

Pattern → Traversal in different manners. (Not about submission)



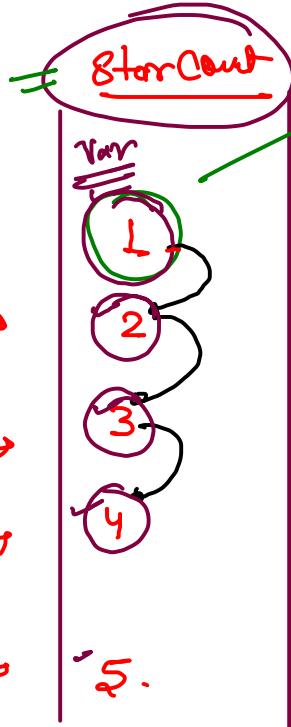
Traversal with loops

Pattern 1 →

row	1.	✓ *	
→ 2.	✓ *	*	
→ 3.	✓ *	*	*
→ 4.	*	*	*
→ 5.	*	*	*

Traversal in rows

n = 5.



Initialisation
Step = 1
n = 3

1. *
2. * #
3. * # #

StartCell
1

Initialisation
Loop [→ print Row
Manage Cnd]

newLine → \n → Enter hit }

```
// initialisation
int star = 1;
// loop for row
for(int r = 1; r <= n; r++) {
    System.out.println(star);
    // manage count
    star++;
}
```

r = 1

r = 2

r = 3

r = 4

r = 5

↓
1

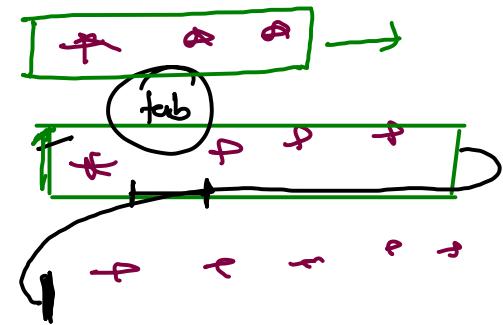
2

3

4

5

Star
print Star, star time
st = 1; st <= star; st++



i) print tab separated Star

ii) Hit Enter → System.out.println();

Special Characters →



```
// initialisation
int star = 1;
// loop for row
for(int r = 1; r <= n; r++) {
    // System.out.println(star);
```

```
// print star
for(int st = 1; st <= star; st++) {
    System.out.print("\t");
}

// hit enter
System.out.println();
// manage count
star++;
```

loop] → iterator

✓ Using i in
body of loop.
✓ n = size of array.

```
for(int i=0; i<n; i++) {
```

System.out.println(arr[i]); }]

Depend on value of

i
i=11; i<20; i++)
Count =

i is just for count
management

point Hello 10 times.

for(int i=0; i<10; i++)
System.out.println("Hello"); no. of steps =

for(int i=1; i<=10; i++)
System.out.println("Hello");

i=1, 2, 3, 4, 5, 6, 7, 8, 9, 10
Count = 10

pattern 2.

$n = 5$

$r=1 \quad * \quad * \quad + \quad + \quad +$

$r=2 \quad + \quad * \quad + \quad + \quad +$

$r=3 \quad + \quad + \quad +$

$r=4 \quad + \quad +$

$r=5 \quad *$

point stor (tab separated)

hit Enter

Merge Cont

Star Cont



initialisation

star = n;

// Merge Cont

→ star--;

$n = 3$

$r=1 \quad * \quad + \quad +$

$r=2 \quad + \quad *$

$r=3 \quad +$

Star Cont



Pattern 8.

