Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

REC_2028_OOPS using Java_Week 3_MCQ

Attempt : 1
Total Mark : 15
Marks Obtained : 15

Section 1 : MCQ

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

```
class Sample {
    public static void main(String[] args) {
        int[] a = {1, 2, 3};
        int product = 1;
        for (int i = 0; i < a.length; i++) {
            product *= a[i];
        }
        System.out.println(product);
    }
}
```

Answer

6

Status : Correct *Marks : 1/1*

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

```
class M {
   public static void main(String[] args) {
      int[][] arr = {
         {1, 2},
         {3, 4},
         {5, 6}
      };

      for (int i = 0; i < arr.length; i++) {
         System.out.print(arr[i][0] + " ");
      }
   }
}
```

Answer

1 3 5

Status : Correct *Marks : 1/1*

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

```
class Q {
   public static void main(String[] args) {
      int[][] a = {
         {1, 2},
         {3, 4}
      };
      for (int i = 0; i < a.length; i++) {
         for (int j = 0; j < a[0].length; j++) {
            System.out.print(a[i][j] + " ");
         }
      }
   }
}
```

Answer

1 2 3 4

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

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

```
class Q {
   public static void main(String[] args) {
      int[] nums = {4, 2, 9, 5};
      int max = nums[0];
      for (int i = 1; i < nums.length; i++) {
         if (nums[i] > max)
            max = nums[i];
      }
      System.out.println(max);
   }
}
```

Answer

9

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

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

```
class Q {
   public static void main(String[] args) {
      int[] a = {1, 2, 3, 4};
      for (int i = 0; i < a.length / 2; i++) {
         int temp = a[i];
         a[i] = a[a.length - 1 - i];
         a[a.length - 1 - i] = temp;
      }
      System.out.println(a[0]);
   }
}
```

Answer

4

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

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

```
class Q {
   public static void main(String[] args) {
      int[] nums = {3, 6, 7, 2, 8};
      int sum = 0;
      for (int i = 0; i < nums.length; i++) {
         if (nums[i] % 2 == 0)
            sum += nums[i];
      }
      System.out.println(sum);
   }
}
```

Answer

16

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

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

```
class Q {
   public static void main(String[] args) {
      int[][] a = {
         {1, 2},
         {3, 4}
      };
      int sum = 0;
      for (int i = 0; i < a.length; i++)
         for (int j = 0; j < a[0].length; j++)
            sum += a[i][j];
      System.out.println(sum);
   }
}
```

Answer

10

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

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

```
class Sample {
   public static void main(String[] args) {
      int[][] matrix = {
         {1, 2, 3},
         {4, 5, 6}
      };
      System.out.println(matrix[1][2]);
   }
}
```

Answer

6

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

9. What will be the output of the given code?

```
public class Main {
   public static void main(String[] args) {
      int[] arr = {1, 2, 3, 4, 5};
      int n = arr.length;
      int temp = arr[0];

      for (int i = 0; i < n - 1; i++) {
         arr[i] = arr[i + 1];
      }
      arr[n - 1] = temp;

      for (int num : arr) {
         System.out.print(num + " ");
      }
```

```
    }
}
```

Answer

2 3 4 5 1

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

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

```
class Q {
    public static void main(String[] args) {
        int[] a = {1, 2, 1, 3, 1, 4};
        int count = 0;
        for (int i = 0; i < a.length; i++) {
            if (a[i] == 1) count++;
        }
        System.out.println(count);
    }
}
```

Answer

3

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

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

```
class Q {
    public static void main(String[] args) {
        int[] a = {1, 2, 3, 4};
        for (int i = 0; i < a.length; i++) {
            if (a[i] % 2 == 0)
                a[i] = 0;
        }
        System.out.println(a[1] + " " + a[3]);
    }
}
```

Answer

0 0

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

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

```
class ReverseArray {
   public static void main(String[] args) {
      int[] a = {1, 2, 3, 4};
      for (int i = 0; i < a.length / 2; i++) {
         int temp = a[i];
         a[i] = a[a.length - 1 - i];
         a[a.length - 1 - i] = temp;
      }
      for (int i : a)
         System.out.print(i + " ");
   }
}
```

