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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 10_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 14

Section 1 : MCQ

1. Which method retrieves the lowest key in a TreeMap?

Answer

firstKey()

Status : Correct ***Marks : 1/1***

2. Which of the following is true about HashMap?

Answer

It is not synchronized

Status : Correct ***Marks : 1/1***

3. What happens if two keys have the same hash code in a HashMap?

Answer

A linked list is used to store values with the same hash

Status : Correct ***Marks : 1/1***

4. Which method removes all elements from a Set?

Answer

clear()

Status : Correct ***Marks : 1/1***

5. What will be the output of the following code?

```
import java.util.*;
class Main {
    public static void main(String[] args) {
        HashMap<String, String> map = new HashMap<>();
        map.put("A", "Apple");
        map.put("B", "Banana");
        map.put("C", "Cherry");
        map.replace("B", "Blueberry");
        System.out.println(map);
    }
}
```

Answer

{A=Apple, B=Blueberry, C=Cherry}

Status : Correct ***Marks : 1/1***

6. What happens when you add duplicate elements to a HashSet?

Answer

The duplicate is ignored

Status : Correct ***Marks : 1/1***

7. What will happen if you add elements in descending order in a TreeSet?

Answer

They are sorted in ascending order

Status : Correct ***Marks : 1/1***

8. What will be the output of the following code?

```
import java.util.*;
class Main {
    public static void main(String[] args) {
        HashMap<String, Integer> map = new HashMap<>();
        map.put("A", 1);
        map.put("B", 2);
        map.put("C", 3);
        System.out.println(map.containsKey("B"));
    }
}
```

Answer

true

Status : Correct ***Marks : 1/1***

9. What is the time complexity of retrieving an element from a HashSet?

Answer

O(1)

Status : Correct ***Marks : 1/1***

10. What will be the output of the following code?

```
import java.util.*;
```

```
class Main {
    public static void main(String[] args) {
        HashMap<String, Integer> map = new HashMap<>();
        map.put("X", 10);
        map.put("Y", 20);
        map.put("Z", 30);
        map.remove("Y");
        System.out.println(map);
    }
}
```

Answer

{X=10, Y=20, Z=30}

Status : Wrong ***Marks : 0/1***

11. Which of the following is true about TreeMap?

Answer

It maintains natural ordering

Status : Correct ***Marks : 1/1***

12. How does HashSet check for duplicate elements?

Answer

Using equals() and hashCode()

Status : Correct ***Marks : 1/1***

13. Which statement is true about HashSet and TreeSet?

Answer

TreeSet provides sorted elements

Status : Correct ***Marks : 1/1***

14. What will happen if you add a null element to a TreeSet?

Answer

An exception occurs

Status : Correct ***Marks : 1/1***

15. Which of the following allows null keys in Java?

Answer

HashMap

Status : Correct ***Marks : 1/1***

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 10_Q1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : COD

1. Problem Statement

A city traffic management system needs to track vehicles entering a toll booth. Each vehicle is uniquely identified by its registration number. The system should allow adding vehicles to a record, ensuring that no duplicate registration numbers exist. The vehicles should be stored in a HashSet, which does not guarantee any specific order.

Your task is to implement a program using a HashSet that allows adding vehicle details and displaying the records.

Input Format

The first line of input contains an integer N - the number of vehicles.

The next N lines contain details of each vehicle in the format: "RegNumber

OwnerName VehicleType"

1. RegNumber (String) - A unique registration number (Alphanumeric).
2. OwnerName (String) - The name of the vehicle owner.
3. VehicleType (String, Car, Bike, or Truck) - The type of vehicle.

If a vehicle with the same registration number is already present, ignore the duplicate entry.

Output Format

The output prints the unique vehicle records in any order (since HashSet does not maintain order).

