

Personal Finance Tracker

An interactive tool for personal finance management

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Overview:

- **Effortless Finance Management:**

- Streamlines personal finance with easy tracking and categorization of daily transactions.

- **Intuitive Interface:**

- User-friendly design accessible to all, facilitating quick and accurate financial data entry.

- **Automated Budgeting:**

- Helps in setting personalized budgets and alerts users about approaching spending limits.

- **Visual Financial Insights:**

- Converts complex data into clear visual charts for better understanding and decision-making.

Key Features:

- **Transaction Logging:**
 - Simplifies recording and categorizing financial transactions for oversight.
- **Budget Management:**
 - Easy setup and tracking of personalized spending limits.
- **Visual Analytics:**
 - Graphical charts to visualize spending patterns and trends.
- **Export Transactions:**
 - Facilitates exporting transaction data for analysis.
- **Intuitive GUI:**
 - User-friendly interface with real-time financial updates.

Modular Design and Key Components

- **Modular Design:** Enhances scalability with each class addressing specific application aspects.
- **FinanceTrackerGUI:** Main user interface for managing transactions and budgets.
- **DatabaseHandler:** Manages database operations, ensuring data accuracy and reliability.
- **Account:** Represents user accounts, overseeing transactions and budget management.
- **Transaction:** Captures key details of financial activities for tracking and analysis.
- **Budget:** Handles budget setting and monitors spending by category.
- **PieChart:** Visualizes financial data with interactive charts for enhanced insights.

Walkthrough of the application GUI

- **GUI Layout:**
 - Organized into sections for specific functions, enhancing usability and navigation.
- **Functional Buttons:**
 - Manage Transactions: For adding transactions with essential details.
 - Manage Budgets: To set and adjust budget limits by category.
 - View Transactions: Lists all transactions in a scrollable view.
 - Export Transactions: Enables exporting data to files.
 - View Charts: Opens charts for financial analysis.
- **Central Transaction Display:**
 - A large, auto-updating text area shows recent transaction and budget details.
- **Total Spending Tracker:**
 - A label at the bottom displays the total amount spent, updated in real time.
- **Ease of Navigation:**
 - User-friendly interface with intuitive controls for efficient financial management.



Finance Tracker

Manage Transactions

Manage Budgets

View Transactions

Export Transactions

View Charts

Total Spent: \$0.00

Transaction Management

- **Transaction Class Functionality:**
 - Captures details of financial transactions, including amount, date, description, and category.
- **Key Attributes:**
 - amount: Monetary value of the transaction.
 - date: Transaction date (using `java.util.Date`).
 - description: Textual description of the transaction.
 - category: Category of expenditure (e.g., groceries, utilities).
- **Adding Transactions:**
 - Users input transaction details, which are used to create a Transaction object.
 - The `addTransaction` method in Account class then records this transaction.
- **Impact on Financial Data:**
 - Every transaction is logged, influencing the account's overall financial data and budget tracking.

Finance Tracker

Manage Transactions

Manage Budgets

View Transactions

Export Transactions

View Charts

Transactions:

```
Transaction{amount=750.0, date=Thu Nov 16 00:00:00 CST 2023, description='December Rent', category='Housing'}  
Transaction{amount=70.0, date=Thu Nov 16 00:00:00 CST 2023, description='Bills', category='Phone/Internet'}  
Transaction{amount=24.0, date=Thu Nov 16 00:00:00 CST 2023, description='Uber', category='Transportation'}  
Transaction{amount=12.0, date=Thu Nov 16 00:00:00 CST 2023, description='CVS', category='Miscellaneous'}  
Transaction{amount=8.0, date=Thu Nov 16 00:00:00 CST 2023, description='AMC', category='Entertainment'}  
Transaction{amount=120.0, date=Thu Nov 16 00:00:00 CST 2023, description='Tax Rebates', category='Savings'}  
Transaction{amount=110.0, date=Thu Nov 16 00:00:00 CST 2023, description='Emergency', category='Emergency'}
```

