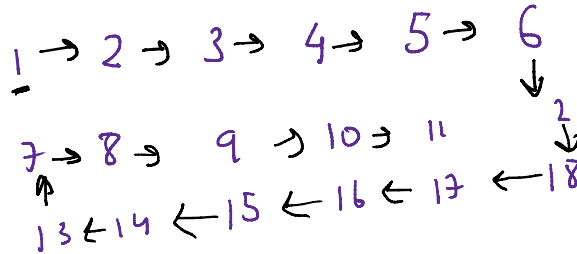
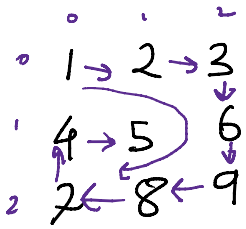
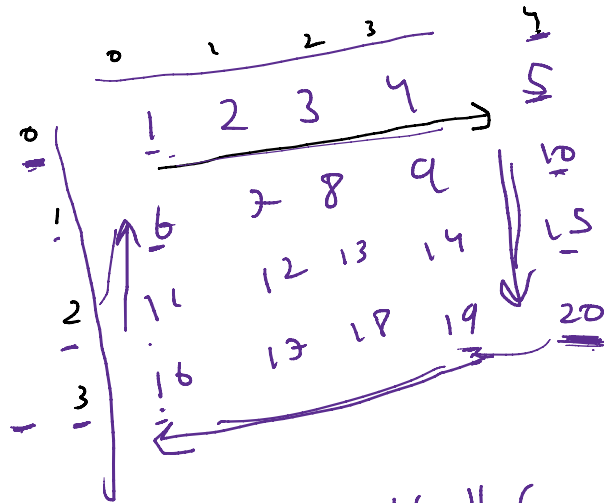


- ### Spiral Display :-

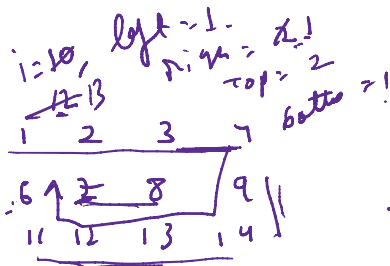


o/p  $\Rightarrow$  1, 2, 3, 4, 5, 6, 12, 18, 17, 16, 15, 14, 13, 7, 8, 9, 10, 11

$\text{left} = 0$   
 $\text{mat}[0].\text{left} = 8$   
 $\text{right} = 9$   
 $\text{top} = 1$   
 $\text{mat}.\text{right} = 2$   
 $\text{bottom} = 2$



op = 1, 2, 3, 4, 5, 10, 15, 20, 19, 18, 17, 16, 11, 6



total = 12

left = 0  
right = 3  
Fop = 0 + 2  
bottom = 2  
i = 0 1 2 3 4 5 6 7 8 9 10 11 12 13

O/P  $\rightarrow 1, 2, 3, 4, \underline{9, 14}, \underline{13, 12, 11}, \underline{6}, \underline{7, 8, 7}$

$$a^2 \quad [3] \quad [4]$$

```
while (i < res.length) {
    for (int j = left; j <= right; j++) {
        res[i] = mat[top][j];
        i++;
    }
    top++;
    for (int j = top; j <= bottom; j++) {
        res[i] = mat[j][right];
        i++;
    }
    right--;
    for (int j = right; j >= left; j--) {
        res[i] = mat[bottom][j];
        i++;
    }
    bottom--;
    for (int j = bottom; j >= top; j++) {
        res[i] = mat[j][left];
        i++;
    }
    left++;
}
```

a = [3] [4]

a.length = 3

a[0].length = 4