Java Technologies

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1. Write a Java program to display “Hello World”.

HelloWorld.java

```java
package firstpack;

public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello World");
    }
}

```

Problems Javadoc Declaration Console

<terminated> HelloWorld [Java Application] C:\Users\MEET PATEL\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe (23-Dec-2022, 9:48:50 am – 9:48:50 am) [pid: 10748]

```
Hello World
```

2. Write a Java program to print numbers between 1 to n which are divisible by 3, 5 and by both(3 and 5) by taking n as an input from the user.

*Divisible.java | Greeter.java | EvenSum.java | Average.java | Matrix.java | HelloWorld.java

```
1  package firstpack;
2  import java.util.Scanner;
3
4  public class Divisible{
5      public int n;
6      public static void main(String[] args){
7          Divisible myobj = new Divisible();
8          Scanner scan_obj = new Scanner(System.in);
9          System.out.println("Enter a number : ");
10         myobj.n = scan_obj.nextInt();
11         System.out.println("Numbers Divisible by 3 are as follows :");
12         for(int i = 1; i <= myobj.n; i++){
13             if(i % 3 == 0){
14                 System.out.println(i);
15             }
16         }
17         System.out.println("Numbers Divisible by 5 are as follows :");
18         for(int i = 1; i <= myobj.n; i++){
19             if(i % 5 == 0){
20                 System.out.println(i);
21             }
22         }
23         System.out.println("Numbers Divisible by 3 and 5 both are as follows :");
24         for(int i = 1; i <= myobj.n; i++){
25             if(i % 15 == 0){
26                 System.out.println(i);
27             }
28         }
29         scan_obj.close();
30     }
31 }
32
```

Problems | Javadoc | Declaration | Console

<terminated> Divisible [Java Application] C:\Users\MEET PATEL\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe

```
Enter a number :
20
Numbers Divisible by 3 are as follows :
3
6
9
12
15
18
Numbers Divisible by 5 are as follows :
5
10
15
20
Numbers Divisible by 3 and 5 both are as follows :
15
```

3. Write a class named Greeter that prompts the user for his or her name, and then prints a personalized greeting. As an example, if the user entered “Era”, the program should respond “Hello Era!”.

Divisible.java | Greeter.java | EvenSum.java | Average.java | Matrix.java | HelloWorld.java

```java
package firstpack;
import java.util.Scanner;

public class Greeter{
    String name;
    public static void main(String[] args){
        Greeter myobj = new Greeter();
        Scanner scan_obj = new Scanner(System.in);
        System.out.println("Enter the Name : ");
        myobj.name = scan_obj.nextLine();
        System.out.println("Hello " + myobj.name);
        scan_obj.close();
    }
}
```

Problems | Javadoc | Declaration | Console

<terminated> Greeter [Java Application] C:\Users\MEET PATEL\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe (24

```
Enter the Name :
Meet
Hello Meet
```

4. Write a Java program that takes Name, Roll No and marks of 5 subjects as input and gives a formatted output as:

Name: ABCD

Roll No. : 1

Average: 84

Also display the grade (e.g. A, B, C…etc) using the average.

Divisible.java | Greeter.java | EvenSum.java | *Average.java | Matrix.java | HelloWorld.java

```java
package firstpack;
import java.util.Scanner;

public class Average{
    String name;
    int roll_no;
    int marks[] = new int[5];
    int avg;
    int sum = 0;
    String grade;
    public static void main(String[] argas){
        Average myobj = new Average();
        Scanner scan_obj = new Scanner(System.in);
        System.out.println("Enter the Name : ");
        myobj.name = scan_obj.nextLine();
        System.out.println("Enter the Roll No : ");
        myobj.roll_no = scan_obj.nextInt();
        System.out.println("Enter the Marks of 5 Subjects : : ");
        for(int i = 0; i < 5; i++){
            myobj.marks[i] = scan_obj.nextInt();
            myobj.sum += myobj.marks[i];
        }
        myobj.avg = myobj.sum/5;
        System.out.println("Name : " + myobj.name);
        System.out.println("Roll No : " + myobj.roll_no);
        System.out.println("Average : " + myobj.avg);
        if(myobj.avg > 90){
            myobj.grade = "A";
        }
        else if(myobj.avg > 80){
            myobj.grade = "B";
        }
        else if(myobj.avg > 70){
            myobj.grade = "C";
        }
        else if(myobj.avg > 60){
            myobj.grade = "D";
        }
```

```
        else if(myobj.avg > 50){
            myobj.grade = "E";
        }
        else if(myobj.avg > 40){
            myobj.grade = "F";
        }
        else{
            myobj.grade = "Fail";
        }
        System.out.println("Grade : " + myobj.grade);
        scan_obj.close();
    }
}
```

Problems Javadoc Declaration Console

```
<terminated> Average [Java Application] C:\Users\MEET PATEL\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe
Enter the Name :
Meet
Enter the Roll No :
5662
Enter the Marks of 5 Subjects : :
91 95 95 97 97
Name : Meet
Roll No : 5662
Average : 95
Grade : A
```

5. Calculate and return the sum of all the even numbers present in the numbers array passed to the method calculateSumOfEvenNumbers. Implement the logic inside calculateSumOfEvenNumbers() method.
   Test the functionalities using the main() method of the Tester class.
   Sample Input and Output:

Sample Input	**Sample Output**
{68,79,86,99,23,2,41,100}	256
{1,2,3,4,5,6,7,8,9,10}	30

Divisible.java | Greeter.java | EvenSum.java | Average.java | Matrix.java | HelloWorld.java

```java
package firstpack;
import java.util.Scanner;

public class EvenSum{
    int array_size;

    public void calculateSumOfEvenNumbers(EvenSum myobj){
        Scanner scan_obj = new Scanner(System.in);
        System.out.println("Enter the array size : ");
        myobj.array_size = scan_obj.nextInt();
        int num[] = new int[myobj.array_size];
        int sum = 0;
        System.out.println("Enter the Elements of Array : ");
        for(int i = 0; i < myobj.array_size; i++){
            num[i] = scan_obj.nextInt();
            if(num[i] % 2 == 0){
                sum += num[i];
            }
        }
        System.out.println("Sum of even numbers is : " + sum);
        scan_obj.close();
    }
    public static void main(String[] args){
        EvenSum myobj = new EvenSum();
        myobj.calculateSumOfEvenNumbers(myobj);
    }
}
```

Problems | Javadoc | Declaration | Console

```
<terminated> EvenSum [Java Application] C:\Users\MEET PATEL\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe
Enter the array size :
10
Enter the Elements of Array :
1 2 3 4 5 6 7 8 9 10
Sum of even numbers is : 30
```

6. Write a program to perform matrix addition and matrix multiplication on two given matrices. Use for-each form of for loop to display the matrices.

Divisible.java | Greeter.java | EvenSum.java | Average.java | Matrix.java | HelloWorld.java

```java
package firstpack;
import java.util.Scanner;

public class Matrix{
    int matrix1_row;
    int matrix1_col;
    int matrix2_row;
    int matrix2_col;
    int matrix1[][];
    int matrix2[][];
    static Matrix myobj;
    static Scanner scan_obj = new Scanner(System.in);

    //Constructor
    Matrix(){
        System.out.println("Enter Size(Row, Col) of Matrix1 : ");
        matrix1_row = scan_obj.nextInt();
        matrix1_col = scan_obj.nextInt();
        matrix1 = new int[matrix1_row][matrix1_col];
        System.out.println("Enter Elements of Matrix1 : ");
        for(int i = 0; i < matrix1_row; i++){
            for(int j = 0; j < matrix1_col; j++){
                matrix1[i][j] = scan_obj.nextInt();;
            }
        }

        System.out.println("Enter Size(Row, Col) of Matrix2 : ");
        matrix2_row = scan_obj.nextInt();
        matrix2_col = scan_obj.nextInt();
        matrix2 = new int[matrix2_row][matrix2_col];
        System.out.println("Enter Elements of Matrix2 : ");
        for(int i = 0; i < matrix2_row; i++){
            for(int j = 0; j < matrix2_col; j++){
                matrix2[i][j] = scan_obj.nextInt();;
            }
        }
    }

    public void display(int matrix[][]){
        for(int mat[]: matrix) {
            for(int a: mat) {
                System.out.print(a + "  ");
            }
            System.out.println();
        }
    }

    public void Matrix_Add(Matrix myobj){
        if(myobj.matrix1_row != myobj.matrix2_row || myobj.matrix1_col != myobj.matrix2_col){
            System.out.println("Addition not Possible");
            return;
        }
        int matrix3[][] = new int[myobj.matrix1_row][myobj.matrix1_col];
        for(int i = 0; i < myobj.matrix1_row; i++){
            for(int j = 0; j < myobj.matrix1_col; j++){
                matrix3[i][j] = myobj.matrix1[i][j] + myobj.matrix2[i][j];
            }
        }
        System.out.println("Addition of Two Matrices is :");
        myobj.display(matrix3);
        System.out.println();
    }

    public void Matrix_Multiply(Matrix myobj){
        if(myobj.matrix1_col != myobj.matrix2_row){
            System.out.println("Multiplication not Possible");
            return;
        }
        int matrix3[][] = new int[myobj.matrix1_row][myobj.matrix2_col];
        for(int i = 0; i < myobj.matrix1_row; i++){
            for(int j = 0; j < myobj.matrix2_col; j++){
                matrix3[i][j] = 0;
                for(int k = 0; k < myobj.matrix1_col; k++){
                    matrix3[i][j] += myobj.matrix1[i][k]*myobj.matrix2[k][j];
                }
            }
```

```
77          }
78          System.out.println("Multiplication of Two Matrices is :");
79          myobj.display(matrix3);
80      }
81
82      public static void main(String[] args) {
83  //          scan_obj = new Scanner(System.in);
84          myobj = new Matrix();
85          //myobj.Create_Matrix();
86          myobj.Matrix_Add(myobj);
87          myobj.Matrix_Multiply(myobj);
88      }
89  }
```

Problems | Javadoc | Declaration | Console ×

<terminated> Matrix [Java Application] C:\Users\MEET PATEL\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.5.v20221102-0933\jre\bin\javaw.exe (24

```
Enter Size(Row, Col) of Matrix1 :
2 2
Enter Elements of Matrix1 :
1 2 3 4
Enter Size(Row, Col) of Matrix2 :
2 2
Enter Elements of Matrix2 :
1 2 3 4
Addition of Two Matrices is :
2       4
6       8

Multiplication of Two Matrices is :
7       10
15      22
```