

OOP

**Assignment No- 04**

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Submitted to:

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Date:

* 28-12-2023

**Topic: “Code Documentation”**

**1. Sort Descending Method:**

**Purpose:**

Sorts an array of integers in descending order using the bubble sort algorithm.

**Method Signature:**

public void sortDescending(int[] array)

**Parameters:**

* **Array**: An array of integers to be sorted in descending order.

**Returns:**

* **void**: The method sorts the input array in place and doesn't return any value.

**Usage:**

int[] myArray = {5, 2, 8, 1, 7};

sortDescending(myArray);

**2. calculate statistics Method:**

**Purpose:** Calculates statistical measures (median, variance, standard deviation, and sum of squares) for an array of integers.

**Method Signature:**

public double[] calculateStatistics(int[] data)

**Parameters:**

* **Data**: An array of integers for which statistical measures are to be calculated.

**Returns:**

* **Double[]**: An array containing the calculated statistics in the order [median, variance, standard deviation, sum of squares].

**Usage:**

int[] myData = {2, 4, 6, 8, 10};

double[] stats = calculateStatistics(myData);

**3. Matrix Multiplication Method:**

**Purpose:**

Performs matrix multiplication for two given matrices.

**Method Signature:**

public int[][] matrixMultiplication(int[][] matrixA, int[][] matrixB, int rowsA, int columnsA, int columnsB)

**Parameters:**

* **matrixA**: First matrix for multiplication.
* **matrixB**: Second matrix for multiplication.
* **rowsA**: Number of rows in matrixA.
* **columnsA**: Number of columns in matrixA (must be equal to the number of rows in matrixB).
* **columnsB**: Number of columns in matrixB.

**Returns:**

* **int[][]**: Resultant matrix after multiplication.

**Usage:**

int[][] matrixA = {{1, 2}, {3, 4}};

int[][] matrixB = {{5, 6}, {7, 8}};

int[][] result = matrixMultiplication(matrixA, matrixB, 2, 2, 2);