Laboratory Work

Subject: Java Technologies
Branch: B.Tech. (CE)
Semester: IV
Batch: A1

Student Roll No: CE001
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Q1)

```java
class helloworld {

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

}
```

```
"C:\Program Files\Eclipse Adoptium\jdk-17.0.8.101-hotspot\bin\java.exe" "-javaagent:C:\Users\LENOVO\AppData\Local\Programs\IntelliJ IDEA Ultimate\lib\idea_rt
 .jar=60691:C:\Users\LENOVO\AppData\Local\Programs\IntelliJ IDEA Ultimate\bin" -Dfile.encoding=UTF-8 -classpath "D:\all files\college stuff\sem
 4\java\java_lab1\java_lab1\out\production\java_lab1" helloworld
Hello World

Process finished with exit code 0
```

Q2)

```java
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");
}
}
{

}
}

}
```

```
 4\java\java_lab1\java_lab1\out\production\java_lab1" _input
10
3

5

6

9

10


Process finished with exit code 0
```

Q3)

```java
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);
}
}
```

```
"C:\Program Files\Eclipse Adoptium\jdk-17.0.8.101-hotspot\bin
 .jar=61130:C:\Users\LENOVO\AppData\Local\Programs\IntelliJ I
 4\java\java_lab1\java_lab1\out\production\java_lab1" Greet
nisarg
Hello  nisarg

Process finished with exit code 0
```

Q4)

```java
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();
    }
}
```

```
"C:\Program Files\Eclipse Adoptium\jdk-17.0.8.1
 .jar=52297:C:\Users\LENOVO\AppData\Local\Progr
 4\java\java_lab1\java_lab1\out\production\java
Enter Name: Nisarg amlani
Enter Roll No: 55
Enter marks for 5 subjects:
Subject 1: 54
Subject 2: 65
Subject 3: 234
Subject 4: 5
Subject 5: 4

Student Details:
Name: Nisarg amlani
Roll No: 55
Average: 72.4

Process finished with exit code 0
```

Q5)

```
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();
    }
}
```

```
"C:\Program Files\Eclipse Adoptium\jdk-17.0
 .jar=52568:C:\Users\LENOVO\AppData\Local\P
 4\java\java_lab1\java_lab1\out\production\
Enter size of array 5
Enter the element 1 :- 4
Enter the element 2 :- 34
Enter the element 3 :- 5
Enter the element 4 :- 2
Enter the element 5 :- 1
The sum is :- 40

Process finished with exit code 0
```

Q6)

```java
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();
    }
}
```

```
4\java\java_lab1\java_lab1\out\production\java_la
Enter the number of rows for matrices: 2
Enter the number of columns for matrices: 2
Enter elements for the first matrix:
Enter element at position (1, 1): 5
Enter element at position (1, 2): 4
Enter element at position (2, 1): 3
Enter element at position (2, 2): 8
Enter elements for the second matrix:
Enter element at position (1, 1): 2
Enter element at position (1, 2): 5
Enter element at position (2, 1): 3
Enter element at position (2, 2): 8
Matrix Addition:
7 9
6 16
Matrix Multiplication:
22 57
30 79

Process finished with exit code 0
```