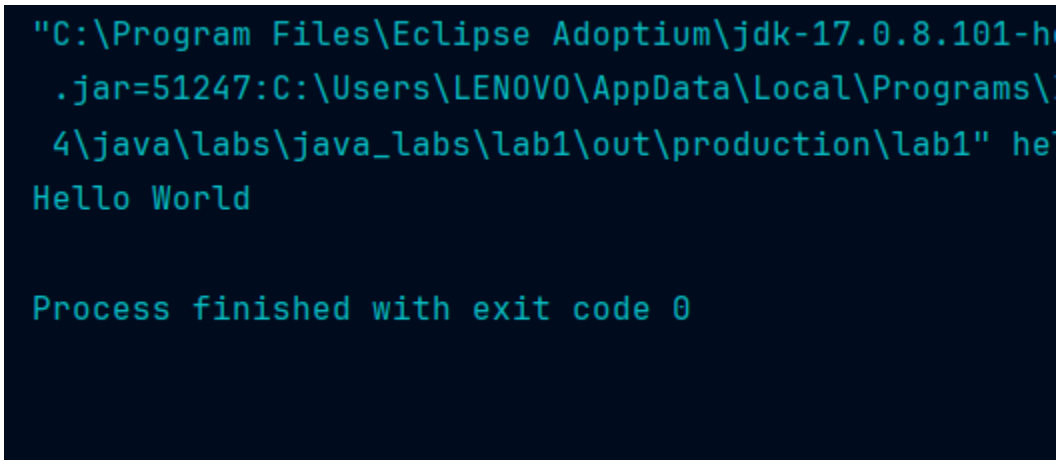
Question 1)

Write a Java program to display “Hello World”.

Solution)

```
class helloworld {

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

}
```

Screenshots)



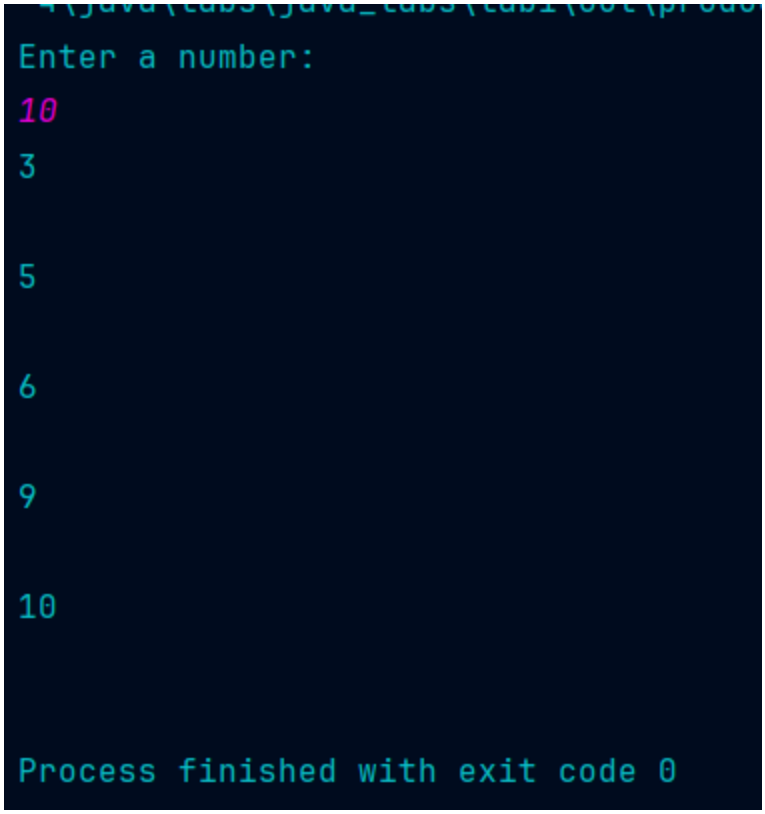
Question 2)

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.

Solution)

```
import java.util.Scanner;

class _input {

    public static void main(String[] args) {
        Scanner obj = new Scanner(System.in);
        int n = obj.nextInt();

        for (int i = 1; i <= n; i++) {
            if (i % 3 == 0 || i % 5 == 0) {
                System.out.println(i + "\n");
            }
        }
    }

}
```

Screenshots



Question 3)

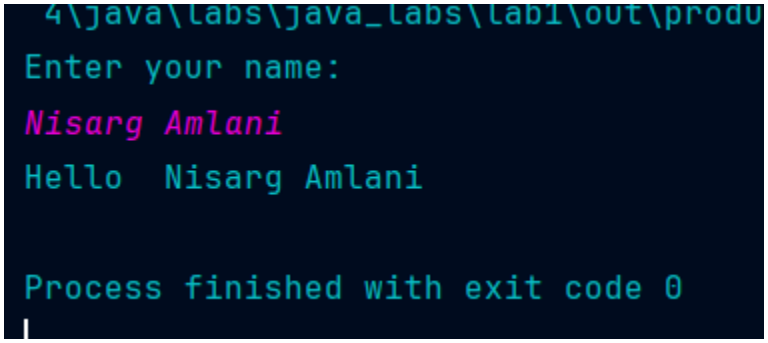
Write a class named Greeter that prompts the user for his or her name, and then prints a personalized greeting. As an example, if the user entered “Era”, the program should respond “Hello Era!”.