Output format: "RegNumber OwnerName VehicleType"

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
KA01AB1234 John Car
MH02CD5678 Alice Bike
DL03EF9012 Bob Truck
TN04GH3456 Mike Car
KA01AB1234 John Car
Output: TN04GH3456 Mike Car
KA01AB1234 John Car
MH02CD5678 Alice Bike
DL03EF9012 Bob Truck

Answer

```
// You are using Java
import java.util.HashSet;
import java.util.*;
public class Main{
   public static void main(String[] args){
      Scanner get=new Scanner(System.in);
      int a=get.nextInt();
      get.nextLine();
      String n;
```

```
        HashSet<String> na=new HashSet<String>();
        for(int i=0;i<a;i++){
            n=get.nextLine();
            na.add(n);
        }
    for(String i:na){
        System.out.println(i);
    }
    }
}
```

Status : Correct **Marks : 10/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 10_Q2

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : COD

1. Problem Statement

John is organizing a fruit festival, and the quantities of various fruits are stored in a HashMap where fruit names are keys and quantities are values.

Help him develop a program to find the total quantity of fruits for the festival by summing up the values in the HashMap.

Input Format

The input consists of fruit quantities in the format 'fruitName:quantity', where fruitName is the name of the fruit(a string), and quantity is a double value representing the quantity.

The input is terminated by entering "done".

Output Format

The output prints a double value, representing the sum of values in the HashMap, rounded off to two decimal places.

If the value is not numeric, print "Invalid input".

If any special characters other than ':' are entered, print "Invalid format".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Banana:15.2
Orange:56.3
Mango:47.3
done

Output: 118.80

Answer

```
// You are using Java
import java.util.*;
import java.text.DecimalFormat;

public class Main {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      Map<String, Double> map = new HashMap<>();

      while (true) {
         String input = sc.nextLine().trim();

         if (input.equals("done")) break;

         // Invalid special characters check (allow only letters and colon and digits
and dot)
         if (!input.matches("[A-Za-z]+:[0-9.]+")) {
            // Check if it's invalid input OR invalid format
            if (!input.contains(":")) {
               System.out.println("Invalid format");
            } else {
               // Contains colon but right side is not numeric
```

```
            String[] parts = input.split(":");
            if (parts.length != 2 || !parts[0].matches("[A-Za-z]+") || !
parts[1].matches("[0-9.]+")) {
                System.out.println("Invalid input");             } else {
                System.out.println("Invalid input");
            }
        }
        return;
    }

    String[] data = input.split(":");
    String fruit = data[0];
    String qtyStr = data[1];

    // Validate numeric
    double qty;
    try {
        qty = Double.parseDouble(qtyStr);
    } catch (Exception e) {
        System.out.println("Invalid input");
        return;
    }

    map.put(fruit, qty);
}

double total = 0;
for (double q : map.values()) {
    total += q;
}

DecimalFormat df = new DecimalFormat("0.00");
System.out.println(df.format(total));
  }
}
```

Status : Correct **Marks : 10/10**

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 10_Q3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : COD

1. Problem Statement

Priya is analyzing encrypted messages in a research project. She wants to analyze the frequency of each character in a given paragraph. The characters should be stored in a TreeMap so that the output is sorted in ascending order of characters automatically.

You are required to build a Java program that:

Uses a TreeMap<Character, Integer> to count how many times each character appears in the message.Ignores spaces and considers only alphabets (case-sensitive).Outputs the frequencies of characters in sorted order.

You must use a TreeMap in the class named MessageAnalyzer.

Input Format

The first line of input contains an integer n, the number of lines in the message.

The next n lines each contain a string (the encrypted message line).

Output Format

The first line of output prints: "Character Frequency:"

Then print each character and its frequency in the format: "<character>: <count>"

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 2
Hello World
Java
Output: Character Frequency:
H: 1
J: 1
W: 1
a: 2
d: 1
e: 1
l: 3
o: 2
r: 1
v: 1

