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Experiment 2.1

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Subject Name: Java Lab **Date of Performance:22-02-24**

Aim: Write a program to collect and store all the cards to assist the users in finding all the cards in a given symbol.

1. Objective: This cards game consists of N number of cards. Get N number of cards details from the user and store the values in Card object with the attributes symbol and number. Store all the cards in a map with symbol as its key and list of cards as its value. Map is used here to easily group all the cards based on their symbol. Once all the details are captured print all the distinct symbols in alphabetical order from the Map. For each symbol print all the card details, number of cards and their sum respectively.

2. Algo. /Approach and output:

```
import java.util.*;
class Card {
    String symbol;
    int number;
    public Card(String symbol, int number) {
        this.symbol = symbol;
        this.number = number;
    }
    @Override
    public String toString() {
```

```
        return symbol + " " + number;
    }
}
public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter Number of Cards:");
        int n = scanner.nextInt();
        Map<String, List<Card>> cardMap = new TreeMap<>();
        for (int i = 0; i < n; i++) {
            System.out.println("Enter card " + (i + 1) + ":");
            String symbol = scanner.next();
            int number = scanner.nextInt();
            Card card = new Card(symbol, number);
            cardMap.computeIfAbsent(symbol, k -> new ArrayList<>()).add(card);
        }
        System.out.println("Distinct Symbols are :");
        for (String symbol : cardMap.keySet()) {
            System.out.print(symbol + " ");
        }
        System.out.println();

        for (Map.Entry<String, List<Card>> entry : cardMap.entrySet()) {
            System.out.println("Cards in " + entry.getKey() + " Symbol");
            int sum = 0;
            for (Card card : entry.getValue()) {
                System.out.println(card);
                sum += card.number;
```

```
            System.out.println("Number of cards : " + entry.getValue().size());
            System.out.println("Sum of Numbers : " + sum);
        }
    }
```

Output:

```
C:\Users\Sujal\.jdks\openjdk-21.0.2\bin\
Enter Number of Cards:
3
Enter card 1:
s
12
Enter card 2:
s
13
Enter card 3:
s
14
Distinct Symbols are :
s
Cards in s Symbol
s 12
s 13
s 14
Number of cards : 3
Sum of Numbers : 39

Process finished with exit code 0
```

Learning Outcomes: -

- Demonstrates efficient use of data structures like Map for grouping data.
- Illustrates dynamic input handling and processing.
- Highlights importance of iterating over collections for data manipulation.
- Shows sorting behavior with TreeMap for alphabetical order.
- Encourages encapsulation and object-oriented design principles with Card class.