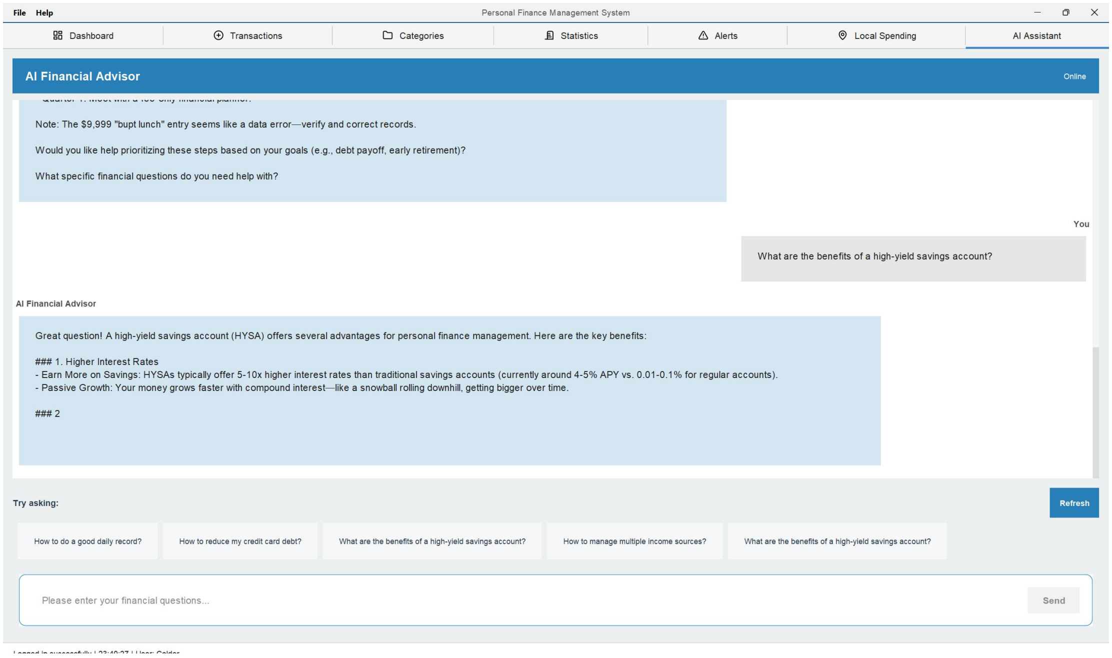
- Real-time Dialogue : Supports natural language interaction

- Multi-language Support : Supports Chinese and English dialogue



Usage Method:

1. Start Dialogue : Enter finance-related questions in input box
2. Select Suggestions : Click preset common questions to start quickly
3. View Reply : AI assistant will provide detailed professional advice
4. Continue Communication : Can have in-depth discussion about reply



content Common Consultation Topics:

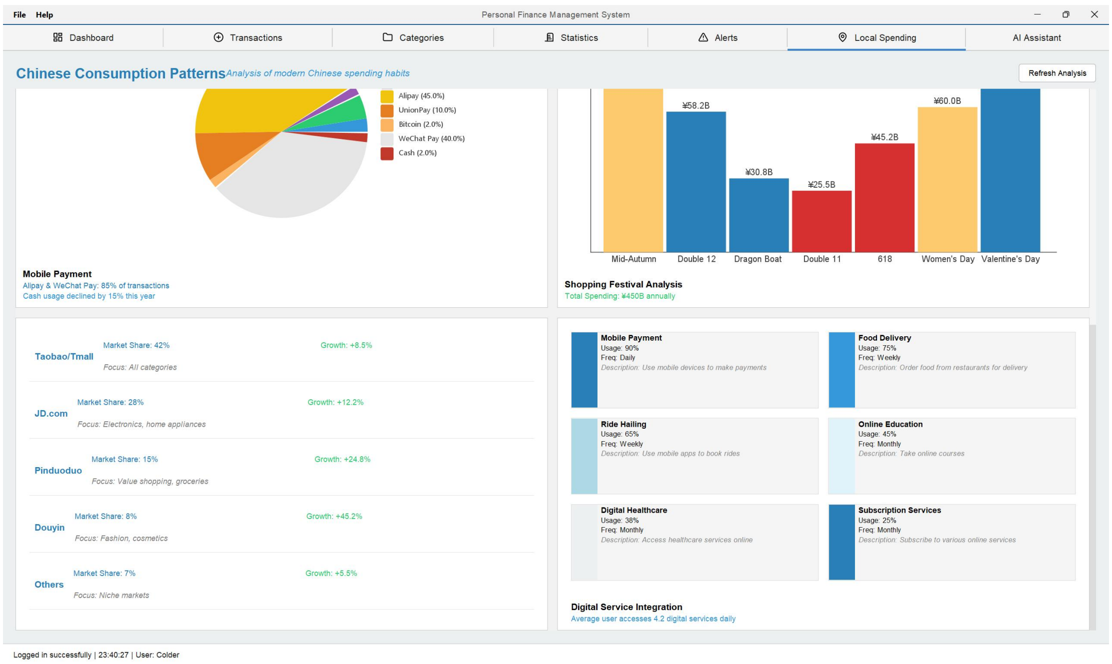
- How to create monthly budget?
- What's best way to save for retirement?
- Should I invest in stocks or funds?
- How much emergency fund should I have?
- How to reduce credit card debt?
- Benefits of high-yield savings account
- How to optimize income tax?
- How to save for children's education?

