TEAM MEMBERS:
Uday Krishna N
Saravanan MD
Guru Sai Charan

Personal Finance Tracker

Introduction

The Personal Finance Tracker is a simple yet effective application designed to help individuals manage their financial transactions efficiently. In today's fast-paced world, managing finances is crucial for maintaining financial stability and achieving long-term goals. This project leverages Java and MySQL to create a user-friendly system where users can log, track, and review their financial transactions. The application allows users to add new transactions, categorize them, and view detailed records, making it an essential tool for personal financial management.

The core functionalities include:

Adding financial transactions with details like date, category, description, and amount.
Viewing a complete history of transactions for better financial oversight.
Storing data persistently in a MySQL database, ensuring the information remains accessible and secure.
This project demonstrates the practical implementation of database connectivity in Java, making it a great learning project for beginners and a useful application for users.

Step 1: Set up MySQL Database

```
CREATE DATABASE finance_tracker;
USE finance_tracker;
CREATE TABLE transactions (
    id INT AUTO_INCREMENT PRIMARY KEY,
    date DATE NOT NULL,
    category VARCHAR(50) NOT NULL,
    description VARCHAR(255),
    amount DECIMAL(10, 2) NOT NULL
);
```

Step 2: Set up the Java Project
Install Java Development Kit (JDK): Ensure you have Java installed on your system.

Install MySQL Connector for Java:

Download the MySQL Connector JAR file from MySQL Connector/J.
Add the JAR to your project's build path.

```
src/
  - Main.java
  - DBConnection.java
  - FinanceTracker.java
```

Step 3: Write the Java Code
Step 4: Run the Project

```
javac Main.java
java Main
```

Use the menu to:

Add a transaction.
View all transactions.
Exit the program.

