

Week 09 : Programming Assignment 1

Due on 2025-03-27, 23:59 IST

Write suitable code to develop a 2D Flip-Flop Array with dimension 5 × 5, which replaces all input elements with values 0 by 1 and 1 by 0. An example is shown below:

INPUT:
00001
00001
00001
00001
00001

OUTPUT:
11110
11110
11110
11110
11110

- Note the following points carefully:
- 1. Here, the input must contain only 0 and 1.
 - 2. The input and output array size must be of dimension 5 × 5.
 - 3. Flip-Flop: If 0 then 1 and vice-versa.

Private Test cases used for evaluation	Input	Expected Output	Actual Output	Status
Test Case 1	00100 01010 10001 01010 00100	11011\n10101\n01110\n10101\n11011	11011\n10101\n01110\n10101\n11011	Passed

The due date for submitting this assignment has passed.
1 out of 1 tests passed.
You scored 100.0/100.

Assignment submitted on 2025-03-25, 20:20 IST

Your last recorded submission was :

```
1 import java.util.Scanner;
2 public class Question91{
3     public static void main(String args[]){
4         Scanner sc = new Scanner(System.in);
5         int[][] arr = new int[5][5];
6         // Input 2D Array and check data validity
7         for (int i = 0; i < 5; i++) {
8             String row = sc.nextLine();
9             if (row.length() != 5) {
10                 System.out.println("Invalid input: Each row must contain 5 digits.");
11                 return;
12             }
13             for (int j = 0; j < 5; j++) {
14                 if (row.charAt(j) != '0' && row.charAt(j) != '1') {
15                     System.out.println("Invalid input: Only 0 and 1 are allowed.");
16                     return;
17                 }
18                 arr[i][j] = row.charAt(j) - '0';
19             }
20         }
21         // Perform the Flip-Flop Operation and Output
22         for (int i = 0; i < 5; i++) {
23             for (int j = 0; j < 5; j++) {
24                 System.out.print(i - arr[i][j]);
25                 System.out.println();
26             }
27         }
28         sc.close();
29     }
30 } // The main() ends here
31 } // The main class ends here
```

Sample solutions (Provided by instructor)

```
1 import java.util.Scanner;
2 public class Question91{
3     public static void main(String args[]){
4         Scanner sc = new Scanner(System.in);
5         // Declare the 5x5 2D array to store the input
6         char original[][] = new char[5][5];
7         // Input 2D Array using Scanner Class and check data validity
8         for(int line=0;line<5; line++){
9             String input = sc.nextLine();
10             char seq[] = input.toCharArray();
11             if(seq.length==5){
12                 for(int i=0;i<5;i++){
13                     if(seq[i]=='0' || seq[i]=='1'){
14                         original[line][i]=seq[i];
15                         if(line==4 && i==4)
16                             flipflop(original);
17                     }
18                     else{
19                         System.out.print("Only 0 and 1 supported.");
20                         break;
21                     }
22                 }
23             }
24             else{
25                 System.out.print("Invalid length");
26                 break;
27             }
28         }
29         static void flipflop(char[][] flip){
30             // Flip-Flop Operation
31             for(int i=0;i<5;i++){
32                 for(int j=0;j<5;j++){
33                     if(flip[i][j]=='0'){
34                         flip[i][j]='1';
35                     }
36                     else{
37                         flip[i][j]='0';
38                     }
39                 }
40             }
41             // Output the 2D FlipFlopped Array
42             for(int i=0;i<5;i++){
43                 for(int j=0;j<5;j++){
44                     System.out.print(flip[i][j]);
45                 }
46                 System.out.println();
47             }
48         }
49     } // The main() ends here
50 } // The main class ends here
```

Your last saved code is :

```
1 import java.util.Scanner;
2 public class Question91{
3     public static void main(String args[]){
4         Scanner sc = new Scanner(System.in);
5         int[][] arr = new int[5][5];
6         // Input 2D Array and check data validity
7         for (int i = 0; i < 5; i++) {
8             String row = sc.nextLine();
9             if (row.length() != 5) {
10                 System.out.println("Invalid input: Each row must contain 5 digits.");
11                 return;
12             }
13             for (int j = 0; j < 5; j++) {
14                 if (row.charAt(j) != '0' && row.charAt(j) != '1') {
15                     System.out.println("Invalid input: Only 0 and 1 are allowed.");
16                     return;
17                 }
18                 arr[i][j] = row.charAt(j) - '0';
19             }
20         }
21         // Perform the Flip-Flop Operation and Output
22         for (int i = 0; i < 5; i++) {
23             for (int j = 0; j < 5; j++) {
24                 System.out.print(i - arr[i][j]);
25                 System.out.println();
26             }
27         }
28         sc.close();
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30 } // The main() ends here
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```