

Pattern_5


$$n=7$$

n=7

sp	st	
6	1	✓ $sp = 7 - 1, st = 1$
5	2	✓ $sp = 7 - 2, st = 2$
4	3	✓ $sp = 7 - 3, st = 3$
3	4	✓ $sp = 7 - 4, st = 4$
2	5	✓ $sp = 7 - 5, st = 5$
1	6	✓ $sp = 7 - 6, st = 6$
0	7	✓ $sp = 7 - 7, st = 7$

$$\underline{\underline{sp = n - i}}, \quad \underline{\underline{st = i}}$$

no. of spaces
in each line

no. of stars
in each line

```
for (int i = 1; i <= n; i++) { // no of rows
    // for spaces
    for (int j = 0; j < n - i; j++) {
        System.out.print(" ");
    }

    // for stars
    for (int j = 0; j < i; j++) {
        System.out.print("*");
    }

    System.out.println();
}
```

Quel

$n=5$

outer
loop

Diagram illustrating the selection sort algorithm. It shows five rows representing array elements $i=1$ to $i=5$. Each row has five positions. Stars represent elements. Red lines and arrows show the selection of the minimum element in the unsorted portion and its swap with the element at position i .

- $i=1$: The minimum element (star) is at position 4. It is swapped with the element at position 1.
- $i=2$: The minimum element (star) is at position 3. It is swapped with the element at position 2.
- $i=3$: The minimum element (star) is at position 4. It is swapped with the element at position 3.
- $i=4$: The minimum element (star) is at position 5. It is swapped with the element at position 4.
- $i=5$: The element is already in its correct position.

```
for (int i = 1; i <= n; i++) { // no of rows
    // for spaces
    for (int j = 1; j <= n - i; j++) {
        System.out.print(" ");
    }

    // for stars
    for (int j = 1; j <= i; j++) {
        System.out.print("* ");
    }

    System.out.println();
}
```

$n=5, i=3$ $n-i$

 $n-i$

$n=5, i=2$

sp	st
4	1
3	2
2	3
1	4
0	5

$$Sp = 5 - 1, st = 1$$

$sp=5-2, st=2$

$$sp = 5 - 3, st = 3$$

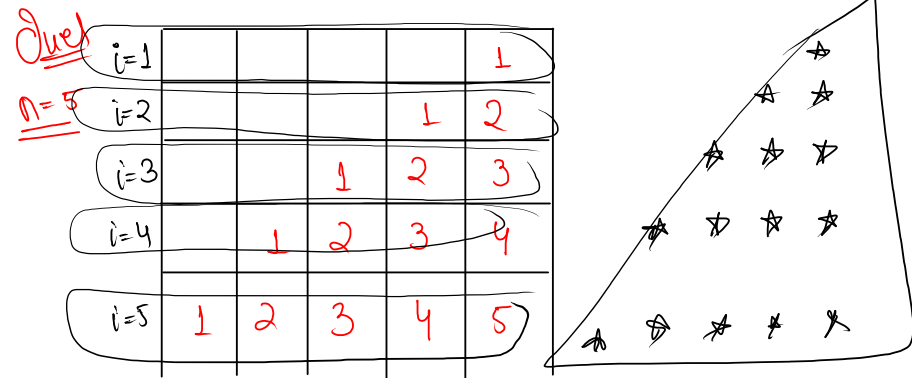
$$s_p = 5 - 4, s_t = 4$$

$$sp = 5 - 5, st = 5$$

$sp = n - i$, $st = i$

$i=1,$	—	—	—	—	☆	—				
$i=2,$	—	—	—	☆	—	☆	—			
$i=3,$	—	—	☆	—	☆	—	☆	—		
$i=4,$	—	☆	—	☆	—	☆	—	☆	—	
$i=5,$	☆	—	☆	—	☆	—	☆	—	☆	—

n=5



```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();

    for (int i = 1; i <= n; i++) { // no of rows
        // for spaces
        for (int j = 1; j <= n - i; j++) {
            System.out.print(" ");
        }

        // for stars
        for (int k = 1; k <= i; k++) {
            System.out.print(k);
        }

        System.out.println();
    }
}
```

Ques

n=5

i=1	1	2	3	4	5
i=2	-	1	2	3	4
i=3	-	-	1	2	3
i=4	-	-	-	1	2
i=5	-	-	-	-	1

sp	st
0	5
1	4
2	3
3	2
4	1

```
for (int i = n; i >= 1; i--) { // no of rows
    // for spaces
    for (int j = 1; j <= n - i; j++) {
        System.out.print(" ");
    }

    // for stars
    for (int k = 1; k <= i; k++) {
        System.out.print(k);
    }

    System.out.println();
}
```

Ques

n=7

1			
1	2		
1	2	3	
1	2	3	4
1	2	3	
1	2		
1			

Input is always odd no.

1) H.W

2) Ladder