Solution)

```
import java.util.Scanner;

class Greeter {
   void greeting(String name) {
      System.out.println("Hello  " + name);
   }
}

class Greet {
```

```
    public static void main(String[] args) {
        Scanner obj = new Scanner(System.in);
        Greeter Obj = new Greeter();
        String name = obj.nextLine();
        Obj.greeting(name);
    }
}
```

Screenshot



Question 4)

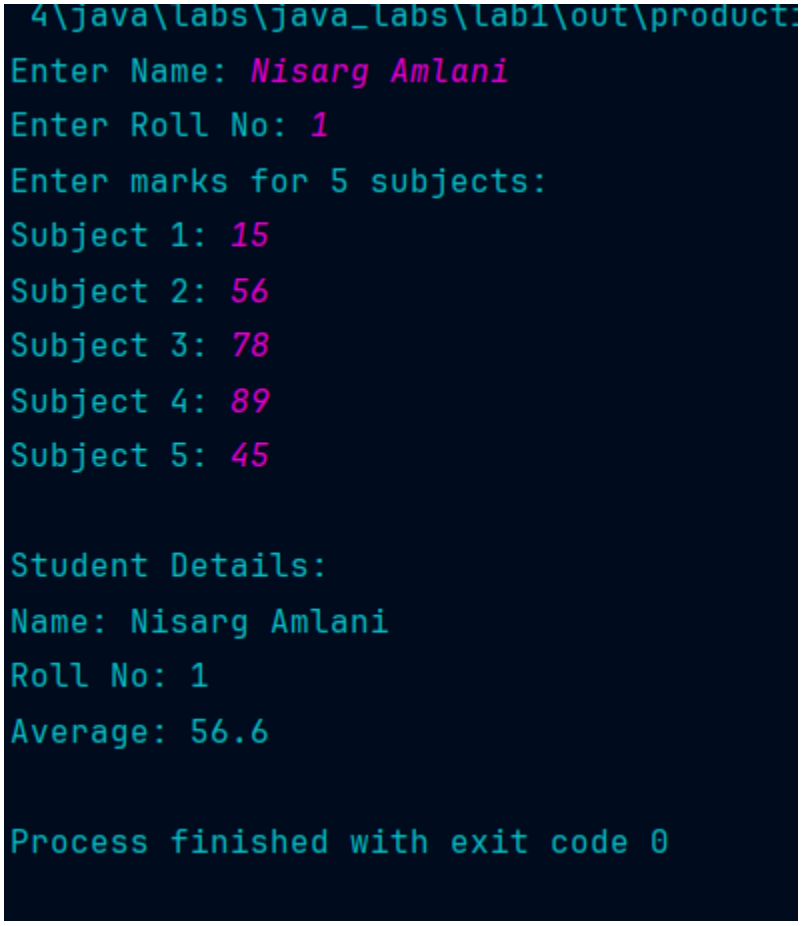
Write a Java program that takes Name, Roll No and marks of 5 subjects as input and
gives a formatted output as:
Name: ABCD
Roll No. : 1
Average: 84
Also display the grade (e.g. A, B, C…etc) using the average.

Solution

```
import java.util.Scanner;

class StudentDetails {
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);

        // Input
        System.out.print("Enter Name: ");
        String name = scanner.nextLine();

        System.out.print("Enter Roll No: ");
        int rollNo = scanner.nextInt();

        System.out.println("Enter marks for 5 subjects:");
        int[] marks = new int[5];
        int sum = 0;

        for (int i = 0; i < 5; i++) {
            System.out.print("Subject " + (i + 1) + ": ");
            marks[i] = scanner.nextInt();
            sum += marks[i];
        }

        // Calculate average
        double average = (double) sum / 5;

        // Output
        System.out.println("\nStudent Details:");
        System.out.println("Name: " + name);
        System.out.println("Roll No: " + rollNo);
        System.out.println("Average: " + average);

        // Display grade
        scanner.close();
    }
}
```

Screenshot



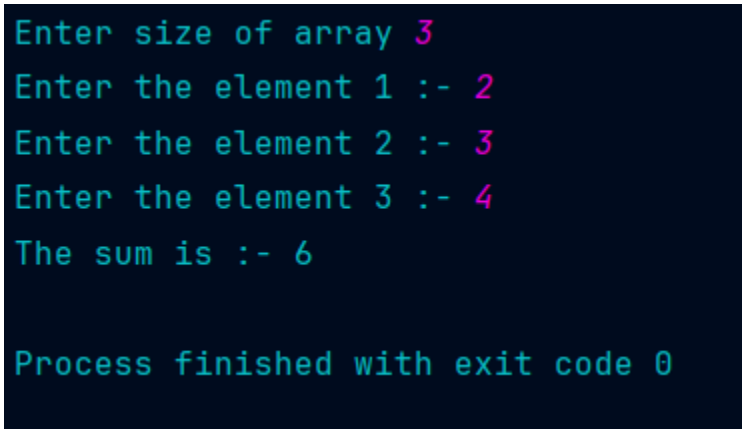
Question 5)

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.

