✓ Mon

H.W

9 DSA 12

Tues

✓ Rec

✓ 6:00-8:00

Rupesh Sir

9

✓ Wed

✓ 1:1

✓ H.W

9 DSA 12

Thurs

9

✓ Fri

✓ H.W.

9 DSA 12

Sat

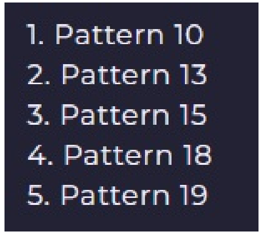
9

① Nados → active → class update

H.W. →

② Nados →

Dream → Companies | DSA ku

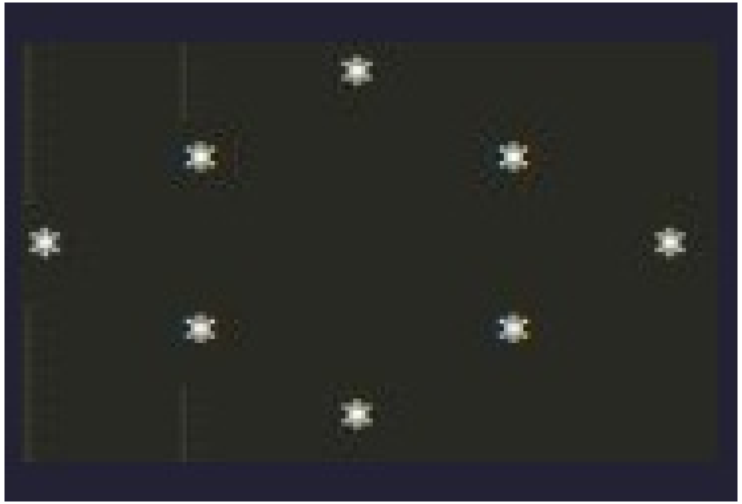


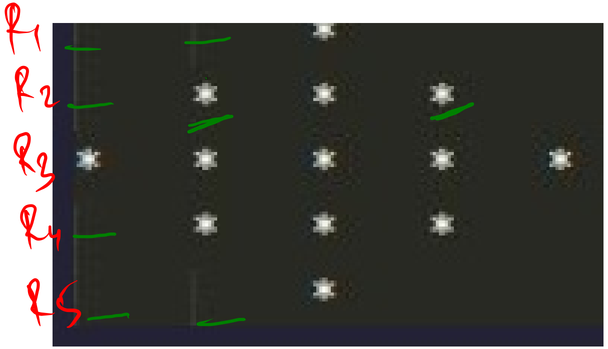
1. Pattern 10
2. Pattern 13
3. Pattern 15
4. Pattern 18
5. Pattern 19