Answer

4 3 2 1

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

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

```
class Q {
   public static void main(String[] args) {
      int[][] arr = {
         {5, 6, 7},
         {8, 9, 10}
      };
      System.out.println(arr[0][2]);
   }
}
```

Answer

7

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

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

```
class Sample {
   public static void main(String[] args) {
      int[][] data = {
         {1, 2},
         {3, 4}
      };
      int sum = 0;

      for (int[] row : data) {
         for (int val : row) {
            sum += val;
         }
      }

      System.out.println("Sum = " + sum);
   }
}
```

Answer

Sum = 10

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

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

```
public class Test {
   public static void main(String[] args) {
      int[] x = {4, 8, 12};
      int result = x[0] * x[2];
      System.out.println(result);
   }
}
```

Answer

48

Status : Correct *Marks : 1/1*

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Rosh is intrigued by numerical patterns. Today, she stumbled upon a puzzle while working with arrays. She wants to compute the sum of the third-largest and second-smallest elements from a list of integers. She seeks your help to implement a program that solves this for her efficiently.

Input Format

The first line of input is an integer N, representing the size of the array.

The second line of input consists of N space-separated integers, representing the elements of the array.

Output Format

The output displays a single integer representing the sum of the third-largest and second-smallest elements in the array.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 10
10 20 30 40 50 60 70 80 90 100
Output: 100

Answer

```
import java.util.*;

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

        // Read array size
        int n = sc.nextInt();

        // Check constraint
        if (n < 3 || n > 50) {
            System.out.println("Invalid array size");
            return;
        }

        int[] arr = new int[n];

        // Read elements
        for (int i = 0; i < n; i++) {
            arr[i] = sc.nextInt();
            if (arr[i] < 1 || arr[i] > 100) {
                System.out.println("Invalid element in array");
                return;
            }
        }

        // Use TreeSet to remove duplicates and sort the elements
        TreeSet<Integer> sortedSet = new TreeSet<>();
        for (int num : arr) {
            sortedSet.add(num);
```

```
        }

        // Convert TreeSet to List for index-based access
        List<Integer> sortedList = new ArrayList<>(sortedSet);

        // Get second-smallest and third-largest from the unique sorted list
        int secondSmallest, thirdLargest;

        if (sortedList.size() < 3) {
            System.out.println("Not enough unique elements");
            return;
        }

        secondSmallest = sortedList.get(1);
        thirdLargest = sortedList.get(sortedList.size() - 3);

        int result = secondSmallest + thirdLargest;
        System.out.println(result);
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q2

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Monica is interested in finding a treasure but the key to opening is to get the sum of the main diagonal elements and secondary diagonal elements.

Write a program to help Monica find the diagonal sum of a square 2D array.

Note: The main diagonal of the array consists of the elements traversing from the top-left corner to the bottom-right corner. The secondary diagonal includes elements from the top-right corner to the bottom-left corner.

Input Format

The first line of input consists of an integer N, representing the number of rows and columns.

The following N lines consist of N space-separated integers, representing the 2D array elements.

Output Format

The first line of output prints "Sum of the main diagonal: " followed by an integer, representing the sum of the main diagonal.

The second line prints "Sum of the secondary diagonal: " followed by an integer, representing the sum of the secondary diagonal.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 3
1 2 3
4 5 6
7 8 9

Output: Sum of the main diagonal: 15
Sum of the secondary diagonal: 15

Answer

```
import java.util.*;

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

        // Read size of matrix (NxN)
        int n = sc.nextInt();

        // Check constraint (ensure n > 0)
        if (n <= 0) {
            System.out.println("Matrix size must be greater than 0.");
            return;
        }

        int[][] matrix = new int[n][n];

        // Read matrix elements
```

```
        for (int i = 0; i < n; i++) {
            for (int j = 0; j < n; j++) {
                matrix[i][j] = sc.nextInt();
            }
        }

        int mainDiagonalSum = 0;
        int secondaryDiagonalSum = 0;

