import java.util.ArrayList;

import java.util.HashMap;

import java.util.Scanner;

class User {

String username;

String password;

User(String username, String password) {

this.username = username;

this.password = password;

}

}

class Expense {

String date;

String category;

double amount;

Expense(String date, String category, double amount) {

this.date = date;

this.category = category;

this.amount = amount;

}

@Override

public String toString() {

return "Date: " + date + ", Category: " + category + ", Amount: $" + amount;

}

}

public class ExpenseTracker {

private static HashMap<String, User> users = new HashMap<>();

private static ArrayList<Expense> expenses = new ArrayList<>();

private static Scanner scanner = new Scanner(System.in);

public static void main(String[] args) {

while (true) {

System.out.println("1. Register");

System.out.println("2. Login");

System.out.println("3. Add Expense");

System.out.println("4. List Expenses");

System.out.println("5. Summarize Expenses by Category");

System.out.println("6. Exit");

System.out.print("Choose an option: ");

int choice = scanner.nextInt();

scanner.nextLine(); // Consume newline

switch (choice) {

case 1:

registerUser();

break;

case 2:

loginUser();

break;

case 3:

addExpense();

break;

case 4:

listExpenses();

break;

case 5:

summarizeExpensesByCategory();

break;

case 6:

System.exit(0);

break;

default:

System.out.println("Invalid choice, please try again.");

}

}

}

private static void registerUser() {

System.out.print("Enter username: ");

String username = scanner.nextLine();

System.out.print("Enter password: ");

String password = scanner.nextLine();

users.put(username, new User(username, password));

System.out.println("User registered successfully.");

}

private static void loginUser() {

System.out.print("Enter username: ");

String username = scanner.nextLine();

System.out.print("Enter password: ");

String password = scanner.nextLine();

if (users.containsKey(username) && users.get(username).password.equals(password)) {

System.out.println("Login successful.");

} else {

System.out.println("Invalid username or password.");

}

}

private static void addExpense() {

System.out.print("Enter date (YYYY-MM-DD): ");

String date = scanner.nextLine();

System.out.print("Enter category: ");

String category = scanner.nextLine();

System.out.print("Enter amount: ");

double amount = scanner.nextDouble();

scanner.nextLine(); // Consume newline

expenses.add(new Expense(date, category, amount));

System.out.println("Expense added successfully.");

}

private static void listExpenses() {

System.out.println("Listing all expenses:");

for (Expense expense : expenses) {

System.out.println(expense);

}

}

private static void summarizeExpensesByCategory() {

HashMap<String, Double> categorySum = new HashMap<>();

for (Expense expense : expenses) {

categorySum.put(expense.category, categorySum.getOrDefault(expense.category, 0.0) + expense.amount);

}

System.out.println("Category-wise summation:");

for (String category : categorySum.keySet()) {

System.out.println("Category: " + category + ", Total Amount: $" + categorySum.get(category));

}

}

}