CODE:

```
import javax.swing.*;
import java.awt.event.*;
import java.sql.*;

public class PersonalFinanceTracker extends JFrame {
    private static final String DB_URL =
"jdbc:mysql://localhost:3306/PersonalFinanceTracker";
    private static final String DB_USER = "root"; // Replace with your MySQL username
    private static final String DB_PASSWORD = "password"; // Replace with your MySQL
password

    public static void main(String[] args) {
        new LoginRegister();
    }

    // Database connection helper
    public static Connection getConnection() throws SQLException {
        return DriverManager.getConnection(DB_URL, DB_USER, DB_PASSWORD);
    }

    // Login and Registration Form
    static class LoginRegister extends JFrame {
        private JTextField txtUsername = new JTextField(20);
        private JPasswordField txtPassword = new JPasswordField(20);
        private JButton btnLogin = new JButton("Login");
        private JButton btnRegister = new JButton("Register");

        public LoginRegister() {
            setTitle("Login/Register");
            setSize(300, 150);
            setLayout(new BoxLayout(getContentPane(), BoxLayout.Y_AXIS));

            add(new JLabel("Username:"));
            add(txtUsername);
            add(new JLabel("Password:"));
            add(txtPassword);
            add(btnLogin);
            add(btnRegister);
            btnLogin.addActionListener(e -> login());
            btnRegister.addActionListener(e -> register());

            setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
            setVisible(true);
        }

        private void login() {
            try (Connection conn = getConnection()) {
                String query = "SELECT * FROM Users WHERE username=? AND
password=?";
                PreparedStatement stmt = conn.prepareStatement(query);
                stmt.setString(1, txtUsername.getText());
                stmt.setString(2, new String(txtPassword.getPassword()));
                ResultSet rs = stmt.executeQuery();
                if (rs.next()) {
                    JOptionPane.showMessageDialog(this, "Login successful!");
                    new Dashboard(rs.getInt("user_id"));
                    dispose();
                } else {
                    JOptionPane.showMessageDialog(this, "Invalid username or password.");
                }
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }

        private void register() {
            try (Connection conn = getConnection()) {
                String query = "INSERT INTO Users (username, password) VALUES (?, ?)";
                PreparedStatement stmt = conn.prepareStatement(query);
                stmt.setString(1, txtUsername.getText());
                stmt.setString(2, new String(txtPassword.getPassword()));
                stmt.executeUpdate();
                JOptionPane.showMessageDialog(this, "Registration successful!");
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
    }

    // Main Application Dashboard
    static class Dashboard extends JFrame {
        private int userId;
        public Dashboard(int userId) {
            this.userId = userId;
            setTitle("Dashboard");
            setSize(400, 300);
            setLayout(new BoxLayout(getContentPane(), BoxLayout.Y_AXIS));

            JButton btnTransactions = new JButton("Manage Transactions");
            JButton btnBudget = new JButton("Set Budget");
            JButton btnReports = new JButton("View Reports");

            btnTransactions.addActionListener(e -> new TransactionManager(userId));
            btnBudget.addActionListener(e -> new BudgetManager(userId));
            btnReports.addActionListener(e -> new ViewReport(userId));

            add(btnTransactions);
            add(btnBudget);
            add(btnReports);

            setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
            setVisible(true);
        }
    }

    // Transaction Manager
    static class TransactionManager extends JFrame {
        private JComboBox<String> categoryCombo = new JComboBox<>();
        private JTextField txtAmount = new JTextField(10);
        private JButton btnAdd = new JButton("Add Transaction");

        public TransactionManager(int userId) {
            setTitle("Manage Transactions");
            setSize(300, 200);
            setLayout(new BoxLayout(getContentPane(), BoxLayout.Y_AXIS));

            add(new JLabel("Category:"));
            loadCategories();
            add(categoryCombo);
            add(new JLabel("Amount:"));
            add(txtAmount);
            add(btnAdd);

            btnAdd.addActionListener(e -> addTransaction(userId));
```

```
            setVisible(true);
        }

        private void loadCategories() {
            try (Connection conn = getConnection()) {
                String query = "SELECT category_name FROM Categories";
                PreparedStatement stmt = conn.prepareStatement(query);
                ResultSet rs = stmt.executeQuery();
                while (rs.next()) {
                    categoryCombo.addItem(rs.getString("category_name"));
                }
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }

        private void addTransaction(int userId) {
            try (Connection conn = getConnection()) {
                String query = "INSERT INTO Transactions (user_id, category_id, amount,
transaction_date) VALUES (?, ?, ?, CURDATE())";
                PreparedStatement stmt = conn.prepareStatement(query);
                stmt.setInt(1, userId);
                stmt.setInt(2, categoryCombo.getSelectedIndex() + 1); // Assuming categories are
sequential
                stmt.setDouble(3, Double.parseDouble(txtAmount.getText()));
                stmt.executeUpdate();
                JOptionPane.showMessageDialog(this, "Transaction added!");
                dispose();
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
    }

    // Budget Manager
    static class BudgetManager extends JFrame {
        private JTextField txtMonth = new JTextField(10);
        private JTextField txtYear = new JTextField(10);
        private JTextField txtAmount = new JTextField(10);
        private JButton btnSet = new JButton("Set Budget");

        public BudgetManager(int userId) {
            setTitle("Set Monthly Budget");
            setSize(300, 200);
            setLayout(new BoxLayout(getContentPane(), BoxLayout.Y_AXIS));

            add(new JLabel("Month (1-12):"));
            add(txtMonth);
            add(new JLabel("Year:"));
            add(txtYear);
            add(new JLabel("Amount:"));
            add(txtAmount);
            add(btnSet);

            btnSet.addActionListener(e -> setBudget(userId));

            setVisible(true);
        }

        private void setBudget(int userId) {
            try (Connection conn = getConnection()) {
                String query = "INSERT INTO Budgets (user_id, month, year, amount)
VALUES (?, ?, ?, ?)";
                PreparedStatement stmt = conn.prepareStatement(query);
                stmt.setInt(1, userId);
                stmt.setInt(2, Integer.parseInt(txtMonth.getText()));
                stmt.setInt(3, Integer.parseInt(txtYear.getText()));
                stmt.setDouble(4, Double.parseDouble(txtAmount.getText()));
                stmt.executeUpdate();
                JOptionPane.showMessageDialog(this, "Budget set!");
                dispose();
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
    }

    // View Report
    static class ViewReport extends JFrame {
        public ViewReport(int userId) {
            setTitle("View Report");
            setSize(400, 300);
            setLayout(new BoxLayout(getContentPane(), BoxLayout.Y_AXIS));

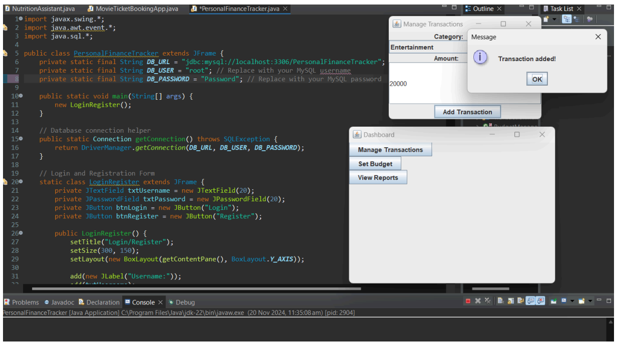
            JTextArea reportArea = new JTextArea();
            reportArea.setEditable(false);
            JScrollPane scrollPane = new JScrollPane(reportArea);
            add(scrollPane);
            try (Connection conn = getConnection()) {
                String query = "SELECT C.category_name, T.amount, T.transaction_date " +
                               "FROM Transactions T JOIN Categories C ON T.category_id =
C.category_id " +
                               "WHERE T.user_id = ? ORDER BY T.transaction_date DESC";
                PreparedStatement stmt = conn.prepareStatement(query);
                stmt.setInt(1, userId);
                ResultSet rs = stmt.executeQuery();

                StringBuilder report = new StringBuilder("Date\tCategory\tAmount\n");
                while (rs.next()) {
                    report.append(rs.getDate("transaction_date")).append("\t")
                          .append(rs.getString("category_name")).append("\t")
                          .append(rs.getDouble("amount")).append("\n");
                }
                reportArea.setText(report.toString());
            } catch (SQLException e) {
                e.printStackTrace();
            }

            setVisible(true);
        }
    }
}
-- Insert default categories
INSERT INTO Categories (category_name)
VALUES ('Salary'), ('Rent'), ('Groceries'), ('Entertainment'), ('Utilities'), ('Other');
-- Add a sample user
INSERT INTO Users (username, password) VALUES ('testuser', 'testpassword');

-- Add sample transactions
INSERT INTO Transactions (user_id, category_id, amount, transaction_date)
VALUES
(1, 1, 5000.00, '2024-11-01'), -- Income from Salary
(1, 2, 1500.00, '2024-11-05'), -- Rent
(1, 3, 200.00, '2024-11-07');  -- Groceries

-- Add a sample budget
INSERT INTO Budgets (user_id, month, year, amount)
VALUES (1, 11, 2024, 7000.00);
```