(6) Localized Consumption Analysis

System provides consumption pattern analysis based on geographic location.

Function Description

1. Regional Consumption Statistics : Analyze consumption habits in different regions
2. Festival Consumption Detection : Automatically identify consumption patterns during holidays
3. Consumption Hotspot Analysis : Identify high-frequency consumption locations and types
4. Regional Comparison : Compare consumption levels in different regions



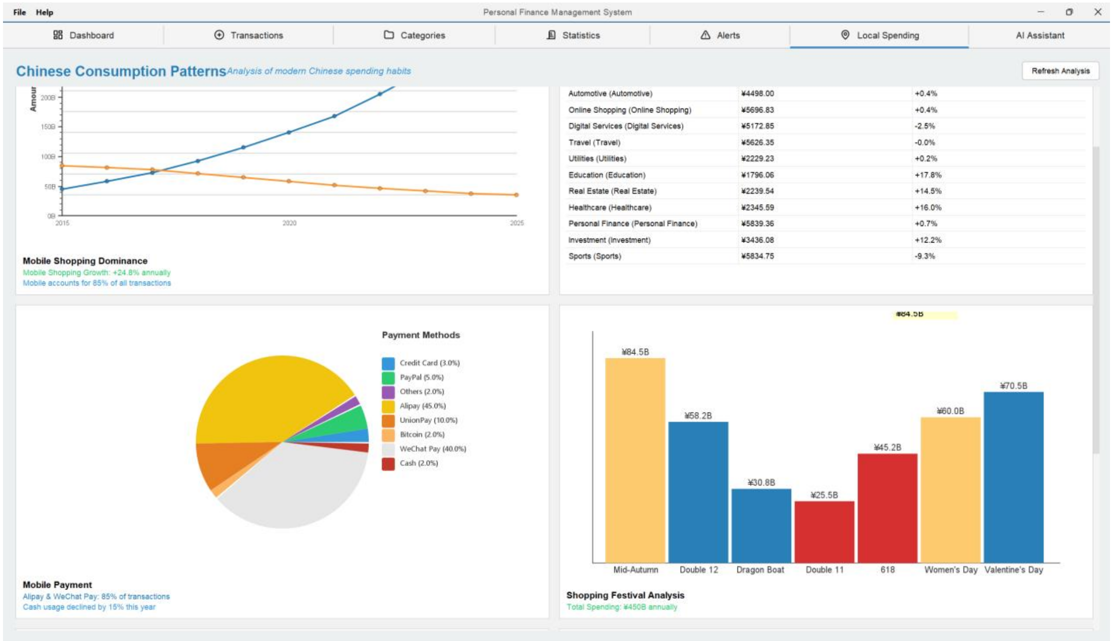
Charts after analysis:

1. Bar Chart : Shows monthly expense comparison

2. Pie Chart : Shows expense category proportion

3. Line Chart : Shows expense trend changes

4. Stack Chart : Shows category expense time changes



(7) Category Management

Category management function helps users organize and manage expense categories.

