

Week 09 : Programming Assignment 3

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

Complete the code to perform a 45 degree anti clock wise rotation with respect to the center of a 5 × 5 2D Array as shown below:

INPUT:

00100
00100
11111
00100
00100

OUTPUT:

10001
01010
00100
01010
10001

- Note the following points carefully:
- 1. Here, instead of 0 and 1 any character may be given.
 - 2. The input and output array size must be of dimension 5 × 5 and nothing else.

Private Test cases used for evaluation	Input	Expected Output	Actual Output	Status
Test Case 1	00100 00100 00100 00100 00100	10000\n 01000\n 00100\n 00010\n 00001	10000\n 01000\n 00100\n 00010\n 00001	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, 21:14 IST

Your last recorded submission was :

```
1 import java.util.Scanner;  
2 public class Question93{  
3     public static void main(String args[]){  
4         Scanner sc = new Scanner(System.in);  
5         char arr[][]= new char[5][5];  
6         // Input 2D Array using Scanner Class  
7         for(int line=0; line<5; line++){  
8             String input = sc.nextLine();  
9             char seq[] = input.toCharArray();  
10            if(seq.length==5){  
11                for(int i=0; i<5; i++){  
12                    arr[line][i]=seq[i];  
13                }  
14            }  
15            else{  
16                System.out.print("Wrong Input!");  
17                System.exit(0);  
18            }  
19        }  
20        // Declaring the array to store Transition  
21        char tra[][]= new char[5][5];  
22        String outer[]={  
23            "00","10","20","30",  
24            "40","41","42","43",  
25            "04","04","04","04",  
26            "11","21","31","32",  
27            "33","23","13","12"};  
28  
29        String inner[]={  
30            "11","21","31","32",  
31            "33","23","13","12"};  
32  
33        // 45-Degree rotation  
34        for(int i=0; i<5; i++){  
35            for(int j=0; j<5; j++){  
36                // Transform outer portion  
37                for(int k=0; k<outer.length; k++){  
38                    char indices[]=outer[k].toCharArray();  
39                    int a = Integer.parseInt(String.valueOf(indices[0]));  
40                    int b = Integer.parseInt(String.valueOf(indices[1]));  
41                    if(a==1 && b==1){  
42                        if(k==1){  
43                            else if(k==14){k=0;}  
44                        }  
45                        indices=outer[k].toCharArray();  
46                        a = Integer.parseInt(String.valueOf(indices[0]));  
47                        b = Integer.parseInt(String.valueOf(indices[1]));  
48                        tra[a][b] = arr[i][j];  
49                        break;  
50                    }  
51                }  
52                // Transform inner portion  
53                for(int k=0; k<inner.length; k++){  
54                    char indices[]=inner[k].toCharArray();  
55                    int a = Integer.parseInt(String.valueOf(indices[0]));  
56                    int b = Integer.parseInt(String.valueOf(indices[1]));  
57                    if(a==1 && b==1){  
58                        if(k==7){k=0;}  
59                        indices=inner[k].toCharArray();  
60                        a = Integer.parseInt(String.valueOf(indices[0]));  
61                        b = Integer.parseInt(String.valueOf(indices[1]));  
62                        tra[a][b] = arr[i][j];  
63                        break;  
64                    }  
65                }  
66            }  
67            // Keeping center same  
68            tra[2][2] = arr[2][2];  
69        }  
70        // Print the transformed output  
71        for(int i=0; i<5; i++){  
72            for(int j=0; j<5; j++){  
73                System.out.print(tra[i][j]);  
74            }  
75            System.out.println();  
76        }  
77    }  
78 } // The main() method ends here  
79 } // The main class ends here
```

Sample solutions (Provided by instructor)

```
1 import java.util.Scanner;  
2 public class Question93{  
3     public static void main(String args[]){  
4         Scanner sc = new Scanner(System.in);  
5         char arr[][]= new char[5][5];  
6         // Input 2D Array using Scanner Class  
7         for(int line=0; line<5; line++){  
8             String input = sc.nextLine();  
9             char seq[] = input.toCharArray();  
10            if(seq.length==5){  
11                for(int i=0; i<5; i++){  
12                    arr[line][i]=seq[i];  
13                }  
14            }  
15            else{  
16                System.out.print("Wrong Input!");  
17                System.exit(0);  
18            }  
19        }  
20        // Declaring the array to store Transition  
21        char tra[][]= new char[5][5];  
22        String outer[]={  
23            "00","10","20","30",  
24            "40","41","42","43",  
25            "04","04","04","04",  
26            "11","21","31","32",  
27            "33","23","13","12"};  
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29        String inner[]={  
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32  
33        // 45-Degree rotation  
34        for(int i=0; i<5; i++){  
35            for(int j=0; j<5; j++){  
36                // Transform outer portion  
37                for(int k=0; k<outer.length; k++){  
38                    char indices[]=outer[k].toCharArray();  
39                    int a = Integer.parseInt(String.valueOf(indices[0]));  
40                    int b = Integer.parseInt(String.valueOf(indices[1]));  
41                    if(a==1 && b==1){  
42                        if(k==15){k=1;}  
43                        else if(k==14){k=0;}  
44                        indices=outer[k].toCharArray();  
45                        a = Integer.parseInt(String.valueOf(indices[0]));  
46                        b = Integer.parseInt(String.valueOf(indices[1]));  
47                        tra[a][b] = arr[i][j];  
48                        break;  
49                    }  
50                }  
51                // Transform inner portion  
52                for(int k=0; k<inner.length; k++){  
53                    char indices[]=inner[k].toCharArray();  
54                    int a = Integer.parseInt(String.valueOf(indices[0]));  
55                    int b = Integer.parseInt(String.valueOf(indices[1]));  
56                    if(a==1 && b==1){  
57                        if(k==7){k=0;}  
58                        else {k+=1;}  
59                        indices=inner[k].toCharArray();  
60                        a = Integer.parseInt(String.valueOf(indices[0]));  
61                        b = Integer.parseInt(String.valueOf(indices[1]));  
62                        tra[a][b] = arr[i][j];  
63                        break;  
64                    }  
65                }  
66            }  
67            // Keeping center same  
68            tra[2][2] = arr[2][2];  
69        }  
70        // Print the transformed output  
71        for(int i=0; i<5; i++){  
72            for(int j=0; j<5; j++){  
73                System.out.print(tra[i][j]);  
74            }  
75            System.out.println();  
76        }  
77    }  
78 } // The main() method ends here  
79 } // The main class ends here
```