Java Week 9 : Q3

Due on 2020-11-19, 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 11111 00100 00100	10001\n 01010\n 00100\n 01010\n 10001	10001\n 01010\n 00100\n 01010\n 10001\n	Passed

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

Assignment submitted on 2020-11-10, 22:53 IST

Your last recorded submission was :

```java
1  import java.util.Scanner;
2  public class Question93{
3      public static void main(String args[]){
4          Scanner sc = new Scanner(System.in);
5  // Input 5X5 2D Array using Scanner Class
6
7
8  // Perform 45-Degree rotation keeping center same (use your own logic)
9
10
11 // Print the transformed output 5X5 2D Array
12          char arr[][]= new char[5][5];
13          // Input 2D Array using Scanner Class
14          for(int line=0;line<5; line++){
15              String input = sc.nextLine();
16              char seq[] = input.toCharArray();
17              if(seq.length==5){
18                  for(int i=0;i<5;i++){
19                      arr[line][i]=seq[i];
20                  }
21              }else{
22                  System.out.print("Wrong Input!");
23                  System.exit(0);
24              }
25          }
26          // Declaring the array to store Transition
27          char tra[][] = new char[5][5];
28          String outer[]={"00","10","20","30",
29                          "40","41","42","43",
30                          "44","34","24","14",
31                          "04","03","02","01"};
32
33          String inner[]={"11","21","31","32",
34                          "33","23","13","12"};
35
36          // 45-Degree rotation
37          for(int i=0;i<5;i++){
38              for(int j=0;j<5;j++){
39                  // Transform outer portion
40                  for(int k=0; k<outer.length; k++){
41                      char indices[]=outer[k].toCharArray();
42                      int a = Integer.parseInt(String.valueOf(indices[0]));
43                      int b = Integer.parseInt(String.valueOf(indices[1]));
44                      if(a==i && b==j){
45                          if(k==15){k=1;}
46                          else if(k==14){k=0;}
47                          else {k+=2;}
48                          indices=outer[k].toCharArray();
49                          a = Integer.parseInt(String.valueOf(indices[0]));
50                          b = Integer.parseInt(String.valueOf(indices[1]));
51                          tra[a][b] = arr[i][j];
52                          break;
53                      }
54                  }
55                  // Transform inner portion
56                  for(int k=0; k<inner.length; k++){
57                      char indices[]=inner[k].toCharArray();
58                      int a = Integer.parseInt(String.valueOf(indices[0]));
59                      int b = Integer.parseInt(String.valueOf(indices[1]));
60                      if(a==i && b==j){
61                          if(k==7){k=0;}
62                          else {k+=1;}
```

```
63                    indices=inner[k].toCharArray();
64                    a = Integer.parseInt(String.valueOf(indices[0]));
65                    b = Integer.parseInt(String.valueOf(indices[1]));
66                    tra[a][b] = arr[i][j];
67                    break;
68                    }
69                }
70                // Keeping center same
71                tra[2][2] = arr[2][2];
72            }
73        }
74        // Print the transformed output
75        for(int i=0;i<5;i++){
76            for(int j=0;j<5;j++){
77                System.out.print(tra[i][j]);
78            }
79            System.out.println();
80        }
81
82
83    } // The main() method ends here
84 } // 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             }else{
15                 System.out.print("Wrong Input!");
16                 System.exit(0);
17             }
18         }
19         // Declaring the array to store Transition
20         char tra[][] = new char[5][5];
21         String outer[]={"00","10","20","30",
22                         "40","41","42","43",
23                         "44","34","24","14",
24                         "04","03","02","01"};
25
26         String inner[]={"11","21","31","32",
27                         "33","23","13","12"};
28
29         // 45-Degree rotation
30         for(int i=0;i<5;i++){
31             for(int j=0;j<5;j++){
32                 // Transform outer portion
33                 for(int k=0; k<outer.length; k++){
34                     char indices[]=outer[k].toCharArray();
35                     int a = Integer.parseInt(String.valueOf(indices[0]));
36                     int b = Integer.parseInt(String.valueOf(indices[1]));
37                     if(a==i && b==j){
38                         if(k==15){k=1;}
39                         else if(k==14){k=0;}
40                         else {k+=2;}
41                         indices=outer[k].toCharArray();
42                         a = Integer.parseInt(String.valueOf(indices[0]));
43                         b = Integer.parseInt(String.valueOf(indices[1]));
44                         tra[a][b] = arr[i][j];
45                         break;
46                     }
47                 }
48                 // Transform inner portion
49                 for(int k=0; k<inner.length; k++){
50                     char indices[]=inner[k].toCharArray();
51                     int a = Integer.parseInt(String.valueOf(indices[0]));
52                     int b = Integer.parseInt(String.valueOf(indices[1]));
53                     if(a==i && b==j){
54                         if(k==7){k=0;}
55                         else {k+=1;}
56                         indices=inner[k].toCharArray();
57                         a = Integer.parseInt(String.valueOf(indices[0]));
58                         b = Integer.parseInt(String.valueOf(indices[1]));
59                         tra[a][b] = arr[i][j];
60                         break;
61                     }
62                 }
63                 // Keeping center same
64                 tra[2][2] = arr[2][2];
65             }
66         }
67         // Print the transformed output
68         for(int i=0;i<5;i++){
69             for(int j=0;j<5;j++){
70                 System.out.print(tra[i][j]);
71             }
72             System.out.println();
73         }
74    } // The main() method ends here
75 } // The main class ends here
```