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            add(new JLabel("Username:"));
```

Manage Transactions

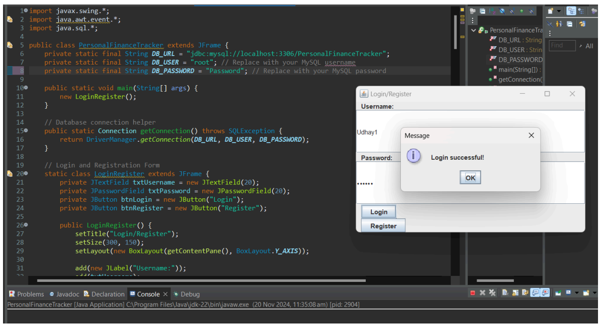
Category: Entertainment

Amount: 20000

Message

Transaction added!

PersonalFinanceTracker [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (20 Nov 2024, 11:35:08 am) [pid: 2904]



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```

Login/Register

Username: Udhay1

Password: ••••••

Message

Login successful!

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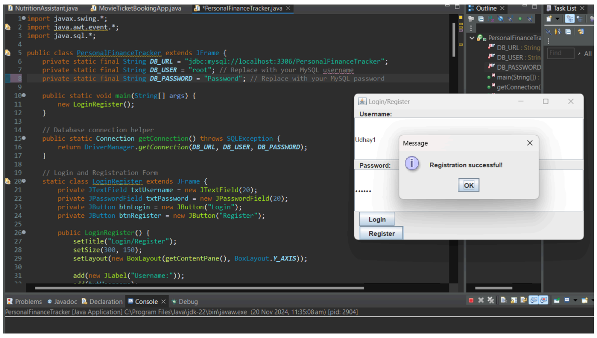

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            setLayout(new BoxLayout(getContentPane(), BoxLayout.Y_AXIS));

            add(new JLabel("Username:"));
```

Login/Register

Username: Udhay1

Password: ••••••

Message

Registration successful!

PersonalFinanceTracker [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (20 Nov 2024, 11:35:08 am) [pid: 2904]

Conclusion

The Personal Finance Tracker is a simple yet powerful tool that emphasizes the importance of financial planning and tracking. By integrating Java for application logic and MySQL for data persistence, the project provides a seamless way to manage and analyze financial transactions. It showcases the practical use of software development principles, including modular design, database interaction, and user input handling.

The project serves as a stepping stone for more complex financial applications, demonstrating how technology can assist in personal financial management. With its basic yet essential features, this tracker can help users maintain control over their spending habits and make informed financial decisions.