Inp/output

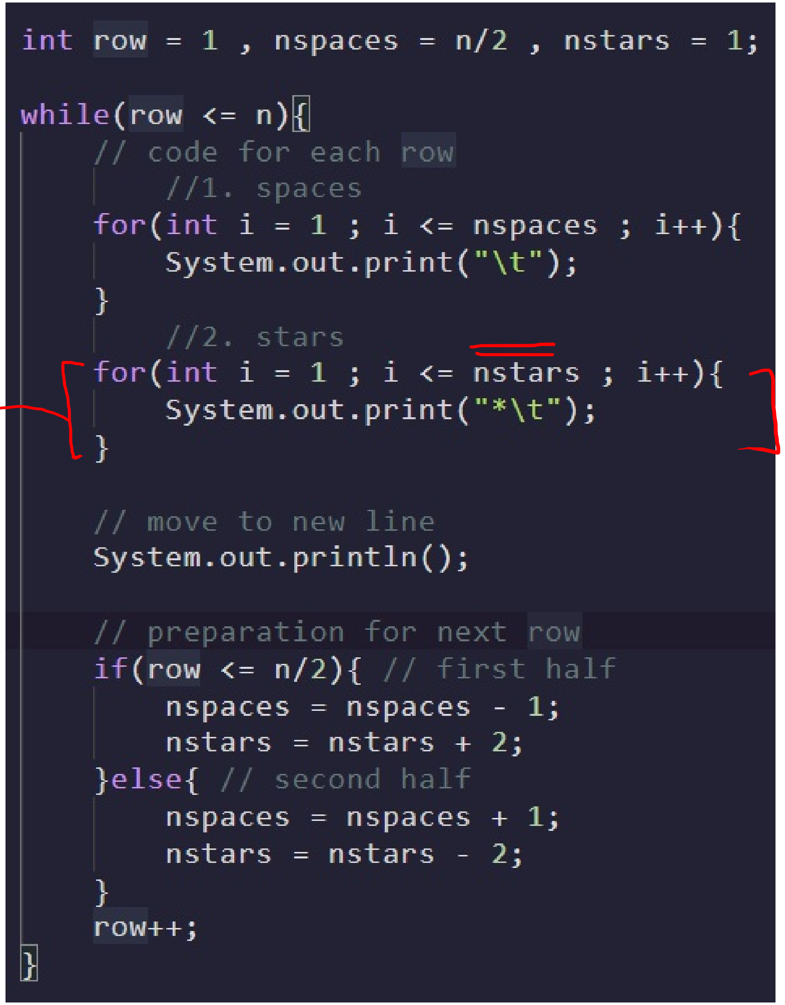
★ 15 min ≈ 45 min

Patterns





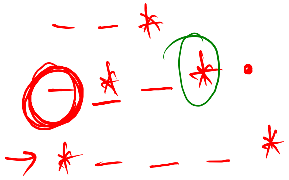
i = 1, ... nstars

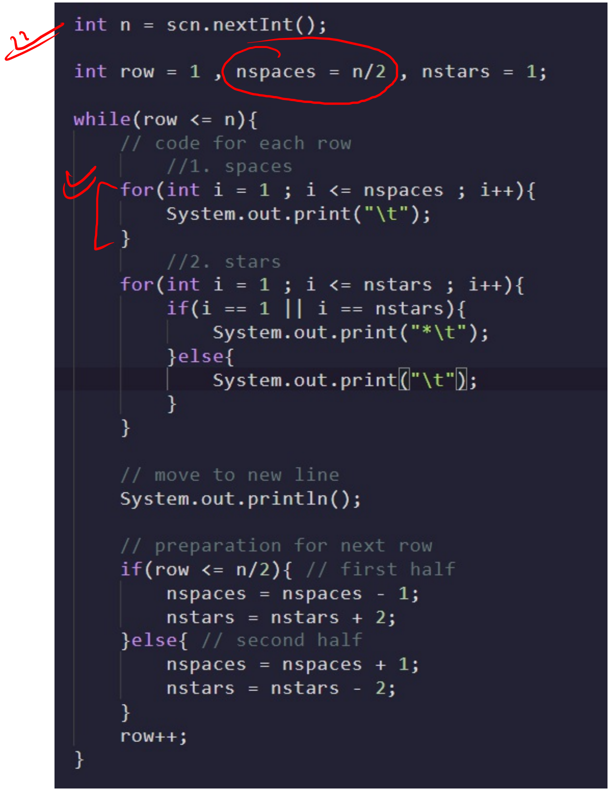


```
int row = 1 , nspaces = n/2 , nstars = 1;

while(row <= n){
    // code for each row
        //1. spaces
    for(int i = 1 ; i <= nspaces ; i++){
        System.out.print("\t");
    }
        //2. stars
    for(int i = 1 ; i <= nstars ; i++){
        System.out.print("*\t");
    }

    // move to new line
    System.out.println();

    // preparation for next row
    if(row <= n/2){ // first half
        nspaces = nspaces - 1;
        nstars = nstars + 2;
    }else{ // second half
        nspaces = nspaces + 1;
        nstars = nstars - 2;
    }
    row++;
}
```