$n=5$

1. - . - - - *	<u>Space</u>	<u>star</u>
2. - - - * *	4	1
3. H - + + +	3	2
4. H + + +	2	3
5. * * + +	0	4

var - Star & space

Star = 1

Space = $n-1$

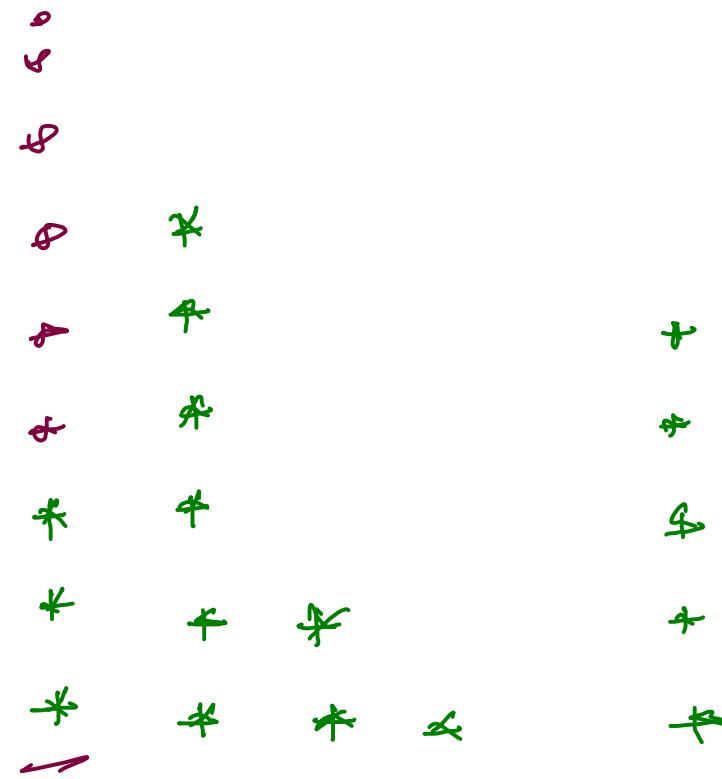
Row works

- ① print Space → Space \leftarrow Star \leftarrow
- ② point Star ← Star \leftarrow Star + "
- ③ hit Enter → Sync
- ④ Dent Mergent → Space --;
Star ++;

$n=3$

1. - - -	4
2. - + +	
3. * + +	

Bar chart (Bm)



9	8	6	0	2	5
---	---	---	---	---	---

Pattern 4.

$n=5$.

1. * * * * *

2. - * * * *

3. - - # # *

4. - - - # *

5. - - - - *

	<u>Space</u>	<u>Star.</u>
1.	0	5
2.	1	4
3.	2	3
4.	3	2
5.	4	1

Row work ??

initialisation ~

Inc / Dec.

print Space

print Star

left Enter

Move Cur.

Initialise

space = 0;

Star = n;

Inc / Dec.

Space + 1

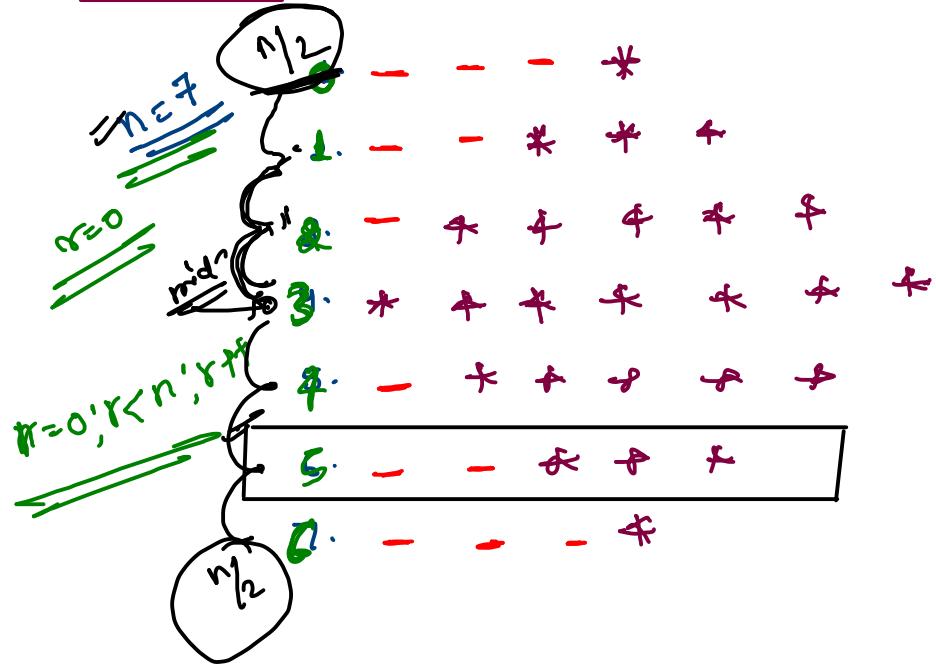
Star - 1;

