Experiment 5

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Subject Name: Project Based Learning in Java **Subject Code: 22CSH-359**

1. Aim:

To write a program to collect and store all the cards to assist the users in finding all the cards in a given symbol.

2. Objective:

To generate a Java program that simulates a card game by taking user input for card symbols and numbers, organizing them into a sorted map by symbol, and then displaying each symbol's cards along with their count and number sum. It demonstrates object-oriented programming with the Card class and uses data structures like TreeMap and ArrayList to manage and process card data, providing a summary of card statistics grouped by their symbols.

3. Implementation/Code:

```
import java.util.*;
class Card {
    String symbol;
    int number;

    Card(String symbol, int number) {
        this.symbol = symbol;
        this.number = number;
    }
}
public class CardGame {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        Map<String, List<Card>> cardMap = new TreeMap<>();

        System.out.print("Enter Number of Cards: ");
        int n = sc.nextInt();
        sc.nextLine();

        for (int i = 1; i <= n; i++) {
            System.out.println("Enter card " + i + ": ");
            String symbol = sc.nextLine();
            int number = sc.nextInt();
```

```
                sc.nextLine();
                cardMap.putIfAbsent(symbol, new ArrayList<>());
                cardMap.get(symbol).add(new Card(symbol, number));
            }
            System.out.println("\nDistinct Symbols are: ");
            for (String symbol : cardMap.keySet()) {
                System.out.print(symbol + " ");
            }
            System.out.println("\n");
            for (String symbol : cardMap.keySet()) {
                List<Card> cards = cardMap.get(symbol);
                int sum = 0;
                System.out.println("Cards in " + symbol + " Symbol");
                for (Card card : cards) {
                    System.out.println(card.symbol + " " + card.number);
                    sum += card.number;
                }
                System.out.println("Number of cards : " + cards.size());
                System.out.println("Sum of Numbers : " + sum);
                System.out.println();
            }
            sc.close();
        }
    }
```

4. Output

```
PS D:\CODING\JAVA\java self\Selfstufdy>  & 'C:\Users\victus\AppData\Local\Pro
deDetailsInExceptionMessages' '-cp' 'D:\CODING\JAVA\java self\Selfstufdy\bin'
Enter Number of Cards: 5
Enter card 1:
c
12
Enter card 2:
d
4
Enter card 3:
h
11
Enter card 4:
s
1
Enter card 5:
c
1

Distinct Symbols are:
c d h s
```

5. Learning Outcome

i. Grasped how to structure data using custom classes (Card) and efficiently organize it with a TreeMap for grouped access.

ii. Learned to process user input through Scanner and then utilize that data to populate and manipulate complex data structures.

iii. Understood how to iterate through nested data structures (maps and lists) to perform calculations and present organized output.