

## Practical 5

**Aim:** Write a program that generates 6\*6 two-dimensional matrix, filled with 1s and 0s, displays the matrix, checks every row and column has an odd number of 1s.

**Input:** not **Require Code:**

```
import java.util.Random;
public class Exp5_1 {
    public static void main(String args[]) {
        // declare matrix    int a[][] = new
int[6][6];    int i, j;

        Random n = new Random();    for (i = 0; i <
6; i++) {        for (j = 0; j < 6; j++) {
a[i][j] = n.nextInt(2);
        }
    }

    System.out.println("\nDisplay of matrix");
    System.out.println("");    displayMat(a);

    System.out.println("\n\nRow Processing");
    System.out.println("");    rowProcess(a);

    System.out.println("\n\nColumn Processing");
    System.out.println("");    columnProcess(a);

}

// display matrix

public static void displayMat(int a[][]) {
    // this is method in java to print 2d array in matrix form    for (int[] x : a) {
for (int y : x) {
        System.out.print(y + " ");
    }
    System.out.println();
}
}

// row process

public static void rowProcess(int a[][]) {    int cn, i, j;
for (i = 0; i < 6; i++) {        cn = 0;        for (j = 0; j < 6;
j++) {            if (a[i][j] == 1) {                cn++;
            }
        }

        if (cn % 2 == 1) {
            System.out.println("Row" + (i + 1) + "has odd number of 1");
        } else {
```

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```
        System.out.println("Row" + (i + 1) + "has even number of 1");
    }
}
} public static void columnProcess(int a[][]) {    int cn, i,
j;    for (i = 0; i < 6; i++) {        cn = 0;
    for (j = 0; j < 6; j++) {        if (a[i][j] ==
1) {            cn++;
        }
    }

    if (cn % 2 == 1) {
        System.out.println("Column" + (i + 1) + "has odd number of 1");
    } else {
        System.out.println("Column" + (i + 1) + "has even number of 1");
    }
}
}
}
```

Output:

\*\*\*\*\*

```

Display of matrix

1 0 1 1 0 1
1 0 1 1 0 0
1 1 0 0 1 1
0 0 0 0 0 0
1 1 0 0 1 0
0 1 1 0 1 0

Row Processing

Row1has even number of 1
Row2has odd number of 1
Row3has even number of 1
Row4has even number of 1
Row5has odd number of 1
Row6has odd number of 1

Column Processing

Column1has even number of 1
Column2has odd number of 1
Column3has even number of 1
Column4has even number of 1
Column5has odd number of 1
Column6has odd number of 1
PS E:\4th sem\oops\programs>

```

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### Aim:

Write a program that creates a Random object with seed 1000 and displays the first 100 random integers between 1 and 49 using the NextInt (49) method.

### Input: not require Code:

```
import java.util.Random;
```

```

public class Exp5_2 {
    public static void main(String args[]) {
        Random r = new Random(1000);

        System.out.println("the first 100 random integer between 1 to 49");    for (int i = 0; i < 100; i++) {
            System.out.format("% d", r.nextInt(49));

            if ((i + 1) % 10 == 0) {
                System.out.println(" ");
            }
        }
    }
}

```

Output:

```

the first 100 random integer between 1 to 49
40 1 17 0 46 46 4 33 9 40
25 13 17 29 30 31 42 35 48 40
11 13 10 0 38 9 0 10 35 10
14 26 34 35 31 43 47 35 2 33
16 48 45 43 5 29 1 35 0 25
28 42 25 2 33 30 18 27 4 28
31 35 9 13 33 12 18 36 39 7
17 31 21 26 47 39 11 40 11 26
48 26 27 32 19 30 26 4 7 40
9 41 8 37 3 34 10 36 4 21
PS E:\4th sem\oops\programs>

```

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Aim: Write a program for calculator to accept an expression as a string in which the operands and operator are separated by zero or more spaces.

For ex: 3+4 and 3 + 4 are acceptable expressions.

Input: Enter two operator and one operand

Code:

```

import java.util.Scanner;
class Exp5_3 {
    public static void main(String[] args) {        Scanner input = new
Scanner(System.in);
        System.out.print("Enter Equation : ");
        String string = input.nextLine();
        String a = string.replaceAll(" ", "");

        if (a.length() < 3) {
            System.out.println(
                "Minimum 2 Opearator and 1 Opearand Required");
            System.exit(0);
        }        int result = 0;
int i = 0;

        while (a.charAt(i) != '+' && a.charAt(i) != '-' && a.charAt(i) != '*' && a.charAt(i) != '/') {        i++;
        }
        switch (a.charAt(i)) {            case '+':
            result = Integer.parseInt(a.substring(0, i)) + Integer.parseInt(a.substring(i
+ 1, a.length()));            break;            case '-':
            result = Integer.parseInt(a.substring(0, i)) - Integer.parseInt(a.substring(i
+ 1, a.length()));            break;            case '*':
            result = Integer.parseInt(a.substring(0, i)) * Integer.parseInt(a.substring(i
+ 1, a.length()));            break;            case '/':
            result = Integer.parseInt(a.substring(0, i)) / Integer.parseInt(a.substring(i
+ 1, a.length()));            break;
        }
    }
}

```

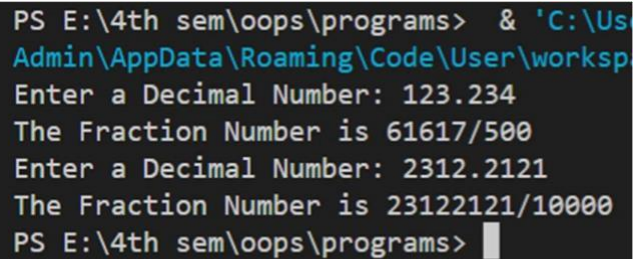


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```
int indexOfDecimal = decimal.indexOf(".");    int len =
decimal.substring(indexOfDecimal).length();    int imag_part = (int)
Math.pow(10, len - 1);
int real_part = (int) (Double.parseDouble(decimal) * imag_part);
Fraction fr = new Fraction(real_part, imag_part);

System.out.println("The Fraction Number is " + fr);    System.out.print("Enter a
Decimal Number: ");    decimal = sc.nextLine();    indexOfDecimal =
decimal.indexOf(".");    len = decimal.substring(indexOfDecimal).length();
imag_part = (int) Math.pow(10, len - 1);    real_part = (int)
(Double.parseDouble(decimal) * imag_part);    fr = new Fraction(real_part, imag_part);
System.out.println("The Fraction Number is " + fr);    }
}
```

### Output:



```
PS E:\4th sem\oops\programs> & 'C:\Us
Admin\AppData\Roaming\Code\User\worksp
Enter a Decimal Number: 123.234
The Fraction Number is 61617/500
Enter a Decimal Number: 2312.2121
The Fraction Number is 23122121/10000
PS E:\4th sem\oops\programs> 
```