Answer

```
// You are using Java
import java.util.*;

class MessageAnalyzer {

    private TreeMap<Character, Integer> freqMap = new TreeMap<>();

    public void analyzeMessage(List<String> lines) {
        for (String line : lines) {
            for (char ch : line.toCharArray()) {
                if (Character.isLetter(ch)) {
```

```
                freqMap.put(ch, freqMap.getOrDefault(ch, 0) + 1);
            }
        }
    }
    printFrequencies();
  }

  private void printFrequencies() {
    System.out.println("Character Frequency:");
    for (Map.Entry<Character, Integer> entry : freqMap.entrySet()) {
      System.out.println(entry.getKey() + ": " + entry.getValue());
    }
  }
}

public class Main {
  public static void main(String[] args) {

    Scanner sc = new Scanner(System.in);
    int n = Integer.parseInt(sc.nextLine());

    List<String> lines = new ArrayList<>();
    for (int i = 0; i < n; i++) {
      lines.add(sc.nextLine());
    }

    MessageAnalyzer analyzer = new MessageAnalyzer();
    analyzer.analyzeMessage(lines);

    sc.close();
  }
}
```

Status : Correct ***Marks : 10/10***

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 10_Q4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : COD

1. Problem Statement

In a ticket reservation system, you store the available seat numbers in a TreeSet. Users input their desired seat number, and the program checks whether the chosen seat is available.

Using a TreeSet ensures quick and efficient verification of seat availability, ensuring a smooth and organized ticket booking process.

Input Format

The first line of input contains a single integer n, representing the number of available seats.

The second line contains n space-separated integers, representing the available seat numbers.

The third line contains an integer m, representing the seat number that needs to be searched.

Output Format

The output displays "[m] is present!" if the given seat is available. Otherwise, it displays "[m] is not present!"

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 4
2 4 5 6
5
Output: 5 is present!

Answer

```
// You are using Java
import java.util.*;
public class Main{
   public static void main(String[] args){
      Scanner get= new Scanner(System.in);
      Set<Integer> set=new HashSet<Integer>();
      int a;
      int n=get.nextInt();
      for(int i=0;i<n;i++){
         a=get.nextInt();
         set.add(a);
      }
      int ch=get.nextInt();
      if(set.contains(ch)){
         System.out.println(ch+" is present!");
      }
      else{
         System.out.println(ch+" is not present!");
      }
   }
}
```

Status : Correct ***Marks : 10/10***

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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 10_PAH

Attempt : 1
Total Mark : 30
Marks Obtained : 30

Section 1 : Coding

1. Problem Statement

A university maintains a list of student records and wants to store them in a sorted manner based on their GPA. If two students have the same GPA, they should be further sorted by their name in lexicographical order. Implement a program that uses a TreeSet to store student records and ensures unique student IDs.

Input Format

The first line contains an integer N - the number of students.

The next N lines contain details of each student in the format: "StudentID Name GPA"

- StudentID (Integer) - A unique identifier.
- Name (String) - The student's name (can contain spaces).

- GPA (Double) - The Grade Point Average.

Output Format

The output prints the list of students in ascending order of GPA.

If two students have the same GPA, sort them by name.

Print details in the format: "StudentID Name GPA" in the output, GPA is rounded to two decimal places.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
101 John 8.5
102 Alice 9.1
103 Bob 8.5
104 Zoe 7.3
105 Charlie 9.1

Output: 104 Zoe 7.30
103 Bob 8.50
101 John 8.50
102 Alice 9.10
105 Charlie 9.10

Answer

```
import java.util.*;

class Student implements Comparable<Student> {
    int id;
    String name;
    double gpa;

    public Student(int id, String name, double gpa) {
        this.id = id;
        this.name = name;
        this.gpa = gpa;
    }
```

```
    @Override
    public int compareTo(Student other) {
        // Sort by GPA ascending
        int gpaCompare = Double.compare(this.gpa, other.gpa);
        if (gpaCompare != 0) return gpaCompare;

        // If GPA same, sort by name
        int nameCompare = this.name.compareTo(other.name);
        if (nameCompare != 0) return nameCompare;

        // If name same, sort by ID
        return Integer.compare(this.id, other.id);
    }
}

public class Main {
    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);
        int n = Integer.parseInt(sc.nextLine());

        TreeSet<Student> set = new TreeSet<>();

        for (int i = 0; i < n; i++) {
            String line = sc.nextLine();
            String[] parts = line.trim().split(" ");

            int id = Integer.parseInt(parts[0]);
            double gpa = Double.parseDouble(parts[parts.length - 1]);

            // Extract full name (may contain spaces)
            StringBuilder sb = new StringBuilder();
            for (int j = 1; j < parts.length - 1; j++) {
                sb.append(parts[j]);
                if (j < parts.length - 2) sb.append(" ");
            }
            String name = sb.toString();

            set.add(new Student(id, name, gpa));
        }

        for (Student s : set) {
```

```
            System.out.printf("%d %s %.2f", s.id, s.name, s.gpa);
            if (s != set.last()) System.out.println();
        }
    }
}
```