$n=3$

Space

*	*	*	0
-	-	*	1
-	-	-	2

Pattern 5.

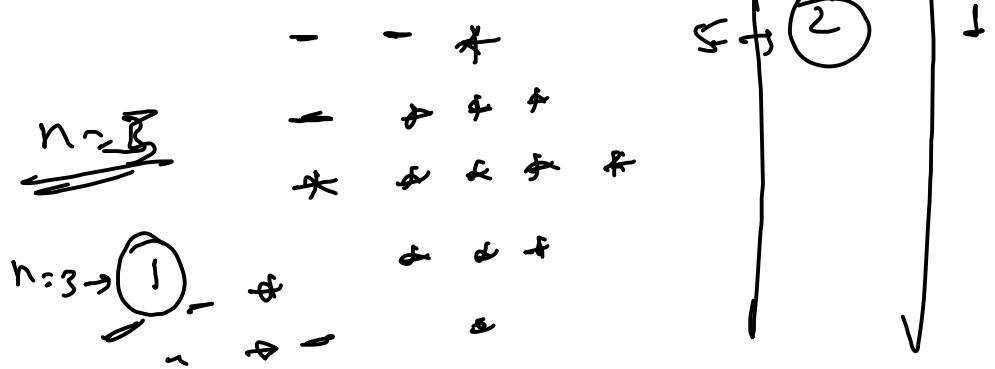
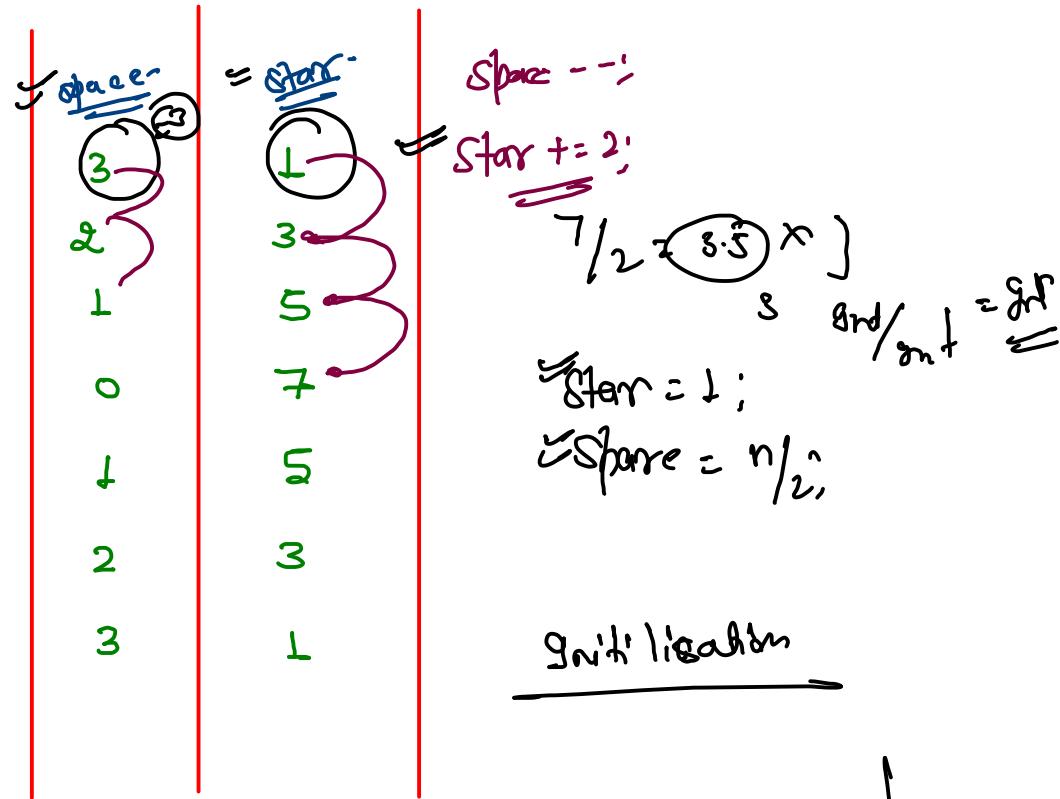