Total Spent: \$1094.00

Adding a transaction

The screenshot displays a desktop application titled "Finance Tracker" with a dark-themed interface. The main window contains five buttons: "Manage Transactions", "Manage Budgets", "View Transactions", "Export Transactions", and "View Charts". A "Total Spent: \$100.00" label is positioned on the right. Below this, two smaller windows are open. The "Transactions" window is in the foreground, showing input fields for "Amount" (100), "Date" (2023-11-16), "Description" (Whole Foods), and "Category" (Groceries). It includes an "Add Transaction" button and a text area displaying the transaction details: "Transaction{amount=100.0, date=Thu Nov 16 00:00:00 CST 2023, descrip". The "Budget Status" window is visible in the background, listing budget limits for various categories: Housing (\$900.00), Groceries (\$180.00), Transportation (\$200.00), Miscellaneous (\$60.00), Entertainment (\$100.00), Savings (\$300.00), Emergency (\$100.00), and Phone/Internet (\$100.00). It features a small icon of a character with a red nose and a blue button labeled "OK".

Finance Tracker

Manage Transactions Manage Budgets

View Transactions Export Transactions

View Charts

Total Spent: \$100.00

Transactions

Amount: 100

Date: 2023-11-16

Description: Whole Foods

Category: Groceries

Add Transaction

Transactions:

Transaction{amount=100.0, date=Thu Nov 16 00:00:00 CST 2023, descrip

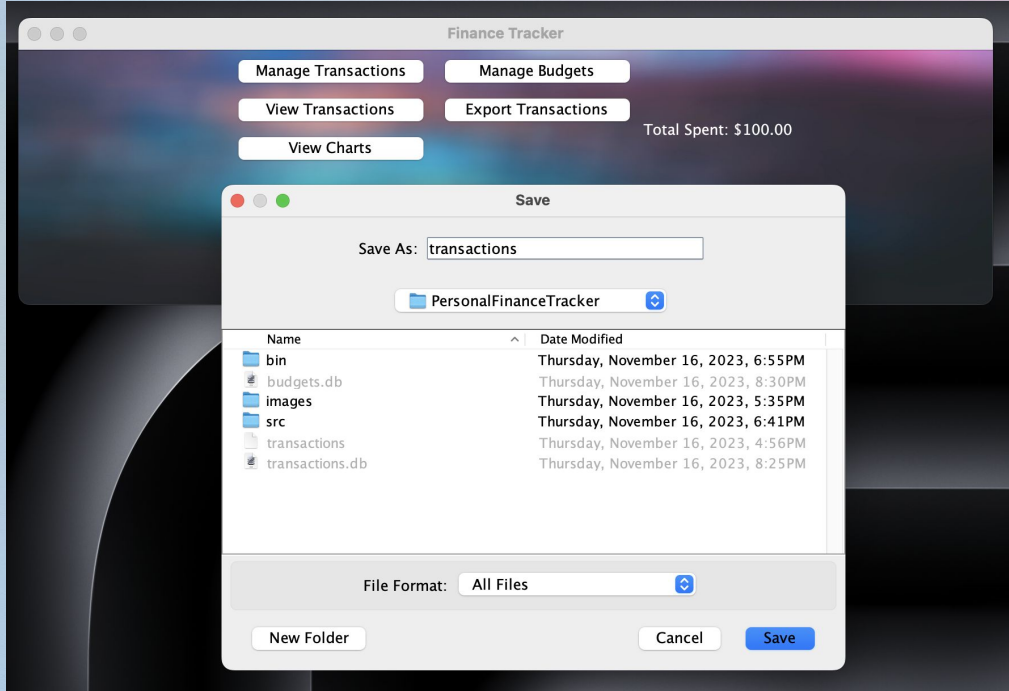
Budget Status

Budgets:

- Category: Housing, Limit: \$900.00
- Category: Groceries, Limit: \$180.00
- Category: Transportation, Limit: \$200.00
- Category: Miscellaneous, Limit: \$60.00
- Category: Entertainment, Limit: \$100.00
- Category: Savings, Limit: \$300.00
- Category: Emergency, Limit: \$100.00
- Category: Phone/Internet, Limit: \$100.00

OK

Exporting Transactions :



Budget Management

- **Budget Class Overview:**

Manages financial limits across categories, enabling users to set and track spending limits.