Status : Correct ***Marks : 10/10***

2. Problem Statement

Sarah is working on a spam detection system that analyzes incoming messages for unique patterns. Spammers often use repetitive character sequences, making it important to identify the first non-repeating character in a message.

Given a string, Sarah needs to determine the first character that appears only once. If all characters repeat, the system should return -1.

She decides to use a HashMap to efficiently track character frequencies and find the solution.

Input Format

The first line contains an integer N representing , the length of the string.

The second line contains a string of N lowercase English letters (a-z).

Output Format

The output prints a character representing the first non-repeating character. If none exist, print -1.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 10
abacabadac

Output: d

Answer

```
// You are using Java
import java.util.*;

public class Main {
   public static void main(String[] args) {

      Scanner sc = new Scanner(System.in);
      int n = sc.nextInt();
      sc.nextLine();
      String s = sc.nextLine();

      HashMap<Character, Integer> map = new HashMap<>();

      for (int i = 0; i < n; i++) {
         char ch = s.charAt(i);
         map.put(ch, map.getOrDefault(ch, 0) + 1);
      }

      for (int i = 0; i < n; i++) {
         char ch = s.charAt(i);
         if (map.get(ch) == 1) {
            System.out.print(ch);
            return;
         }
      }

      System.out.print("-1");
   }
}
```

Status : Correct ***Marks : 10/10***

3. Problem Statement

Riya is building a calendar event scheduler where each event is stored in chronological order using a TreeMap. The key represents the event time in 24-hour format (HH:MM), and the value is the event description.

She wants the system to:

Automatically sort events by time.Avoid duplicate time entries — if a duplicate time is entered, ignore the new entry.Print all scheduled events in order.

Implement this logic using a class named EventManager.

Input Format

The first line of the input contains an integer n, representing the number of events.

The next n lines each contain a string in the format: "HH:MM Description"

(Example: 09:00 TeamMeeting).

Output Format

The first line of the output prints "Scheduled Events:"

The next k lines print each event in the format: "HH:MM - Description"

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
09:00 TeamMeeting
13:30 LunchBreak
11:00 ProjectUpdate
09:00 Standup
15:00 ClientCall
Output: Scheduled Events:
09:00 - TeamMeeting
11:00 - ProjectUpdate
13:30 - LunchBreak
15:00 - ClientCall

Answer

// You are using Java

```
import java.util.*;

class EventManager {
    TreeMap<String, String> events = new TreeMap<>();

    public void addEvent(String time, String desc) {
        if (!events.containsKey(time)) {
            events.put(time, desc);
        }
    }

    public void printEvents() {
        System.out.println("Scheduled Events:");
        for (Map.Entry<String, String> e : events.entrySet()) {
            System.out.println(e.getKey() + " - " + e.getValue());
        }
    }
}

public class Main {
    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        sc.nextLine();

        EventManager em = new EventManager();

        for (int i = 0; i < n; i++) {
            String line = sc.nextLine();
            String[] parts = line.split(" ");
            String time = parts[0];
            String desc = parts[1];
            em.addEvent(time, desc);
        }

        em.printEvents();
    }
}
```

Status : Correct **Marks : 10/10**

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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 10_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : COD

1. Problem Statement

Bob wants to develop a score-tracking application for a gaming tournament. Each player's score is stored in a HashMap with the player's name as the key and the score as the value.

Write a program to assist Bob that takes user input to enter player scores, calculates the maximum score from the HashMap, and prints the player with the highest score.

Input Format

The input consists of strings representing player details in the format "playerName:score".

The input is terminated by entering "done".