Row work → ~~point~~ space

~~point~~ star

~~fit~~ Enter

n:9
~~range count~~

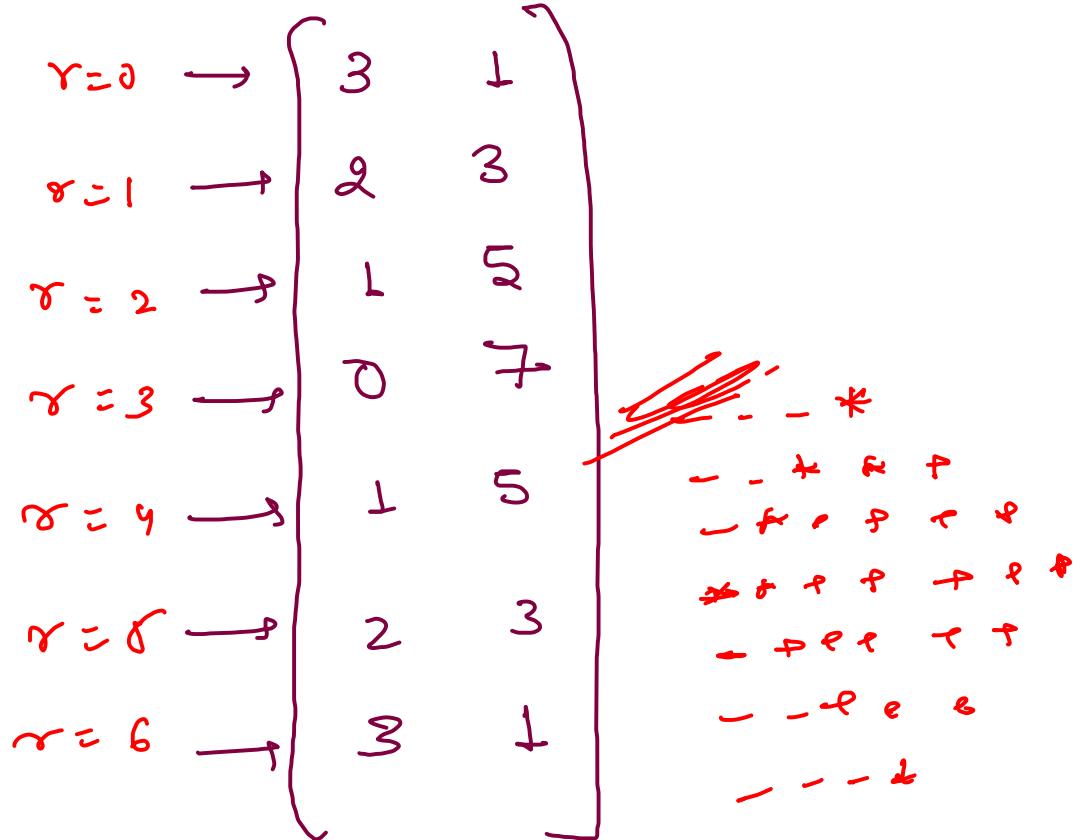


$n = 7$
 $n/2 = 3$
 Star: ~~X P B X S Z Y~~
 Space: ~~X P X S X T X 3~~

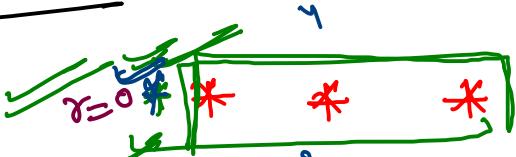
```

// initialisation
int star = 1;
int space = n / 2;
for(int r = 0; r < n; r++) {
    System.out.println("Space : " + space + " Star : " + star);

    // manage count
    if(r < n / 2) {
        star += 2;
        space--;
    } else {
        star -= 2;
        space++;
    }
}
    
```