- **Budget Creation:**

Users set budgets for categories like groceries or entertainment, defining maximum spending limits.

- **Budget Monitoring:**

The app tracks and updates spending against these budgets with each new transaction.

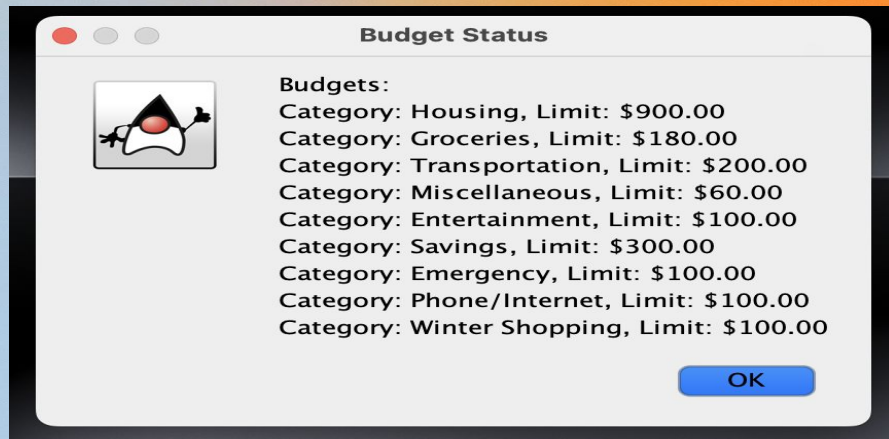
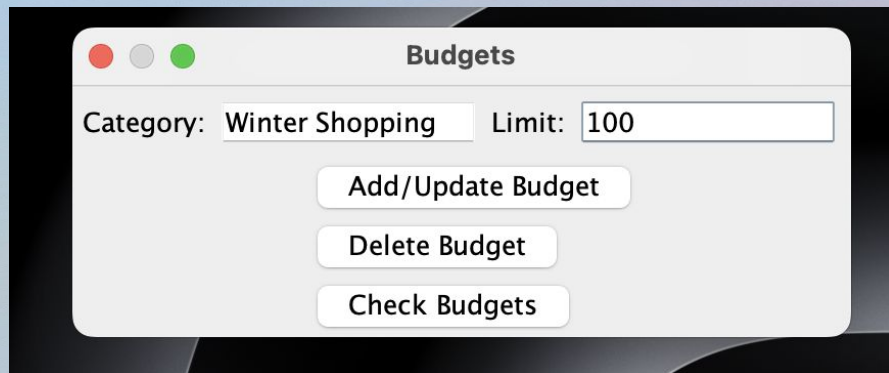
- **Key Attributes:**