Output Format

The output displays a string, representing the player's name who scored the maximum.

If the value is not numeric, print "Invalid input".

If any special characters other than ':' are given, print "Invalid format".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: Alice:15
Bob:56
done
Output: Bob

Answer

```
import java.util.*;

// You are using Java


class ScoreTracker {

    HashMap<String, Integer> scoreMap = new HashMap<>();

    public boolean processInput(String input) {


        for (char c : input.toCharArray()) {
            if (!Character.isLetterOrDigit(c) && c != ':') {
                return printFormatError();
            }
        }

        // Must contain exactly one ':'
        if (!input.contains(":")) {
            return printFormatError();
        }
```

```
        String[] parts = input.split(":");
        if (parts.length != 2) {
            return printFormatError();
        }

        String name = parts[0];
        String scoreStr = parts[1];


        int score;
        try {
            score = Integer.parseInt(scoreStr);
        } catch (Exception e) {
            System.out.println("Invalid input");
            return false;
        }

        scoreMap.put(name, score);
        return true;
    }

    private boolean printFormatError() {
        System.out.println("Invalid format");
        return false;
    }

    public String findTopPlayer() {
        String best = "";
        int maxScore = -1;

        for (Map.Entry<String, Integer> e : scoreMap.entrySet()) {
            if (e.getValue() > maxScore) {
                maxScore = e.getValue();
                best = e.getKey();
            }
        }
        return best;
    }
}
public class Main {
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);
        ScoreTracker tracker = new ScoreTracker();
        boolean validInput = true;

        while (true) {
            String input = scanner.nextLine();

            if (input.toLowerCase().equals("done")) {
                break;
            }

            if (!tracker.processInput(input)) {
                validInput = false;
                break;
            }
        }

        if (validInput && !tracker.scoreMap.isEmpty()) {
            System.out.println(tracker.findTopPlayer());
        }

        scanner.close();
    }
}
```

Status : Correct **Marks : 10/10**

2. Problem Statement

A linguist named Meera is classifying a list of words based on their first character. She wants to store words grouped by their starting letter using a TreeMap so that the groups appear in sorted order of characters (i.e., 'a' to 'z'). For each letter, all words starting with that letter should be stored in the order they appear.

Implement the logic inside a class named WordClassifier using the TreeMap<Character, List<String>> collection.

Input Format

The first line of the input contains an integer n, representing the number of words.

The next n lines each contain a word.

Output Format

The first line of the output prints: "Grouped Words by Starting Letter:"

The next lines print each character key and its list of words in the format:

"letter: word1 word2 word3...

..."

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
dog
deer
cat
cow
camel
Output: Grouped Words by Starting Letter:
c: cat cow camel
d: dog deer

Answer

```
import java.util.*;

// You are using Java
 class WordClassifier {

    private TreeMap<Character, List<String>> map = new TreeMap<>();

    public void classifyWords(List<String> words) {

        for (String w : words) {
            char ch = w.charAt(0);

            map.putIfAbsent(ch, new ArrayList<>());
```

```
            map.get(ch).add(w);
        }

        System.out.println("Grouped Words by Starting Letter:");
        for (Map.Entry<Character, List<String>> e : map.entrySet()) {
            System.out.print(e.getKey() + ": ");
            for (String word : e.getValue()) {
                System.out.print(word + " ");
            }
            System.out.println();
        }
    }
}

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = Integer.parseInt(sc.nextLine());

        List<String> words = new ArrayList<>();
        for (int i = 0; i < n; i++) {
            words.add(sc.nextLine());
        }

        WordClassifier classifier = new WordClassifier();
        classifier.classifyWords(words);
    }
}
```

Status : Correct ***Marks : 10/10***

3. Problem Statement

Tony is an e-learning platform administrator, he oversees the user ratings for various online courses offered in the platform.

To enhance user experience, you should assist him in utilizing a HashMap to store course ratings given by learners. Regularly, he analyzes this data to identify the highest and lowest-rated courses, enabling targeted improvements and ensuring the quality of the educational content. This process assists in maintaining a competitive and engaging online learning

environment for the users.