Solution

```
import java.util.Scanner;

class Tester {
   void calculateSumOfEvenNumbers(int arr[]) {
      int n = arr.length;
      int sum = 0;
      for (int i = 0; i < n; i++) {
         if (arr[i] % 2 == 0) sum += arr[i];
      }
      System.out.println("The sum is :- " + sum);
   }
}

class res {
   public static void main(String[] args) {
      Scanner obj = new Scanner(System.in);
      Tester Obj = new Tester();
      System.out.print("Enter size of array ");
      int n = obj.nextInt();
      int arr[] = new int[n];
      for (int i = 0; i < n; i++) {
         System.out.print("Enter the element " + (i + 1) + " :- ");
         arr[i] = obj.nextInt();
      }
      Obj.calculateSumOfEvenNumbers(arr);
   }
}
```

Screenshots



Question 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.

Solution)

```
import java.util.Scanner;

class MatrixOperations {
    public static void displayMatrix(int[][] matrix) {
        for (int[] row : matrix) {
            for (int element : row) {
                System.out.print(element + " ");
            }
            System.out.println();
        }
    }

    public static int[][] addMatrices(int[][] matrix1, int[][] matrix2)
{
```

```
        int rows = matrix1.length;
        int columns = matrix1[0].length;
        int[][] resultMatrix = new int[rows][columns];

        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < columns; j++) {
                resultMatrix[i][j] = matrix1[i][j] + matrix2[i][j];
            }
        }

        return resultMatrix;
    }

    public static int[][] multiplyMatrices(int[][] matrix1, int[][]
matrix2) {
        int rowsA = matrix1.length;
        int columnsA = matrix1[0].length;
        int columnsB = matrix2[0].length;
        int[][] resultMatrix = new int[rowsA][columnsB];

        for (int i = 0; i < rowsA; i++) {
            for (int j = 0; j < columnsB; j++) {
                int elementSum = 0;
                for (int k = 0; k < columnsA; k++) {
                    elementSum += matrix1[i][k] *
matrix2[k][j];
                }
                resultMatrix[i][j] = elementSum;
            }
        }

        return resultMatrix;
```

```
    }

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

        System.out.print("Enter the number of rows for
matrices: ");
        int rows = scanner.nextInt();
        System.out.print("Enter the number of columns for
matrices: ");
        int columns = scanner.nextInt();

        // Input for the first matrix
        System.out.println("Enter elements for the first
matrix:");
        int[][] matrixA = new int[rows][columns];
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < columns; j++) {
                System.out.print("Enter element at position
(" + (i + 1) + ", " + (j + 1) + "): ");
                matrixA[i][j] = scanner.nextInt();
            }
        }

        // Input for the second matrix
        System.out.println("Enter elements for the second
matrix:");
        int[][] matrixB = new int[rows][columns];
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < columns; j++) {
                System.out.print("Enter element at position
(" + (i + 1) + ", " + (j + 1) + "): ");
```

```
                    matrixB[i][j] = scanner.nextInt();
                }
            }

            // Matrix addition
            int[][] sumMatrix = addMatrices(matrixA, matrixB);
            System.out.println("Matrix Addition:");
            displayMatrix(sumMatrix);

            // Matrix multiplication
            int[][] productMatrix = multiplyMatrices(matrixA,
matrixB);
            System.out.println("Matrix Multiplication:");
            displayMatrix(productMatrix);

            scanner.close();
        }
}
```

Screenshots

```
Enter the number of rows for matrices: 3
Enter the number of columns for matrices: 3
Enter elements for the first matrix:
Enter element at position (1, 1): 5
Enter element at position (1, 2): 4
Enter element at position (1, 3): 3
Enter element at position (2, 1): 2
Enter element at position (2, 2): 1
Enter element at position (2, 3): 5
Enter element at position (3, 1): 4
Enter element at position (3, 2): 3
Enter element at position (3, 3): 2
Enter elements for the second matrix:
Enter element at position (1, 1): 1
Enter element at position (1, 2): 5
Enter element at position (1, 3): 4
Enter element at position (2, 1): 3
Enter element at position (2, 2): 2
Enter element at position (2, 3): 1
Enter element at position (3, 1): 5
Enter element at position (3, 2): 4
Enter element at position (3, 3): 3
Matrix Addition:
6 9 7
5 3 6
9 7 5
Matrix Multiplication:
32 45 33
30 32 24
23 34 25
```