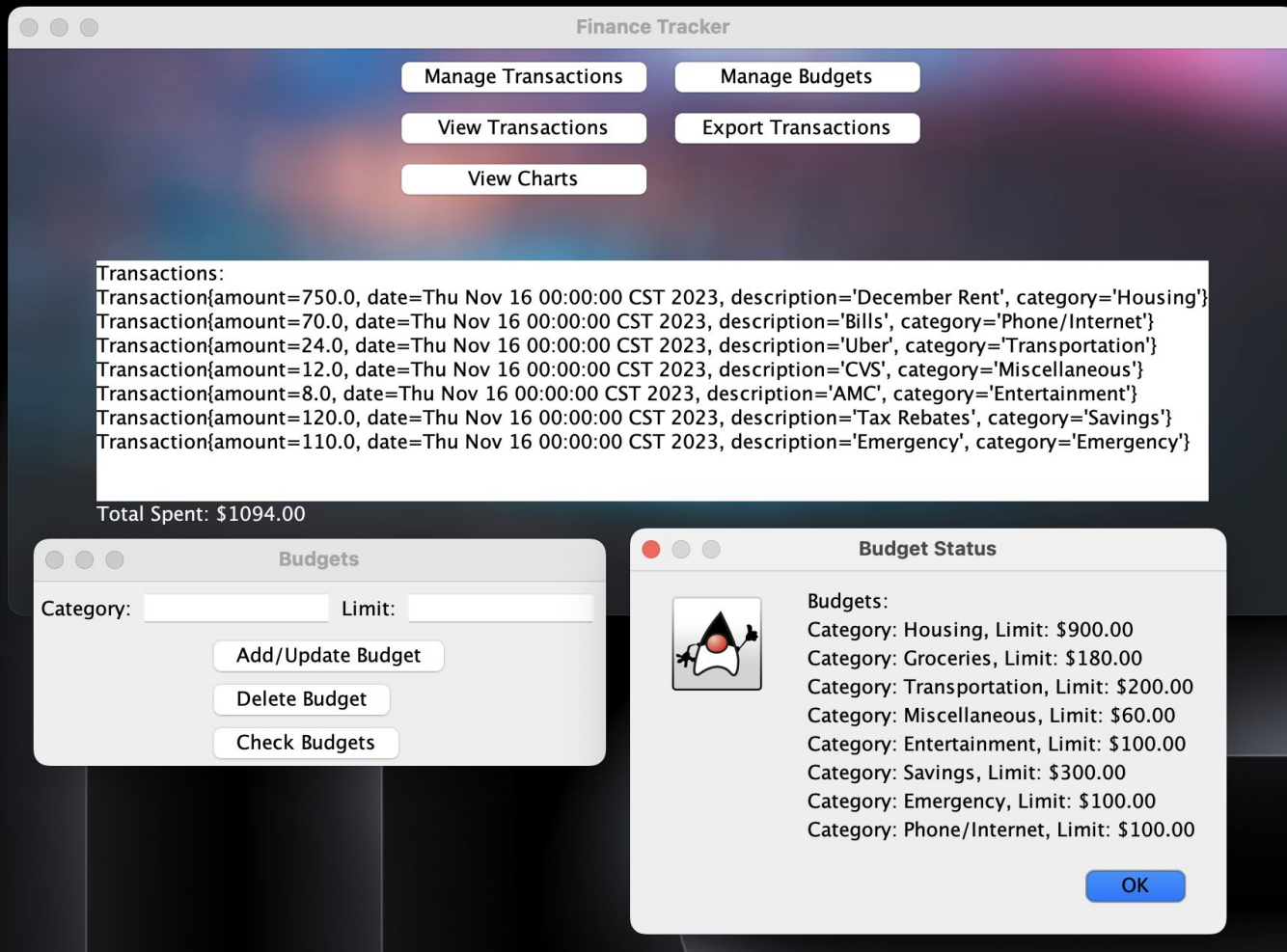
- category: Defines the budget area.
- limit: Sets the maximum allowable spending.
- spent: Tracks current expenditure in the category.

- **Alerts for Overspending:**

- Utilizes isOverLimit to notify users if spending exceeds the budget, aiding in financial discipline.

Setting a budget





Visualizing Finances with PieChart

- **PieChart Class Overview:**

- Visualizes financial data with pie and bar charts, offering a clear view of one's financial health.

