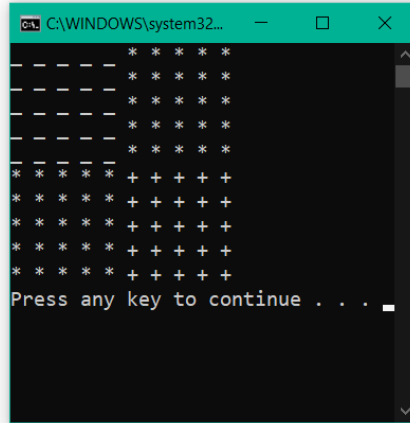


12A

```
1 class Array12A {
2     public static void main(String[] args) {
3         int MAX_ROWS = 10;
4         int MAX_COLS = 10;
5         int rowsUsed = 5;
6         int colsUsed = 5;
7         int row, column;
8         char [][] table = new char[MAX_ROWS][MAX_COLS];
9         for ( column = 0 ; column < MAX_COLS ; column++) {
10             for ( row = 0 ; row < MAX_ROWS ; row++)
11                 table[row][column] = '+';
12         }
13         for ( row = rowsUsed ; row < MAX_ROWS ; row++)
14             for ( column = colsUsed ; column < MAX_COLS ; column++)
15                 table[row][column] = '+';
16         for ( column = 0 ; column < colsUsed ; column++)
17             for ( row = 0 ; row < rowsUsed ; row++)
18                 table[row][column] = '-';
19         printMatrix(table);
20     }
21     public static void printMatrix(char[][] A){
22         for( int i = 0; i < A.length; i++){
23             for( int j = 0; j < A[0].length; j++){
24                 System.out.print(A[i][j]+" ");
25             }
26             System.out.println();
27         }
28     }
29 }
30 }
31 }//Supawit Saengrattanayon 64050694
```



----- Java Compile -----
Picked up JAVA_TOOL_OPTIONS: -Dfile.encoding=UTF-8
Output completed (0 sec consumed) - Normal Termination

```

class Array12A {
public static void main(String[] args) {
    int MAX_ROWS = 10;
    int MAX_COLS = 10;
    int rowsUsed = 5;
    int colsUsed = 5;
    int row, column;
    char[][] table = new char[MAX_ROWS][MAX_COLS];
    for (column = 0; column < MAX_COLS; column++) {
        for (row = 0; row < MAX_ROWS; row++)
            table[row][column] = 'a';
    }
    for (row = rowsUsed; row < MAX_ROWS; row++)
        for (column = colsUsed; column < MAX_COLS; column++)
            table[row][column] = '+';

    for (column = 0; column < colsUsed; column++)
        for (row = 0; row < rowsUsed; row++)
            table[row][column] = '1';

    printMatrix(table);
}

public static void printMatrix(char[][] A) {
    for (int i = 0; i < A.length; i++) {
        for (int j = 0; j < A[0].length; j++) {
            System.out.print(A[i][j] + " ");
        }
        System.out.println();
    }
}
}

```

Output :

```

      a a a a a
      a a a a a
      a a a a a
      a a a a a
      a a a a a
a a a a a + + + +
a a a a a + + + +
a a a a a + + + +
a a a a a + + + +
a a a a a + + + +

```

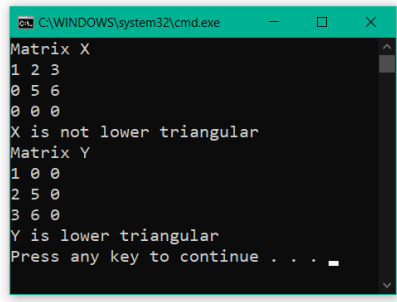
- 1) ส่วนของโปรแกรมเป็นการสร้างตาราง (อาเรย์) ขนาด 10×10 มิติ ประเภท char
- 2) ลูป for กลุ่มแรก เป็นการประมวลผลตาราง ตามแถว หรือ ตามคอลัมน์
 ลูป for กลุ่มสอง เป็นการประมวลผลตาราง ตามแถว หรือ ตามคอลัมน์
 ลูป for กลุ่มสาม เป็นการประมวลผลตาราง ตามแถว หรือ ตามคอลัมน์

12B

```
1 class Array12B{
2     public static boolean lowerTriangular(int[][] M){
3         int i, j;
4         for (i = 0; i < M.length; i++){
5             for (j = i + 1; j < M[i].length; j++){
6                 if(M[i][j] != 0)
7                     return false;
8                 break;
9             }
10        }
11        return true;
12    }
13    public static int[][] transposeMatrix(int[][] M){
14        int[][] X = new int[M[0].length][M.length];
15        int i, j;
16        for (i = 0; i < M.length; i++){
17            for (j = 0; j < M[i].length; j++){
18                X[j][i] = M[i][j];
19            }
20        }
21        return X;
22    }
23    public static void printMatrix(int[][] M){
24        int i, j;
25        for (i = 0; i < M.length; i++){
26            for (j = 0; j < M[i].length; j++){
27                System.out.print(M[i][j]+" ");
28            }
29            System.out.println();
30        }
31    }
32    public static void main(String[] args) {
33        int[][] X = {{1, 2, 3}, {0, 5, 6}, {0, 0, 0}};
34        int[][] Y;
35        System.out.println("Matrix X");
36        printMatrix(X);
37        if (lowerTriangular(X))
38            System.out.println("X is lower triangular");
39        else
40            System.out.println("X is not lower triangular");
41        Y = transposeMatrix(X);
42        System.out.println("Matrix Y");
43        printMatrix(Y);
44        if (lowerTriangular(Y))
45            System.out.println("Y is lower triangular");
46        else
47            System.out.println("Y is not lower triangular");
48    }
49 } //Supawit Saengrattayanayon 64050694
```

----- Java Compile -----
Picked up JAVA_TOOL_OPTIONS: -Dfile.encoding=UTF-8

Output completed (0 sec consumed) - Normal Termination



12B

```

class Array12B {
    public static boolean lowerTriangular(int[][] M){
        int i,j;
        for(i=0; i < M.length; i++){
            for(j=i+1; j < M[i].length; j++){
                if(M[i][j] != 0)
                    return false;
                break;
            }
        }
        return true;
    }

    public static int[][] transposeMatrix(int[][] M){
        int[][] X = new int[M[0].length][M.length];
        int i,j;
        for(i=0; i < M.length; i++){
            for(j=0; j < M[i].length; j++){
                X[j][i] = M[i][j];
            }
        }
        return X;
    }

    public static void printMatrix(int[][] M){
        int i,j;
        for(i=0; i < M.length; i++){
            for(j=0; j < M[i].length; j++){
                System.out.print(M[i][j] + " ");
            }
            System.out.println();
        }
    }

    public static void main(String[] args){
        int[][] X = {{1,2,3},{0,5,6},{0,0,0}};
        int[][] Y;
        System.out.println("Matrix X");
        printMatrix(X);
        if(lowerTriangular(X))
            System.out.println("X is lower triangular");
        else
            System.out.println("X is not lower triangular");
        Y = transposeMatrix(X);
        System.out.println("Transpose Matrix Y");
        printMatrix(Y);
        if(lowerTriangular(Y))
            System.out.println("Y is lower triangular");
        else
            System.out.println("Y is not lower triangular");
    }
}

```

Suravit Saengrothtanayon
64050694

Output :

Matrix X

```

1 2 3
0 5 6
0 0 0

```

X is not lower triangular

Matrix Y

```

1 0 0
2 5 0
3 6 0

```

Y is lower triangular