Test Question 5(24.7.24)

SET 1

1. Develop a simple banking system that allows users to create accounts, deposit money, withdraw money, and check balance. Implement methods for account creation, deposit, withdrawal, and balance inquiry.

Methods:

- createAccount(String accountHolderName, double initialDeposit)
- depositMoney(String accountNumber, double amount)
- withdrawMoney(String accountNumber, double amount)
- checkBalance(String accountNumber)

PROGRAM :-

Main.java

```java
import java.util.HashMap;
public class BankingSystem {
    private HashMap<String, Double> accounts = new HashMap<>();
    public void createAccount(String accountHolderName, double initialDeposit) {
        String accountNumber = generateAccountNumber();
        accounts.put(accountNumber, initialDeposit);
        System.out.println("Account created successfully. Account Number: " +
            accountNumber);
    }
    public void depositMoney(String accountNumber, double amount) {
        if (accounts.containsKey(accountNumber)) {
            double currentBalance = accounts.get(accountNumber);
            accounts.put(accountNumber, currentBalance + amount);
            System.out.println("Deposit successful. New Balance: " + accounts.get
                (accountNumber));
        } else {
            System.out.println("Account not found.");
        }
    }
    public void withdrawMoney(String accountNumber, double amount) {
        if (accounts.containsKey(accountNumber)) {
            double currentBalance = accounts.get(accountNumber);
            if (currentBalance >= amount) {
                accounts.put(accountNumber, currentBalance - amount);
                System.out.println("Withdrawal successful. New Balance: " + accounts.get
                    (accountNumber));
            } else {
                System.out.println("Insufficient funds.");
            }
        } else {
            System.out.println("Account not found.");
        }
```

Share Run

Output

```
java -cp /tmp/w6zCrvSkDC/BankingSystem
Account created successfully. Account Number: ACC347
Account not found.
Account not found.
Account not found.

=== Code Execution Successful ===
```

Main.java

```java
        if (accounts.containsKey(accountNumber)) {
            double currentBalance = accounts.get(accountNumber);
            if (currentBalance >= amount) {
                accounts.put(accountNumber, currentBalance - amount);
                System.out.println("Withdrawal successful. New Balance: " + accounts.get
                    (accountNumber));
            } else {
                System.out.println("Insufficient funds.");
            }
        } else {
            System.out.println("Account not found.");
        }
    }
    public void checkBalance(String accountNumber) {
        if (accounts.containsKey(accountNumber)) {
            System.out.println("Current Balance: " + accounts.get(accountNumber));
        } else {
            System.out.println("Account not found.");
        }
    }
    private String generateAccountNumber() {
        return "ACC" + (int) (Math.random() * 1000);
    }
    public static void main(String[] args) {
        BankingSystem bankingSystem = new BankingSystem();
        bankingSystem.createAccount("John Doe", 1000);
        bankingSystem.depositMoney("ACC123", 500);
        bankingSystem.withdrawMoney("ACC123", 200);
        bankingSystem.checkBalance("ACC123");
    }
}
```

Output

```
java -cp /tmp/w6zCrvSkDC/BankingSystem
Account created successfully. Account Number: ACC347
Account not found.
Account not found.
Account not found.

=== Code Execution Successful ===
```

2. Create an expense tracker that allows users to add expenses, categorize them, and view a summary report. Implement methods to add expenses, categorize expenses, and generate reports.

Methods:

- addExpense(String description, double amount, String category)
- viewExpensesByCategory(String category)
- generateExpenseReport()

PROGRAM :-

Main.java

```java
import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;
import java.util.Map;
public class ExpenseTracker {
    private List<Expense> expenses;
    public ExpenseTracker() {
        this.expenses = new ArrayList<>();
    }
    public void addExpense(String description, double amount, String category) {
        expenses.add(new Expense(description, amount, category));
    }
    public void viewExpensesByCategory(String category) {
        for (Expense expense : expenses) {
            if (expense.getCategory().equals(category)) {
                System.out.println(expense);
            }
        }
    }
    public void generateExpenseReport() {
        Map<String, Double> categoryTotal = new HashMap<>();
        for (Expense expense : expenses) {
            String category = expense.getCategory();
            double amount = expense.getAmount();

            categoryTotal.put(category, categoryTotal.getOrDefault(category, 0.0) +
                amount);
        }
        for (Map.Entry<String, Double> entry : categoryTotal.entrySet()) {
            System.out.println("Category: " + entry.getKey() + ", Total Amount: " +
                entry.getValue());
        }
```

Output

```
java -cp /tmp/1nJNWoYVy2/ExpenseTracker
Category: Utilities, Total Amount: 60.0
Category: Food, Total Amount: 80.0
Description: Groceries, Amount: 50.0, Category: Food
Description: Dinner, Amount: 30.0, Category: Food

=== Code Execution Successful ===
```

Main.java

Share Run

```java
    }
    public static void main(String[] args) {
        ExpenseTracker tracker = new ExpenseTracker();
        tracker.addExpense("Groceries", 50.0, "Food");
        tracker.addExpense("Internet Bill", 60.0, "Utilities");
        tracker.addExpense("Dinner", 30.0, "Food");
        tracker.generateExpenseReport();
        tracker.viewExpensesByCategory("Food");
    }
}
class Expense {
    private String description;
    private double amount;
    private String category;
    public Expense(String description, double amount, String category) {
        this.description = description;
        this.amount = amount;
        this.category = category;
    }
    public String getDescription() {
        return description;
    }
    public double getAmount() {
        return amount;
    }
    public String getCategory() {
        return category;
    }
    public String toString() {
        return "Description: "+description+",Amount: "+amount+",Category:"+category;
    }
}
```

Output

```
java -cp /tmp/1nJNWoYVy2/ExpenseTracker
Category: Utilities, Total Amount: 60.0
Category: Food, Total Amount: 80.0
Description: Groceries, Amount: 50.0, Category: Food
Description: Dinner, Amount: 30.0, Category: Food

=== Code Execution Successful ===
```