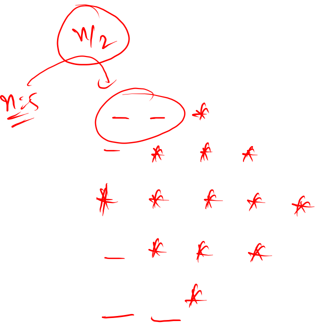
n=5

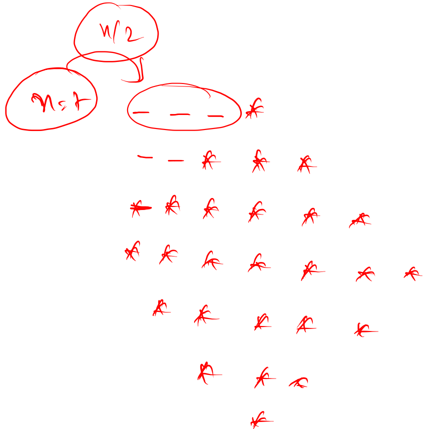
row	nspaces	nstars
1	2	1
2	1	3
3	0	5





```
int n = scn.nextInt();

int row = 1 , nspaces = n/2 , nstars = 1;

while(row <= n){
    // code for each row
        //1. spaces
    for(int i = 1 ; i <= nspaces ; i++){
        System.out.print("\t");
    }
        //2. stars
    for(int i = 1 ; i <= nstars ; i++){
        if(i == 1 || i == nstars){
            System.out.print("*\t");
        }else{
            System.out.print("\t");
        }
    }

    // move to new line
    System.out.println();

    // preparation for next row
    if(row <= n/2){ // first half
        nspaces = nspaces - 1;
        nstars = nstars + 2;
    }else{ // second half
        nspaces = nspaces + 1;
        nstars = nstars - 2;
    }
    row++;
}
```





n/2+1

n=7

1->n

	C1	C2	C3	C4	C5	C6	C7
R1	*	*	*	*			*
R2				*			*
R3				*			*
R4	*	*	*	*	*	*	*
R5	*			*			
R6	*			*			
R7	*			*	*	*	*

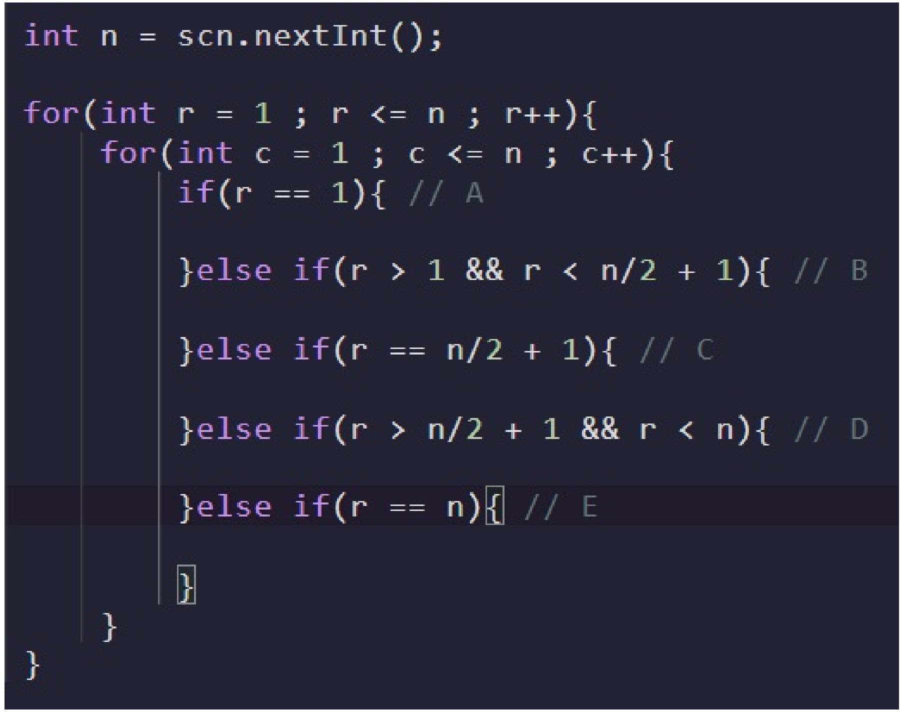
A if(r == 1)

B if(r>1 && r < $\frac{n}{2}$+1)

C if(r== $\frac{n}{2}$+1)