- **Functionality:**

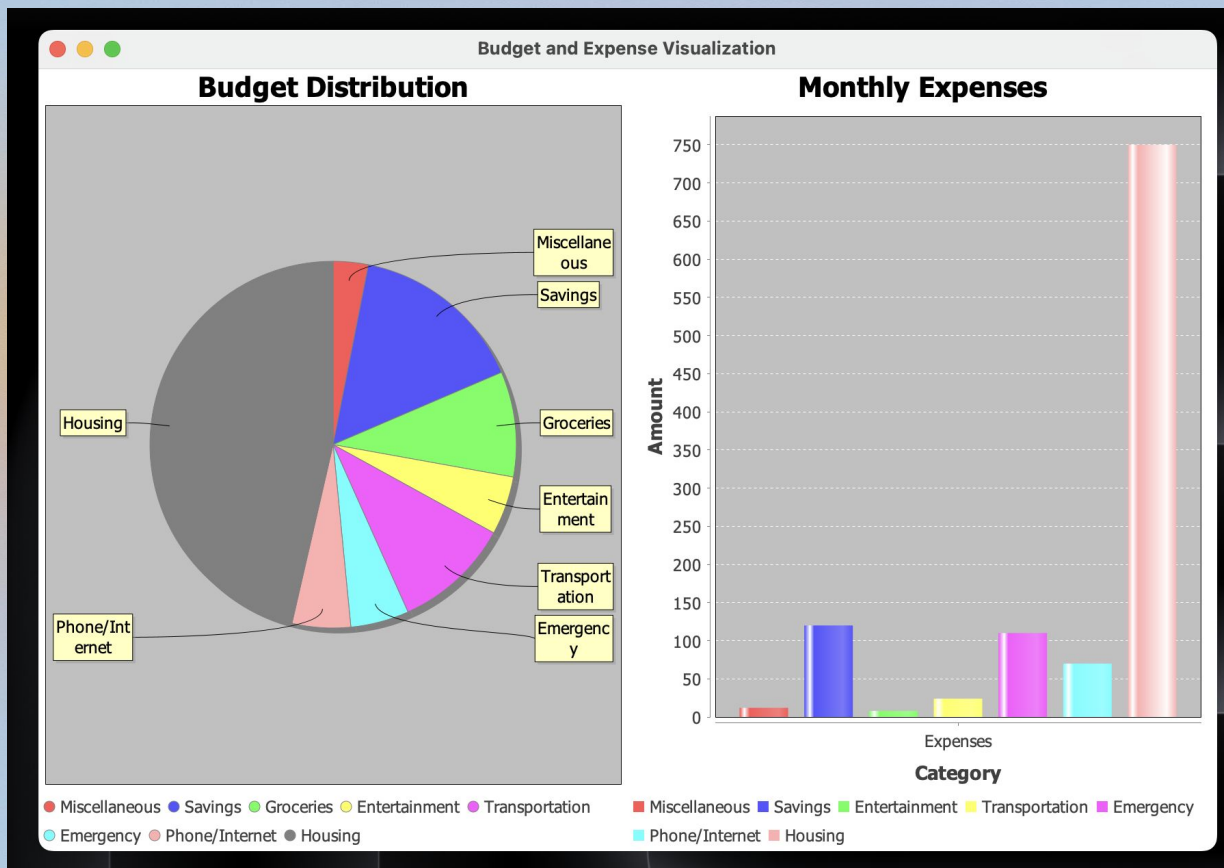
- Collaborates with DatabaseHandler to fetch data, using JFreeChart for creating compelling visualizations. Displays budget allocations and expense categories interactively.

- **Key Visualizations:**

- Budget Distribution: Visualizes how budget is spread across different categories.
- Expense Analysis: Highlights spending in various categories to pinpoint major expenses.

- **Benefits of Visual Data:**

- Simplifies complex financial data into understandable charts.
- Aids in spotting spending patterns for smarter budgeting.
- Provides immediate insights for effective financial management.