Pattern 6-



$r=0$	*	*	*	*	-	-	*	*	*	*
$r=1$	*	*	*	-	-	-	*	*	*	*
$r=2$	*	*	-	-	-	-	*	*	-	-
$r=3$	*	-	-	-	-	-	-	-	-	*
$r=4$	*	-	-	-	-	-	-	-	-	*
$r=5$	*	*	*	-	-	-	*	*	*	*
$r=6$	*	*	*	*	-	*	*	*	*	*

Row work →

- 1 point Star
- 11 point Space
- 11 point Star
- 10 Shift Enter
- 10 Enter

	Star	Space
9	3	1
3	2	3
2	1	5
1	0	7
2	+	5
3	2	3
7	3	1

if($r < w_1$) {

Space = 1;

Space = 2;

} else {

Space = 1;

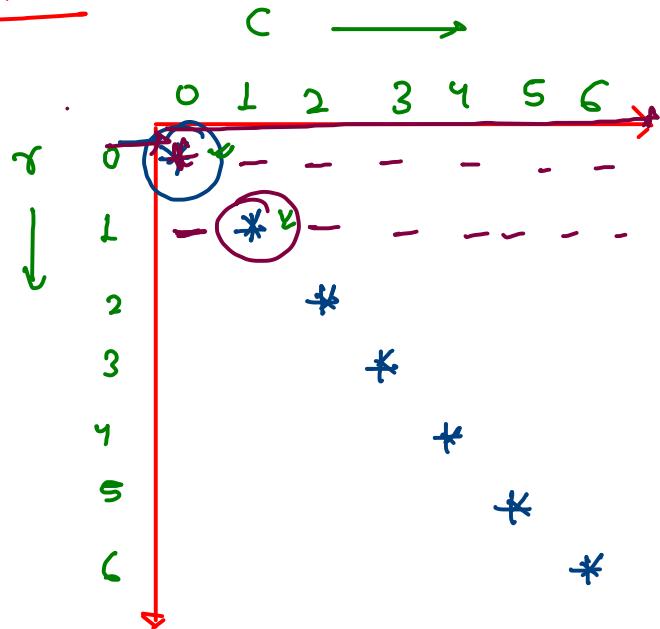
Space = 2;