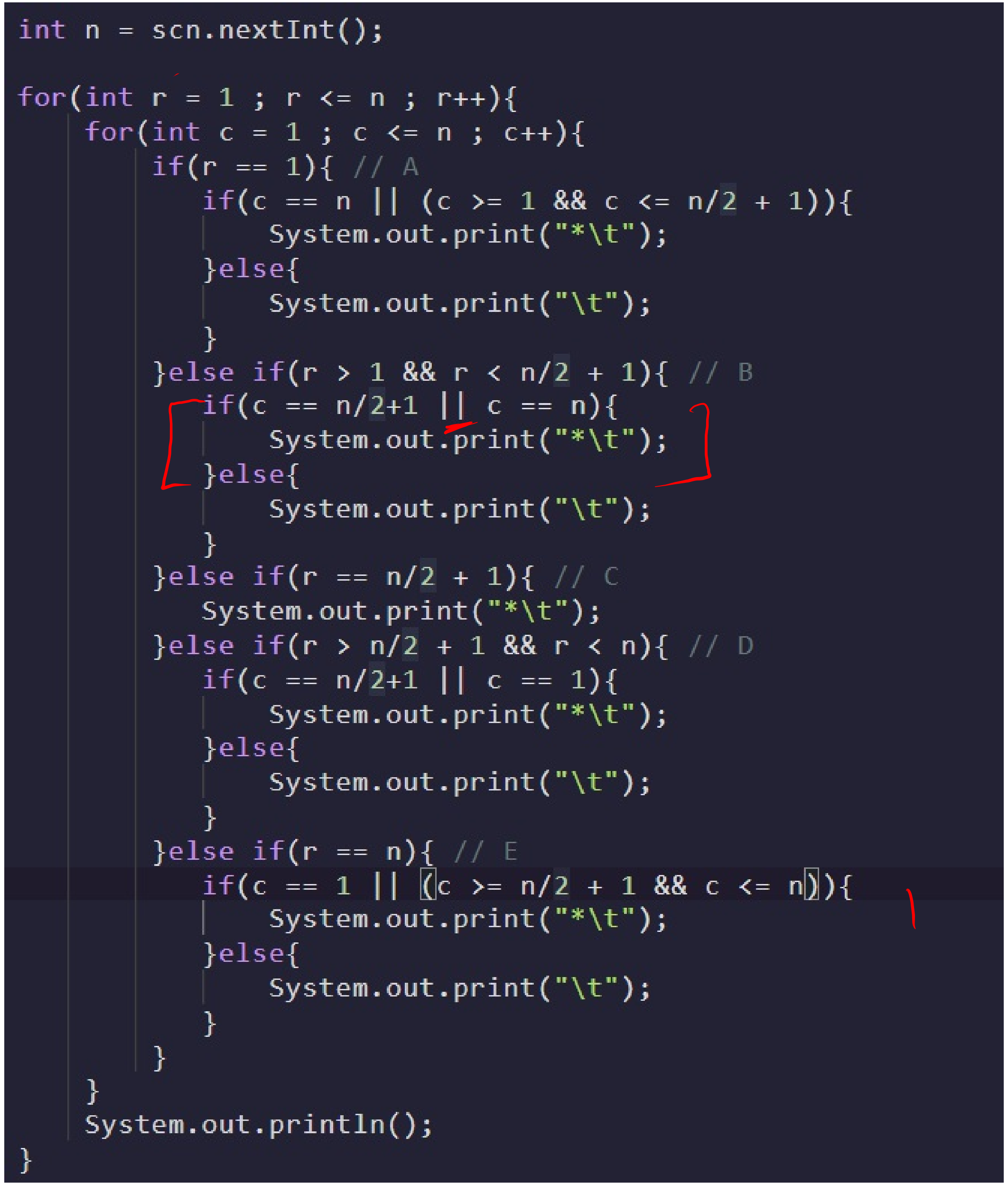
D if(r> $\frac{n}{2}$+1 && r<n)

E if(r==n)



```
int n = scn.nextInt();

for(int r = 1 ; r <= n ; r++){
    for(int c = 1 ; c <= n ; c++){
        if(r == 1){ // A

        }else if(r > 1 && r < n/2 + 1){ // B

        }else if(r == n/2 + 1){ // C

        }else if(r > n/2 + 1 && r < n){ // D

        }else if(r == n){ // E

        }
    }
}
```

