Experiment: 2.1

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Subject Name: Project-Based Learning in Java
Subject Code: 21CSH-319

- **Aim:** Create a program to collect and store all the cards to assist the users in finding all the cards in a given symbol using the Collection interface.

- **Objective:**
  The objective of this program is to collect and store all the cards to assist the users in finding all the cards in a given symbol.

- **Code:**

```
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;
   }
} class exp4 {     public static void main(String[]
args) {        Scanner scanner = new
Scanner(System.in);


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


      Map<String, List<Card>> cards = collectCards(n);
```

```
        System.out.println("\nDistinct Symbols are:");
        List<String> sortedSymbols = new ArrayList<>(cards.keySet());
sortedSymbols.sort(null);
        for (String symbol : sortedSymbols) {
            System.out.println(symbol);
        }
        for (Map.Entry<String, List<Card>> entry : cards.entrySet()) {
            String symbol = entry.getKey();
List<Card> cardList = entry.getValue();
printSymbolCards(symbol, cardList);
        }

        scanner.close();
    }

    private static Map<String, List<Card>> collectCards(int n) {
        Map<String, List<Card>> cards = new
HashMap<>();         Scanner scanner = new
Scanner(System.in);         for (int i = 0; i < n; i++) {
            System.out.printf("Enter card %d:\n", i + 1);
String symbol = scanner.next();             int number
= scanner.nextInt();             Card card = new
Card(symbol, number);

            if (!cards.containsKey(symbol)) {4
cards.put(symbol, new ArrayList<>());
            }
            cards.get(symbol).add(card);
        }
scanner.close();
return cards;
    }
    private static void printSymbolCards(String symbol, List<Card> cards) {
System.out.println("\nCards in " + symbol + " Symbol");         for (Card
card : cards) {
            System.out.println(card);
        }
        int totalCards = cards.size();
        int sumOfNumbers = cards.stream().mapToInt(c -> c.number).sum();
```

```
        System.out.println("Number of cards: " + totalCards);
        System.out.println("Sum of Numbers: " + sumOfNumbers);
    } }
```

- **Result:**

```
Enter Number of Cards: 4
Enter card 1:
a
10
Enter card 2:
b
6
Enter card 3:
c
18
Enter card 4:
d
7

Distinct Symbols are:
a
b
c
d

Cards in a Symbol
a 10
Number of cards: 1
Sum of Numbers: 10

Cards in b Symbol
b 6
Number of cards: 1
Sum of Numbers: 6

Cards in c Symbol
c 18
Number of cards: 1
Sum of Numbers: 18

Cards in d Symbol
d 7
Number of cards: 1
Sum of Numbers: 7
```

- **Learning Outcomes:**

1. Developed proficiency in collecting and storing data using Java collections such as HashMap and Array List.
2. Understood the implementation of user input handling and data processing in Java.
3. Learned to manipulate and display data in a structured format, enhancing problem solving and programming skills in Java.