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Question: Write a program to show addition, subtraction and multiplication of two matrices.

Code:

```
import java.util.Scanner;

public class MatrixOP{
    public static void main(String args[]) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter number of rows: ");
        int r = scanner.nextInt();
        System.out.print("Enter number of columns: ");
        int c = scanner.nextInt();
        int i,j,k;
        int[][] matrix1 =new int[r][c];
        int[][] matrix2 =new int[r][c];
        int[][] addMatrix =new int[r][c];
        int[][] subMatrix =new int[r][c];
        int[][] mulMatrix =new int[r][c];

        System.out.println("Enter the elements in first matrix :");
        for (i=0;i<r;i++){
            for (j=0;j<c;j++){
                matrix1[i][j] =scanner.nextInt();
            }
        }
        System.out.println("Enter the elements in second matrix:");
        for (i=0;i<r;i++) {
            for (j=0;j<c;j++) {
                matrix2[i][j] =scanner.nextInt();
            }
        }
        for (i=0;i<r;i++) {
            for(j=0;j<c;j++){
                addMatrix[i][j] =matrix1[i][j] + matrix2[i][j];
            }
        }
        for (i=0;i<r;i++){
            for(j=0;j<c;j++){
                subMatrix[i][j] =matrix1[i][j]-matrix2[i][j];
```

```
            }
        }
        for(i=0;i<r;i++)
        {
            for(j=0;j<c;j++)
            {
                mulMatrix[i][j]=0;
                for(k=0;k<r;k++)

mulMatrix[i][j]=mulMatrix[i][j]+matrix1[i][k]*matrix2[k][j];
            }
        }
        System.out.println("\nFirst matrix: ");
        for (i=0;i<r;i++){
            for (j=0;j<c;j++){
                System.out.print(matrix1[i][j]+" ");
            }
            System.out.println();
        }
        System.out.println("\nSecond matrix: ");
        for (i=0;i<r;i++){
            for (j=0;j<c;j++){
                System.out.print(matrix2[i][j]+" ");
            }
            System.out.println();
        }
        System.out.println("\nSum: ");
        for (i=0;i<r;i++){
            for (j=0;j<c;j++){
                System.out.print("\t"+addMatrix[i][j]);
            }
            System.out.println();
        }
        System.out.println("\nSubstraction: ");
        for (i=0;i<r;i++){
            for (j=0;j<c;j++){
                System.out.print("\t"+subMatrix[i][j]);
            }
            System.out.println();
        }
```

```
        System.out.println("\nMultiplication: ");
        for (i=0;i<r;i++){
            for (j=0;j<c;j++){
                System.out.print("\t"+mulMatrix[i][j]);
            }
            System.out.println();
        }
    }
}
```

Output:

```
PS D:\OOPS-PCC-CS593\Day 4 (19.09.2020)> java MatrixOP
Enter number of rows: 2
Enter number of columns: 2
Enter the elements in first matrix :
1
2
3
4
Enter the elements in second matrix:
4
3
2
1

First matrix:
1 2
3 4

Second matrix:
4 3
2 1

Sum:
        5       5
        5       5

Substraction:
        -3      -1
        1       3

Multiplication:
        8       5
        20      13
```

Question: Write a program to find sum and average of several integers (in an array) using enhanced-for loop.

Code:

```
import java.util.Scanner;

public class EnhanFor {
    public static void main(String[]args){
        Scanner input = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = input.nextInt();
        int num [] = new int[n];
        double sum = 0;
        double avg = 0;
        System.out.println("Enter the elements: ");

        for(int i : num){
            num[i] = input.nextInt();
            sum += num[i];
        }
        avg = sum / num.length;
        System.out.print("Sum= " + sum + "\n");
        System.out.print("Average= " + avg);
    }
}
```

Output:

```
PS D:\OOPS-PCC-CS593\Day 4 (19.09.2020)> javac EnhanFor.java
PS D:\OOPS-PCC-CS593\Day 4 (19.09.2020)> java EnhanFor
Enter the number of elements: 6
Enter the elements:
4
5
1
2
7
8
Sum= 27.0
Average= 4.5
```

Question: WAP to sort an array.

Code:

```
import java.util.Scanner;

public class Sorted {
    public static void main(String[]args){
        Scanner input = new Scanner(System.in);
        System.out.print("Enter the size of the array: ");
        int n = input.nextInt();
        int num [] = new int[n];
        System.out.println("Enter the elements of the array: ");
        for (int i = 0 ; i < n ; i++){
            num[i] = input.nextInt();
        }
        for(int i =0; i < n; i++){
            for(int j = 0; j < n-i-1 ; j++){
                if(num [j] > num[j+1]){
                    int temp = num [j];
                    num [j] = num [j+1];
                    num [j+1] = temp;
                }
            }
        }
        System.out.print("The array after sortting: \n");
        for (int i : num)
            System.out.print(i + " ");
        System.out.println();
    }
}
```

Output:

```
PS D:\OOPS-PCC-CS593\Day 4 (19.09.2020)> javac Sorted.java
PS D:\OOPS-PCC-CS593\Day 4 (19.09.2020)> java Sorted
Enter the size of the array: 5
Enter the elements of the array:
10
45
12
1
68
The array after sortting:
1 10 12 45 68
```