R1 (R2 R3) R4 R5 R6 R7



```java
int n = scn.nextInt();

for(int r = 1 ; r <= n ; r++){
    for(int c = 1 ; c <= n ; c++){
        if(r == 1){ // A
            if(c == n || (c >= 1 && c <= n/2 + 1)){
                System.out.print("*\t");
            }else{
                System.out.print("\t");
            }
        }else if(r > 1 && r < n/2 + 1){ // B
            if(c == n/2+1 || c == n){
                System.out.print("*\t");
            }else{
                System.out.print("\t");
            }
        }else if(r == n/2 + 1){ // C
            System.out.print("*\t");
        }else if(r > n/2 + 1 && r < n){ // D
            if(c == n/2+1 || c == 1){
                System.out.print("*\t");
            }else{
                System.out.print("\t");
            }
        }else if(r == n){ // E
            if(c == 1 || (c >= n/2 + 1 && c <= n)){
                System.out.print("*\t");
            }else{
                System.out.print("\t");
            }
        }
    }
    System.out.println();
}
```

R=1 C = 1 2 3 4 5 6 7

R=2

R=3

R=4

R=5

R=6 * * * * _ _ *

R=7

2 3 4 5 6 7

* *

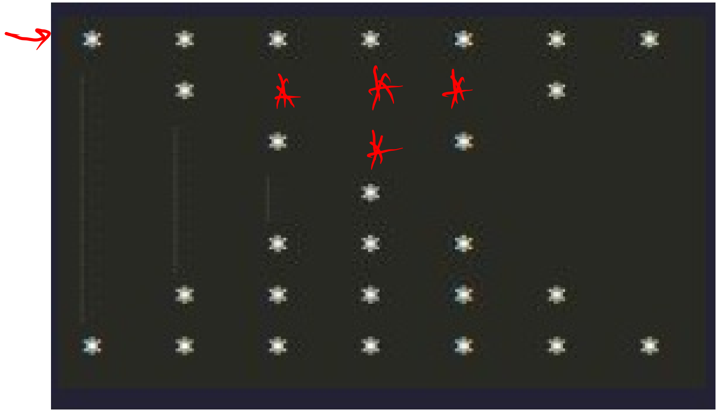
Pattern → 18 $if(r > 1 \ \&\& \ r <= \frac{n}{2}+1)\{$

H.W.

I

Nachos

II

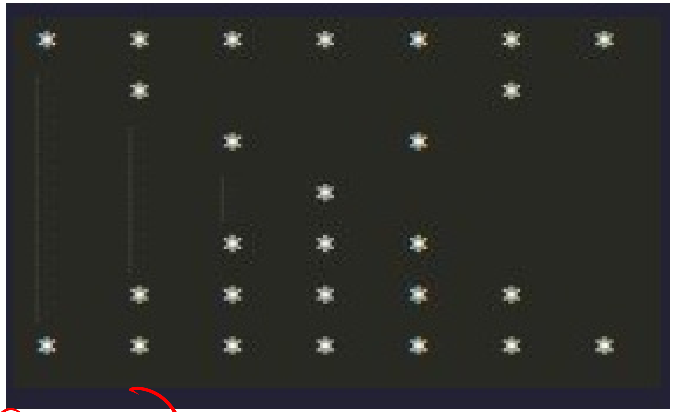


```
*  *  *  *  *  *  *
   *           *
      *     *
         *
      *  *  *
   *  *  *  *  *
*  *  *  *  *  *  *
```

(Similar to pattern 6)

while

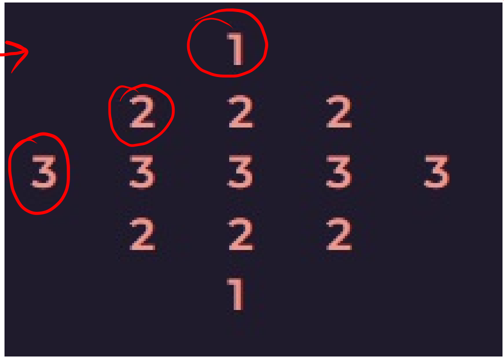
1. Code for each row
2. next line
3. preparation for next row
4. row++;



```
*  *  *  *  *  *  *
   *           *
      *     *
         *
      *  *  *
   *  *  *  *  *
*  *  *  *  *  *  *
```