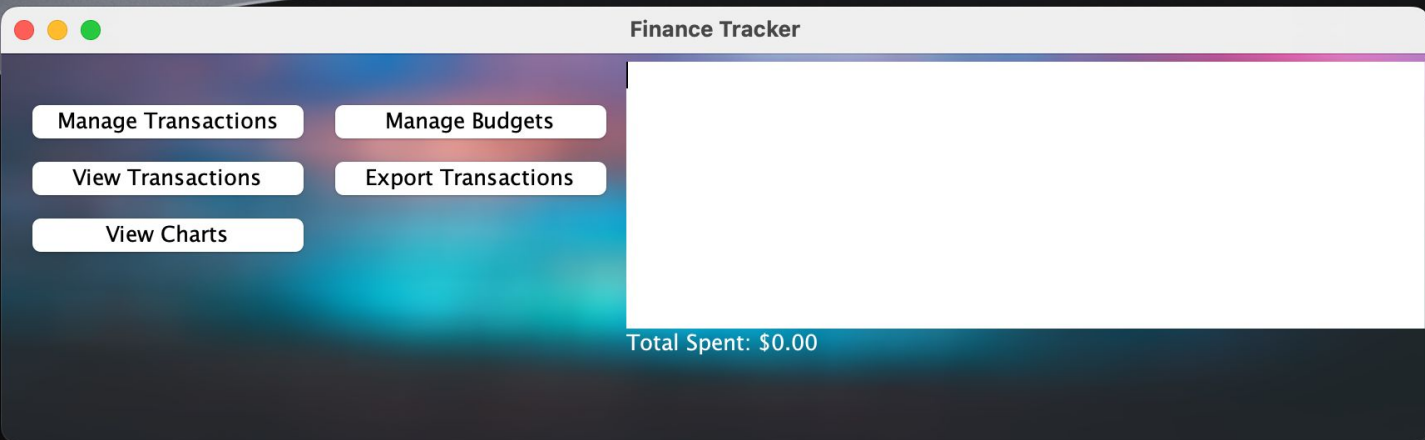


Skeleton Overview of FinanceTrackerGUI

- **FinanceTrackerGUI Class:**
 - The primary class for the user interface.
 - Manages the layout and interactions of the application.
- **BackgroundPanel Inner Class:**
 - Custom JPanel with a background image.
 - Used for setting the background of the main frame.
- **Key GUI Elements:**
 - JFrame frame: Main application window.
 - BackgroundPanel: Displays the background image.
 - JPanel buttonPanel: Contains buttons for various actions.
 - JDialog transactionDialog: Manages transaction inputs.
 - JDialog budgetDialog: Handles budget inputs and adjustments.

Skeleton Overview of FinanceTrackerGUI

- **User Interaction Components:**
 - Text Fields: For inputting amounts, descriptions, categories, and budget limits.
 - Buttons: For managing transactions, budgets, viewing transactions, exporting data, and viewing charts.
 - Date Picker: JXDatePicker datePicker: For selecting transaction dates.
- **Utility and Display Elements:**
 - JTextArea outputArea: Displays transaction and budget information.
 - JLabel totalSpentLabel: Shows total expenditure.
 - SimpleDateFormat dateFormat: Formats date display.
- **Event Handling:**
 - Methods like showTransactionDialog, addTransaction, refreshTransactions, etc., handle user actions.
- **Integration with Backend:**
 - Interact with the database and manage financial data.
- **Initialization and Main Method:**
 - Sets up the UI and initializes the application.



