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**FA22-BCS-151**

**Assignment No 04**

**Documentation**

**OOP**

**Question no 01:**

**Write a Java method named sortAscending that accepts an array of integers as input and sorts it in ascending order.  
Ans:**

* **Purpose:**

The sortAscending() method is designed to sorting of an array of integers in ascending order. It prompts the user to input the number of elements they want to sort and then takes the integer values. After sorting the array in ascending order, it displays the sorted elements to the user.

* **Returns**:

Ascending Order

* **Usage:**

1. Enter the number of elements:

The method prompts the user to input the total number of elements they want to sort.

1. Enter the elements:

The method then prompts the user to input each element one by one.

1. View the sorted array:

After inputting all the elements, the method sorts the array in ascending order using Arrays.sort().

The method uses the Arrays.sort() method to perform the sorting operation.

The sorted array is then displayed to the user in ascending order.

1. Output:

The method displays the sorted elements in ascending order.

**Question No 02:**

**Create a Java method named calculateStats that accepts an**

**array of integers as input and returns an array of doubles. This**

**method should find and return the maximum value, minimum value,**

**and average of the numbers in the input array. On index 0 or**

**returned array will hold the Max values, index 1 will have Minimum**

**value and 2 will have average.**

**Ans:**

* **Purpose:**

calculateStats() method is designed to calculate and display

information for a given array of integers. It prompts the user to input the number of elements and return the value in double. It solves and displays the maximum value, minimum value, and average of the array elements.

* **Return**:

Maximum Value, Minimum Value and Average Value

* **Usage:**

1. Enter the number of elements:

The method prompts the user to input the total number of elements they want to calculate.

1. Enter the elements:

The method then prompts the user to input each element one by one.

1. Display:

After inputting all the elements, the method calls the calculateStats(int[] numbers) helper method to calculate and display the maximum, minimum, and average values.

1. Output:

The method displays the calculated statistics or a message if the array is empty or null.

**Question No 03:**

**Develop a Java method called matrixAddition that accepts two 2D integers arrays representing matrices, along with the number of rows and columns for each matrix. This method computes the sum of the input matrices and returns the resultant matrix as a 2D array.**

**Its signature should be as following.**

**public int[][] matrixAddition(int[][] matrixA, int[][] matrixB, int rows, int columns)Ans:**

* **Purpose:**

The matrixAddition method performs the addition of two matrices and returns the resulting matrix. It also prints the original matrices (matrixA and matrixB) as well as the resultant matrix.

* **Parameters:**
  + matrixA: The first matrix to be added.
  + matrixB: The second matrix to be added.
  + rows: The number of rows in the matrices.
  + columns: The number of columns in the matrices.
* **Returns:**

An integer 2D array representing the result of the matrix addition.

* **Usage:**

1. Access the result:

The result matrix is returned and can be used as needed in the program.

1. printMatrix:

The printMatrix method is designed to print the elements of a matrix in a readable format.

1. Provide matrix as an argument:

Pass the matrix that you want to print as an argument to the printMatrix method.

1. Compatible for Addition:

Ensure that the dimensions of the matrices (rows and columns) are compatible for addition.

1. Output:

At last, output will be displayed.