Pattern 10

Row → num



```
    1
  2 2 2
3 3 3 3 3
  2 2 2
    1
```

num

	num
R1	1
	+1
R2	2
	+1
R3	3
	-1
R4	2
	-1
R5	1

a

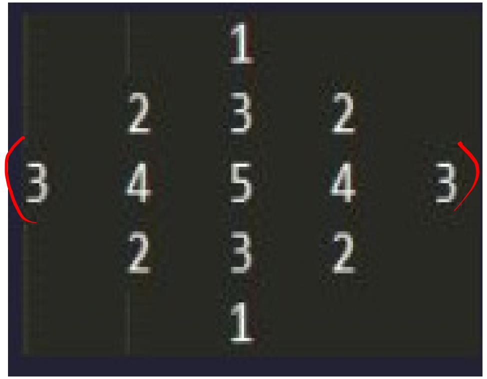
```
    *
  * * *
* * * * *
  * * *
    *
```

b

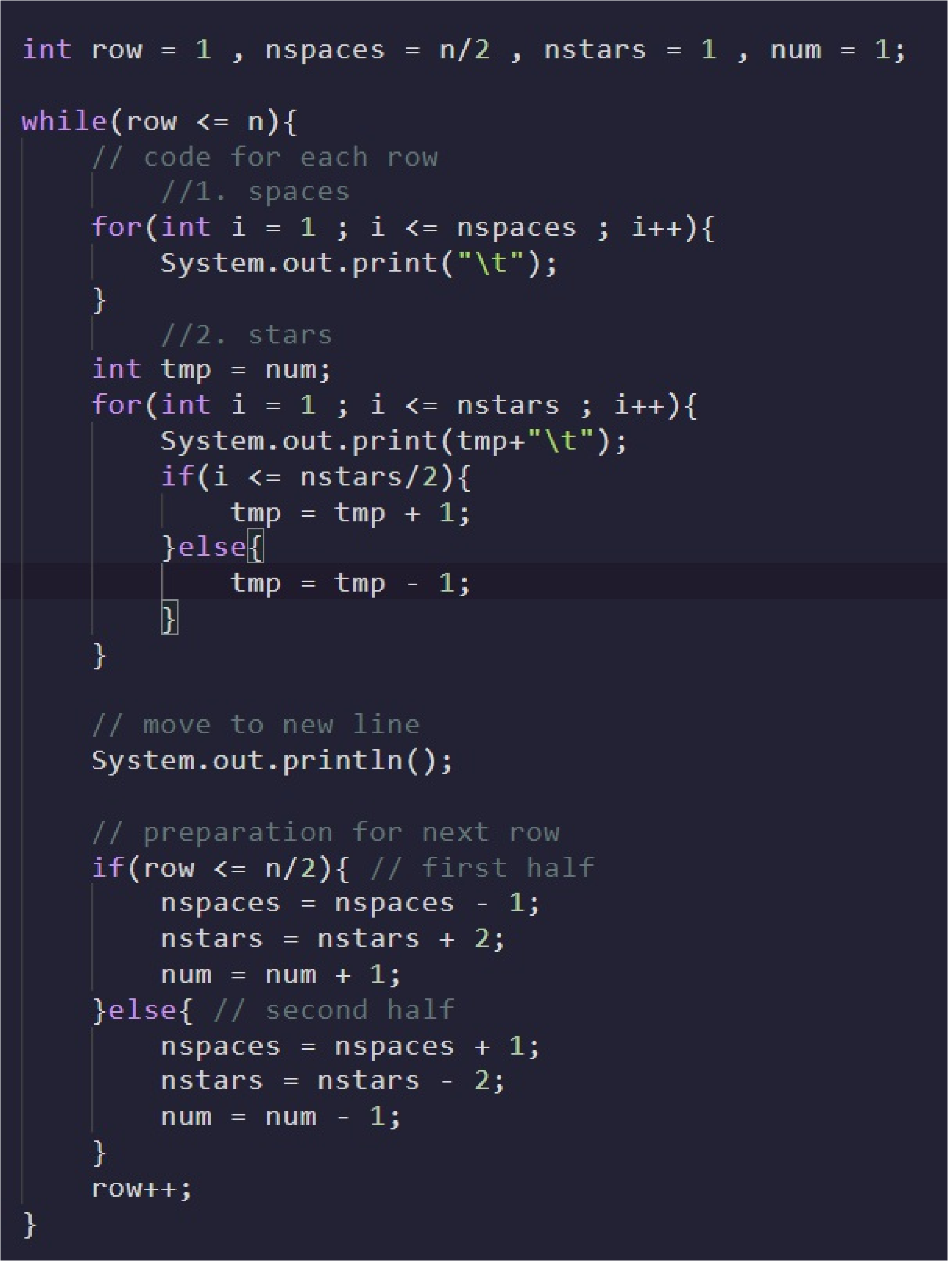
```
    1
  1 1 1
1 1 1 1 1
  1 1 1
    1
```