Input Format

The input consists of a string representing the course name followed by a double value representing the course's rating, in separate lines.

The input is terminated by entering "done".

Output Format

The first line of output prints the string "Highest Rated Course: " followed by the highest-rated course.

The second line prints the string "Lowest Rated Course: " followed by the lowest-rated courses.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: DSA
4.0
OOPS
4.2
C
3.2
done
Output: Highest Rated Course: OOPS
Lowest Rated Course: C

Answer

```
import java.util.HashMap;
import java.util.Map;
import java.util.Scanner;

// You are using Java
class CourseAnalyzer {
    //type your code here
    public Map<String, String>
identifyHighestAndLowestRatedCourses(Map<String, Double> courseRatings) {
```

```
        String highestCourse = null;
        String lowestCourse = null;

        double highest = Double.NEGATIVE_INFINITY;
        double lowest = Double.POSITIVE_INFINITY;

        for (Map.Entry<String, Double> entry : courseRatings.entrySet()) {
            String course = entry.getKey();
            double rating = entry.getValue();

            if (rating > highest) {
                highest = rating;
                highestCourse = course;
            }

            if (rating < lowest) {
                lowest = rating;
                lowestCourse = course;
            }
        }

        Map<String, String> result = new HashMap<>();
        result.put("highest", highestCourse);
        result.put("lowest", lowestCourse);

        return result;
    }
}
public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        Map<String, Double> courseRatings = new HashMap<>();

        while (true) {
            String courseName = scanner.nextLine();
            if (courseName.equalsIgnoreCase("done")) {
                break;
            }
            double rating = Double.parseDouble(scanner.nextLine().trim());
            courseRatings.put(courseName, rating);
        }
```

```
        CourseAnalyzer analyzer = new CourseAnalyzer();
        Map<String, String> result =
analyzer.identifyHighestAndLowestRatedCourses(courseRatings);

        System.out.printf("Highest Rated Course: %s\n", result.get("highest"));
        System.out.printf("Lowest Rated Course: %s", result.get("lowest"));

        scanner.close();
    }
}
```

Status : Correct **Marks : 10/10**

4. Problem Statement

Aryan is developing a voting system for a college election. Each vote is recorded as an entry in an array, where every student's vote is represented by a candidate's ID. Since it's a majority-rule election, the winner is the candidate who receives more than n/2 votes, where n is the total number of votes cast.

To quickly determine the winner, Aryan decides to use a HashMap to count the occurrences of each vote and identify the candidate who has received more than half of the total votes.

Example

Input

7

2 2 1 2 2 2 3

Output

2

Explanation

The votes are: 2, 2, 1, 2, 2, 3, 2

Count of each candidate:

2 appears 5 times1 appears once3 appears once

The majority element is the one that appears more than N/2 times. Since 7/2 = 3.5, a number must appear at least 4 times to be the majority.

The number 2 appears 5 times, which is greater than 3.5, so the output is 2.

Input Format

The first line contains an integer N representing the number of votes cast.

The second line contains N space-separated integers representing the votes, where each integer corresponds to a candidate.

Output Format

The output prints an integer representing the majority element (the candidate who received more than N/2 votes).

If no such candidate exists, print -1.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 7
2 2 1 2 2 2 3
Output: 2

Answer

```
import java.util.HashMap;
import java.util.Scanner;

// You are using Java
class MajorityElementFinder {
   //type your code here
    public static int findMajorityElement(int[] arr) {
       HashMap<Integer, Integer> countMap = new HashMap<>();
       int n = arr.length;

       for (int num : arr) {
          countMap.put(num, countMap.getOrDefault(num, 0) + 1);
```

```
            if (countMap.get(num) > n / 2) {
                return num;
            }
        }

        return -1; // No majority element
    }
}

class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int N = scanner.nextInt();
        int[] arr = new int[N];

        for (int i = 0; i < N; i++) {
            arr[i] = scanner.nextInt();
        }

        int result = MajorityElementFinder.findMajorityElement(arr);
        System.out.println(result);

        scanner.close();
    }
}
```

Status : Correct **Marks : 10/10**