        // Calculate both diagonals
        for (int i = 0; i < n; i++) {
            mainDiagonalSum += matrix[i][i]; // (i,i) for main diagonal
            secondaryDiagonalSum += matrix[i][n - 1 - i]; // (i, n-1-i) for secondary
diagonal
        }

        // Output in the exact required format
        System.out.println("Sum of the main diagonal: " + mainDiagonalSum);
        System.out.println("Sum of the secondary diagonal: " +
secondaryDiagonalSum);
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q3

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

You are developing a warehouse management system for a shipping company. The system uses an integer array to represent the weights of packages in a specific order. To verify that the weight capacity is not exceeded, the program needs to calculate the sum of the weights of the first and last packages in the list.

Task:

Write a code to calculate the sum of the weights of the first and last packages in the list. The program should take an integer array as input and return the total weight of the first and last packages.

Input Format

The first line of the input is an integer N representing the size of the array.

The second line of the input is N space-separated integer values.

Output Format

The output is displayed in the following format:

"Sum of the first and last elements: <<Sum>>"

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
10 20 30 40 50
Output: Sum of the first and last elements: 60

Answer

```
import java.util.Scanner;

 class WarehouseManagement {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        int N = sc.nextInt();  // size of the array
        int[] arr = new int[N];

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

        int sum = arr[0] + arr[N - 1];
        System.out.println("Sum of the first and last elements: " + sum);

        sc.close();
    }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Sesha is developing a weather monitoring system for a region with multiple weather stations. Each weather station collects temperature data hourly and stores it in a 2D array.

Write a program that can add the temperature data from two different weather stations to create a combined temperature record for the region.

Input Format

The first line of input consists of two space-separated integers N and M, representing the number of rows and columns of the matrices, respectively.

The next N lines consist of M space-separated integers, representing the values of the first matrix.

The following N lines consist of M space-separated integers, representing the values of the second matrix.

Output Format

The output prints the addition of the two matrices in N rows and M columns, representing the combined temperature record.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 3 3
1 2 3
4 5 6
7 8 9
1 1 1
2 2 2
3 3 3

Output: 2 3 4
6 7 8
10 11 12

Answer

```
import java.util.Scanner;

class MatrixAddition {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        // Read dimensions
        int N = sc.nextInt();
        int M = sc.nextInt();

        int[][] matrix1 = new int[N][M];
        int[][] matrix2 = new int[N][M];

        // Read first matrix
        for (int i = 0; i < N; i++) {
            for (int j = 0; j < M; j++) {
                matrix1[i][j] = sc.nextInt();
```

```
        }
    }

    // Read second matrix
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < M; j++) {
            matrix2[i][j] = sc.nextInt();
        }
    }

    // Add matrices and print result
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < M; j++) {
            System.out.print((matrix1[i][j] + matrix2[i][j]) + " ");
        }
        System.out.println();
    }

    sc.close();
  }
}
```

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

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 3_Q5

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Sharon is creating a program that finds the first repeated element in an integer array. The program should efficiently identify the first element that appears more than once in the given array. If no such element is found, it should appropriately display a message.

Help Sharon to complete the program.

Input Format

The first line of input consists of an integer n, representing the number of elements in the array.

The second line consists of n space-separated integers, representing the array elements.

Output Format

If a repeated element is found, print the first element that appears more than once.

If no repeated element is found, print "No repeated element found in the array".

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 8
12 21 13 14 21 36 47 21
Output: 21

Answer

```
import java.util.Scanner;
import java.util.HashSet;

class FirstRepeatedElement {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);

      int n = sc.nextInt();
      int[] arr = new int[n];

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

      HashSet<Integer> seen = new HashSet<>();
      boolean repeatedFound = false;

      for (int i = 0; i < n; i++) {
         if (seen.contains(arr[i])) {
            System.out.println(arr[i]);
            repeatedFound = true;
            break;
         } else {
            seen.add(arr[i]);
```

```
            }
        }

        if (!repeatedFound) {
            System.out.println("No repeated element found in the array");
        }

        sc.close();
    }
}
```

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