c

```
    1
  2 2 2
3 3 3 3 3
  2 2 2
    1
```



```
    1
  2 3 2
3 4 5 4 3
  2 3 2
    1
```



```
int row = 1 , nspaces = n/2 , nstars = 1 , num = 1;

while(row <= n){
    // code for each row
        //1. spaces
    for(int i = 1 ; i <= nspaces ; i++){
        System.out.print("\t");
    }
        //2. stars
    int tmp = num;
    for(int i = 1 ; i <= nstars ; i++){
        System.out.print(tmp+"\t");
        if(i <= nstars/2){
            tmp = tmp + 1;
        }else{
            tmp = tmp - 1;
        }
    }

    // move to new line
    System.out.println();

    // preparation for next row
    if(row <= n/2){ // first half
        nspaces = nspaces - 1;
        nstars = nstars + 2;
        num = num + 1;
    }else{ // second half
        nspaces = nspaces + 1;
        nstars = nstars - 2;
        num = num - 1;
    }
    row++;
}
```

row	nsp	nst	num	n = 5
1	2	1	1	
2	1	3	2	
→ 3	0	5	3	

i = 1 2 3 4 5

* * * * *

3 4 5

1 + 2 = 3

1 + 1 + 1 = 3

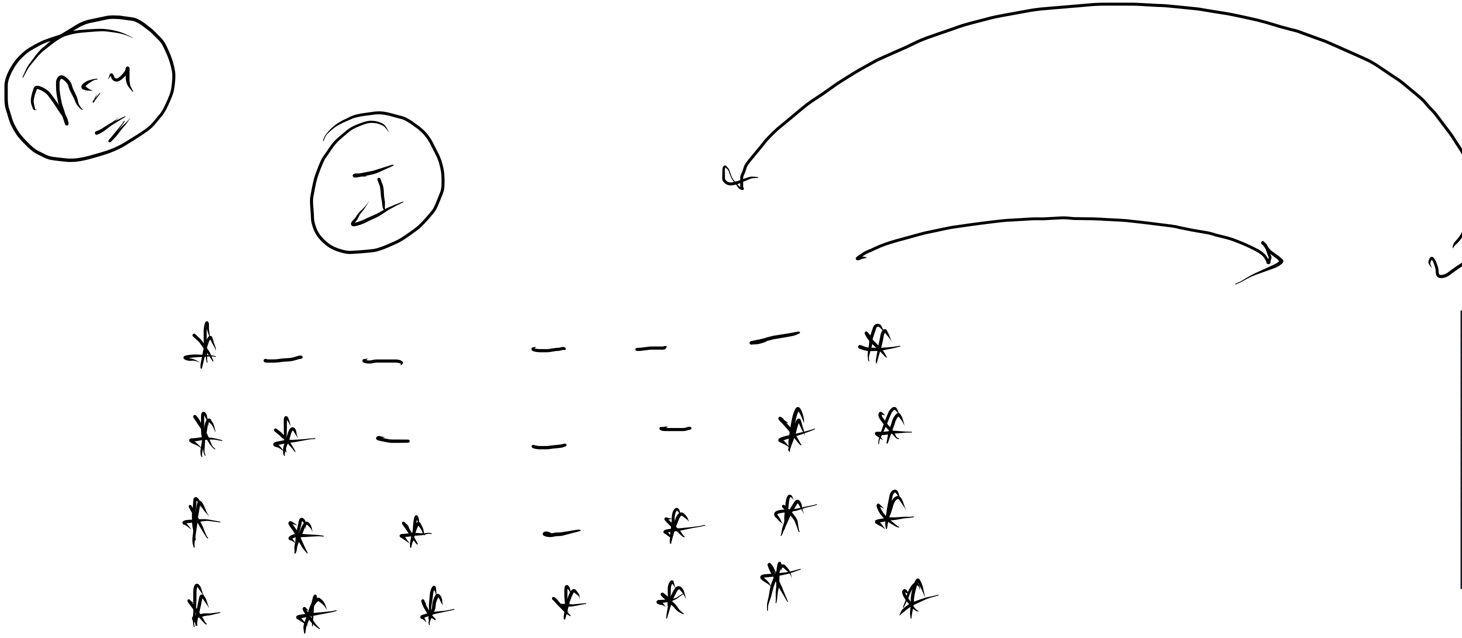
R1 _ _ 1

R2 → _ 2 3 2

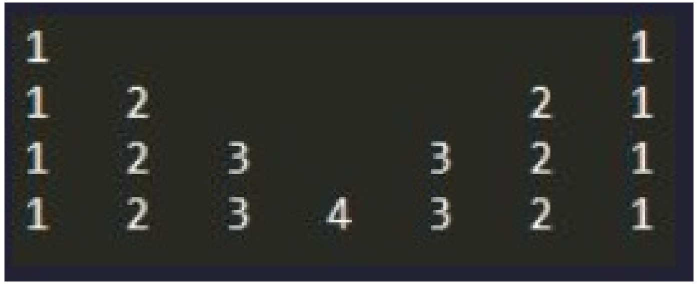
R3 → 3 4 5 4 3

R4 →

R5

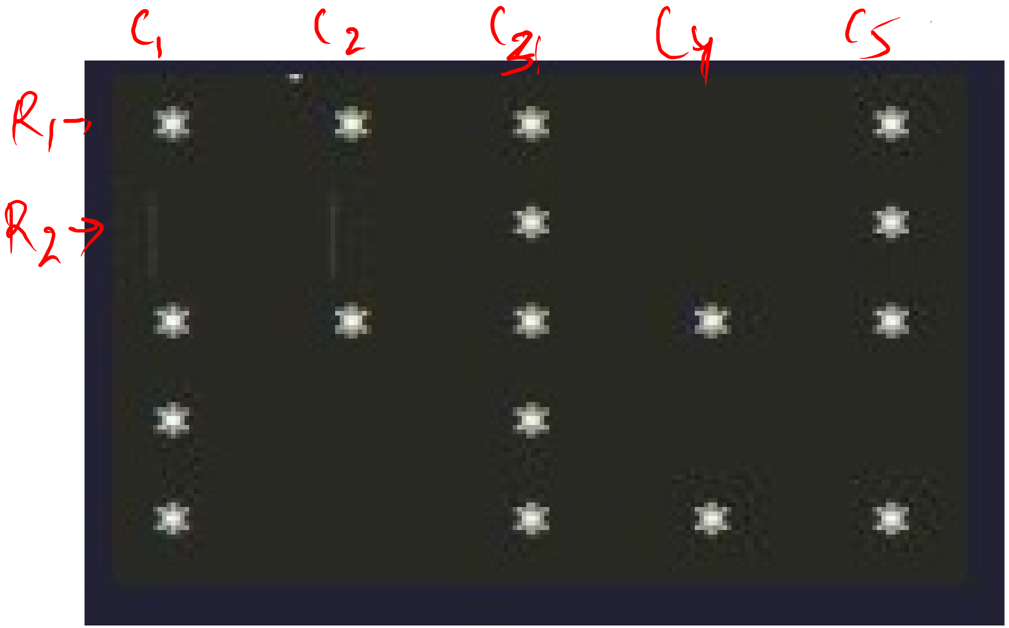


```
*  _  _  _  _  _  *
*  *  _  _  _  *  *
*  *  *  _  *  *  *
*  *  *  *  *  *  *
```



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

$n=5$



1, 2, 3, 5

$\left(c >= 1 \ \&\& \ \overset{3}{c <= n/2+1}\right)$

1 2 3 4 5

$\left(c == n \ \ || \ \ c == n/2+1\right)$