Database Management with DatabaseHandler

- **Purpose of DatabaseHandler :**
 - Manages database connections and operations for transactions and budgets.
 - Utilizes SQLite databases for storing and retrieving data.
- **Key Methods and Their Functionalities:**
 - `connectTransactions` and `connectBudgets`: Establish connections to respective SQLite databases.
 - `initializeDatabase`: Creates necessary tables if they don't exist.
 - `insertTransaction`: Adds a new transaction record.
 - `getAllTransactions`: Retrieves all transaction records.
 - `insertBudget`, `updateBudgetLimit`, `deleteBudget`: Manage budget records.
 - `budgetExists`: Checks if a budget category exists.
 - `getAllBudgets`: Retrieves all budget records.
 - `getBudgetLimit`: Gets the limit of a specific budget.
 - `getMonthlyExpenses`: Calculates total expenses per category.
 - `getBudgetLimits`: Retrieves limits for all budget categories.

Database Management with DatabaseHandler

- **Core Functionalities:**
 - Processes new transactions and updates existing records as per user inputs.
 - Retrieves and displays data for budget management and financial analysis.
 - Supplies financial data to visualization components like PieChart.
- **Integration with FinanceTrackerGUI and Accounts:**
 - **User Interface Communication:**
 - Handles data input/output between the GUI and databases.
 - Example: insertTransaction is called when users add transactions via GUI.
 - **Data Display:**
 - Retrieves and displays data like transactions and budgets in the GUI using methods like getAllTransactions.
 - **User Feedback:**
 - Provides user alerts and confirmations after database operations.

Database Management with DatabaseHandler

- **Data Synchronization:**
 - Keeps in-memory financial data in sync with database changes.
 - Updates databases when transactions or budgets are modified.
- **Budget Management:**
 - Manages budget data storage, retrieval, and updates in the database.
- **Analytical Operations:**
 - Supports reporting, like monthly expense summaries, by fetching and processing data for analysis.

SQL Schema for Transactions

CREATE TABLE IF NOT EXISTS transactions (

id INTEGER PRIMARY KEY,

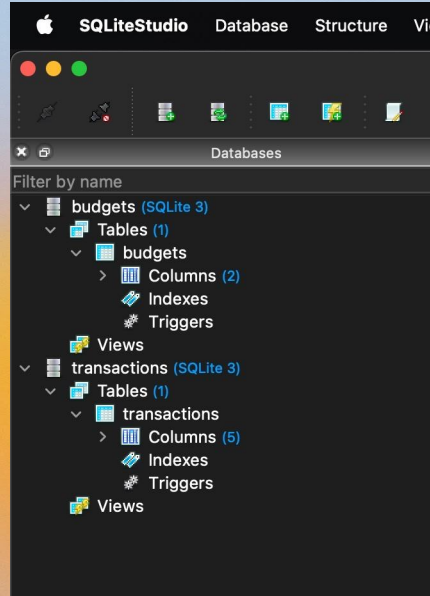
amount REAL NOT NULL,

date TEXT NOT NULL,

description TEXT,

category TEXT NOT NULL

);



SQL Schema for Budgets

CREATE TABLE IF NOT EXISTS budgets (

category TEXT PRIMARY KEY,

"limit" REAL NOT NULL

);

Database Queries :

Transactions Database Operations:

- **Insert a New Transaction:**
 - `INSERT INTO transactions(amount, date, description, category) VALUES()`
- **Retrieve All Transactions:**
 - `SELECT id, amount, date, description, category FROM transactions`
- **Calculate Monthly Expenses by Category:**
 - `SELECT category, SUM(amount) as total FROM transactions GROUP BY category`

Budgets Database Operations:

- **Insert a New Budget:**
 - `INSERT INTO budgets(category, "limit") VALUES()`
- **Retrieve All Budgets:**
 - `SELECT category, "limit" FROM budgets`

Future Enhancements:

- **Alerts and Notifications:**

- Implement customizable alerts for upcoming bills, budget limits, unusual spending, and savings milestones.
- Provide proactive financial advice and reminders to help users stay on top of their finances.

- **Enhanced Report Generation:**

- Develop features for generating detailed financial reports, such as monthly spending summaries, category-wise expenditure analysis, and year-end financial overviews.
- Offer options to export reports in various formats like PDF or HTML for easy sharing and printing.