Preset Categories:

System provides common expense categories:

- Food : Restaurant meals, takeout, groceries

- Transportation : Bus, subway, taxi, gas

- Shopping : Clothing, electronics, daily necessities
- Entertainment : Movies, games, travel
- Healthcare : Doctor visits, medicine, health checkups
- Education : Tuition, training, books
- Housing : Rent, mortgage, property fees
- Utilities : Water, electricity, gas, internet, phone Custom Categories
- Add Category : Create personalized expense categories
- Edit Category : Modify existing category names and descriptions
- Delete Category : Remove unnecessary categories
- Merge Categories : Merge similar categories

6. Data Management

(1) Data Storage

System uses CSV file format to store data, with following advantages:

High Readability : Can be opened directly with Excel

Good Compatibility : Supports cross-platform data migration

Safe and Reliable : Local storage, ensures data privacy

Easy Backup : Small files, convenient for backup and recovery Data

File Structure

```
data
├── transactions.csv    # Transaction records
├── users.csv           # User information
```

```
├──── alert_history.csv    # Alert history
└──── corrections.log      # Data correction log
```

(2) Data Backup Manual Backup

1. Copy Data Folder : Copy entire data folder to safe location
2. Regular Backup : Recommend complete backup weekly
3. Cloud Storage : Can upload backup files to cloud drive Automatic

Backup (Recommended)

Use system's file synchronization function

Set scheduled tasks to automatically copy data files

Configure version control system to manage data changes

(3) Data Import Export Export Function

- Complete Export : Export all transaction records
- Filtered Export : Export by time range or category
- Format Selection : Support CSV, Excel formats Import Function
- CSV Import : Import data from other financial software
- Format Validation : Automatically check data format correctness
- Duplicate Detection : Avoid importing duplicate transaction records

7. Intelligent Classification

AI classifier can automatically recommend categories based on transaction description:

Working Principle:

Keyword Matching : Identify keywords in description

Pattern Learning : Learn user's classification habits

Context Analysis : Consider transaction time and amount

Continuous Optimization : Continuously improve based on user feedback Usage Tips

Detailed Description : Provide detailed transaction description to improve accuracy

Confirm Suggestions : Timely confirm or correct AI's classification suggestions

8. Troubleshooting

(1) Common Issues 1. Program Won't Start

Problem Description : No response after double-clicking run.bat

Solutions :

- Check Java Version: Ensure Java 21 or higher is installed

- Check Environment Variables: Ensure JAVA_HOME is correctly set

- View Error Log: Check console output error messages

- Rebuild: Delete target folder and run again 2. Data Loading Failure

Problem Description : Transaction records can't display or load

Solutions :

- Check Data File: Confirm data/transactions.csv exists

- Verify File Format: Check if CSV file format is correct

- Permission Issue: Ensure program has read/write permissions for data folder

- File Encoding: Ensure CSV file uses UTF-8 encoding 3. AI Function Not Working

Problem Description : AI assistant not responding or error

Solutions :

- Check Network Connection: Ensure network connection is normal
- API Key Configuration: Check if AI service API key is correct
- Firewall Settings: Ensure firewall allows program network access
- Service Status: Check AI service provider's service status 4. Interface

(2) Display Abnormal

Problem Description : Interface layout messy or incomplete

Solutions :

- Adjust Window Size: Manually adjust main window size
- Reset Interface: Restart program to restore default interface settings
- Display Settings: Check system display scaling settings
- Update Graphics Driver: Ensure graphics driver is up to date

9. Security and Privacy

(1) Data Security Password Security

Password Encryption : User passwords stored using strong encryption algorithm

Password Policy : Require password at least 6 characters

Login Protection : Prevent brute force attacks

Session Management : Secure user session management Data

(2) Protection

Local Storage : All data stored locally, not uploaded to cloud

Access Control : Only authorized users can access data

Data Integrity : Regularly verify data file integrity

Backup Encryption : Recommend encrypting backup files

10. Technical Support

User Manual : This manual provides complete usage guidance

API Documentation : Developers can refer to API documentation for extension

FAQ : Check FAQ to solve common problems

Feature Suggestions : Submit new feature requirements and improvement suggestions

Developer Exchange : Participate in open source project development discussions

Language : English

Technical Support : GitHub Issues