Initialisation

$$\text{star} = \frac{n}{2} + 1$$

$$\text{space} = 1;$$

Pattern 7



$\therefore c=0 \text{ to } c < n.$

$$\left. \begin{array}{l} r \geq 0 \\ r < n \end{array} \right\}$$

Point $P_1 = (r_1, c_1)$
 Point $P_2 = (r_2, c_2)$

Point $P_2 = (5, 5)$

line of Eqn \rightarrow

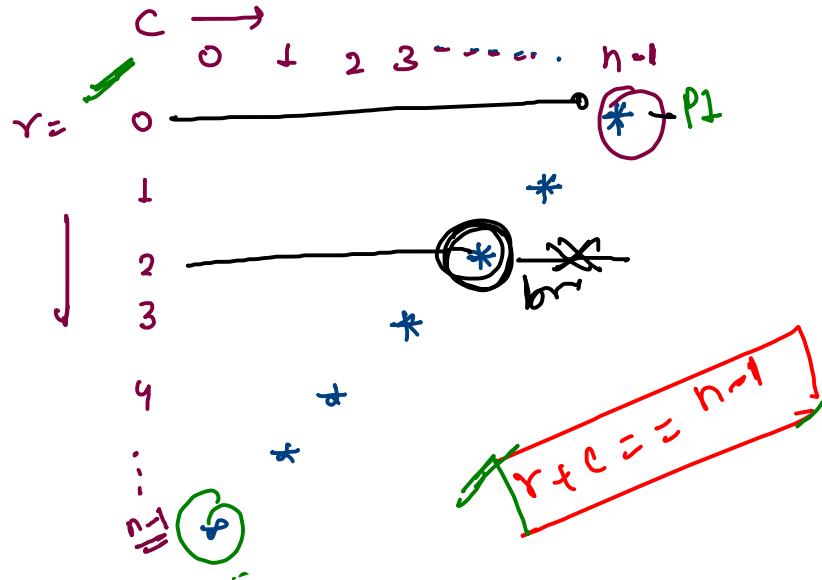
$$c - c_1 = \left(\frac{c_2 - c_1}{r_2 - r_1} \right) (r - r_1)$$

$$c - 0 = \left(\frac{5 - 0}{5 - 0} \right) (r - 0)$$

$$c = r$$



Pattern 8-



$$\tilde{P}_1 \rightarrow \tilde{\infty}(0, n-1) \rightarrow (r_1, c_1)$$

$$P_2 \rightarrow (n-1, 0) \rightarrow (r_2, c_2)$$

line of Σ_2 .

$$c - c_1 = \left(\frac{c_2 - c_1}{r_2 - r_1} \right) (r - r_1)$$

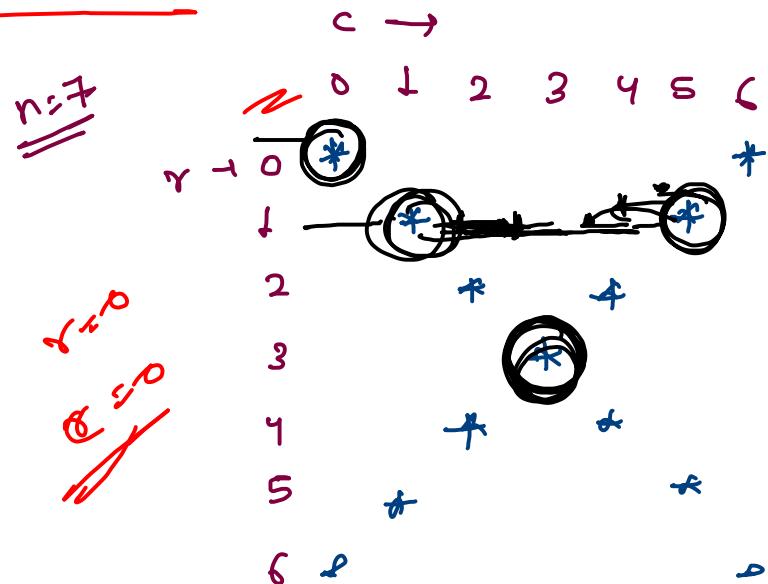
$$c - (n-1) = \left[\frac{0 - (n-1)}{(n-1) - 0} \right] (r - 0)$$

$$c - (n-1) = - \left[\frac{n-1}{n-1} \right] r$$

$$c - (n-1) = -r$$

$$\boxed{r + c = n-1}$$

Pattern 9 -



line - 2

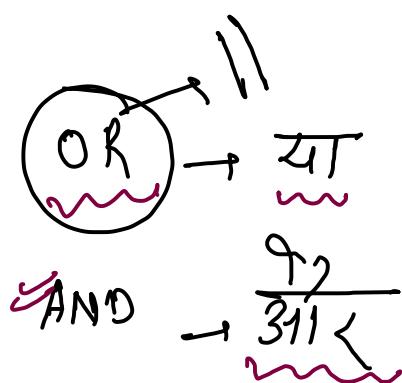
$r=0, c=0$

$$r+c = n-1$$

line - 1 \rightarrow

$r=c$

$A \cdot B$	All
T	T
F	F
T	F
F	F



if ($r = c \ || \ r+c = n-1$) {
 echo("1")
}