

pattern 6. n_{12} space = $N/2 + 1$

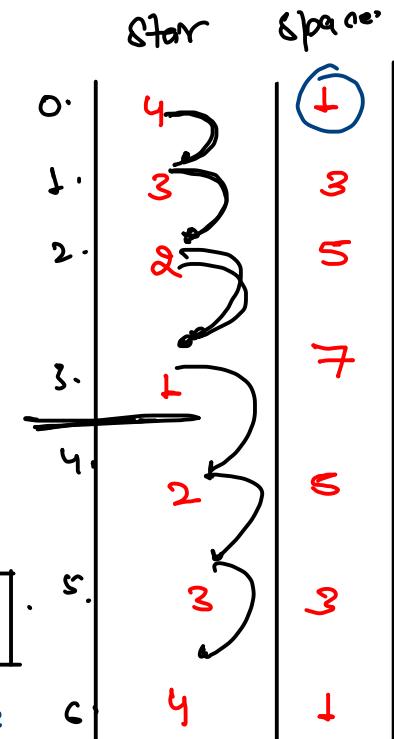
$n=7$	$r=0$	n_{12}	space = $N/2 + 1$
		*	
$r=1$	*	*	
$r=2$	*	*	
3.	*	*	
4.	*	*	
5.	*	*	
6.	*	*	

Row work → point star
 n point space
 point star
 hit Enter
 count Management

variable →

$\text{if } (r < n_1) \{$
 $\quad \star --;$
 $\quad \text{space} += 2;$

2



initialisation

Space = 1;

star = $N/2 + 1$;

else {
 $\quad \star +=;$
 $\quad \text{space} -= 2;$

s

$n=3$

15

$r/2$

Space

Star
2
1
2

spa

二三十一

Star

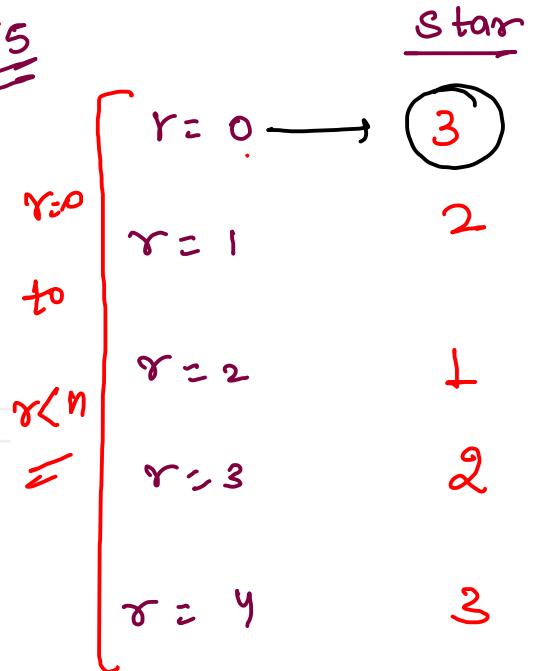
3
2
1
2
3

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

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

$$\begin{array}{l} \cancel{n/2=2} \\ \cancel{n=5} \end{array}$$

```
for(int r = 0; r < n; r++) {  
    // 1. print star  
    for(int st = 0; st < star; st++) {  
        System.out.print("*\t");  
    }  
    // 2. print space  
    for(int sp = 0; sp < space; sp++) {  
        System.out.print("\t");  
    }  
    // 3. print star  
    for(int st = 0; st < star; st++) {  
        System.out.print("*\t");  
    }  
    // 4. hit enter  
    System.out.println();  
    // 5. count management  
    if(r < n / 2) {  
        star--;  
        space += 2;  
    } else {  
        star++;  
        space -= 2;  
    }  
}
```



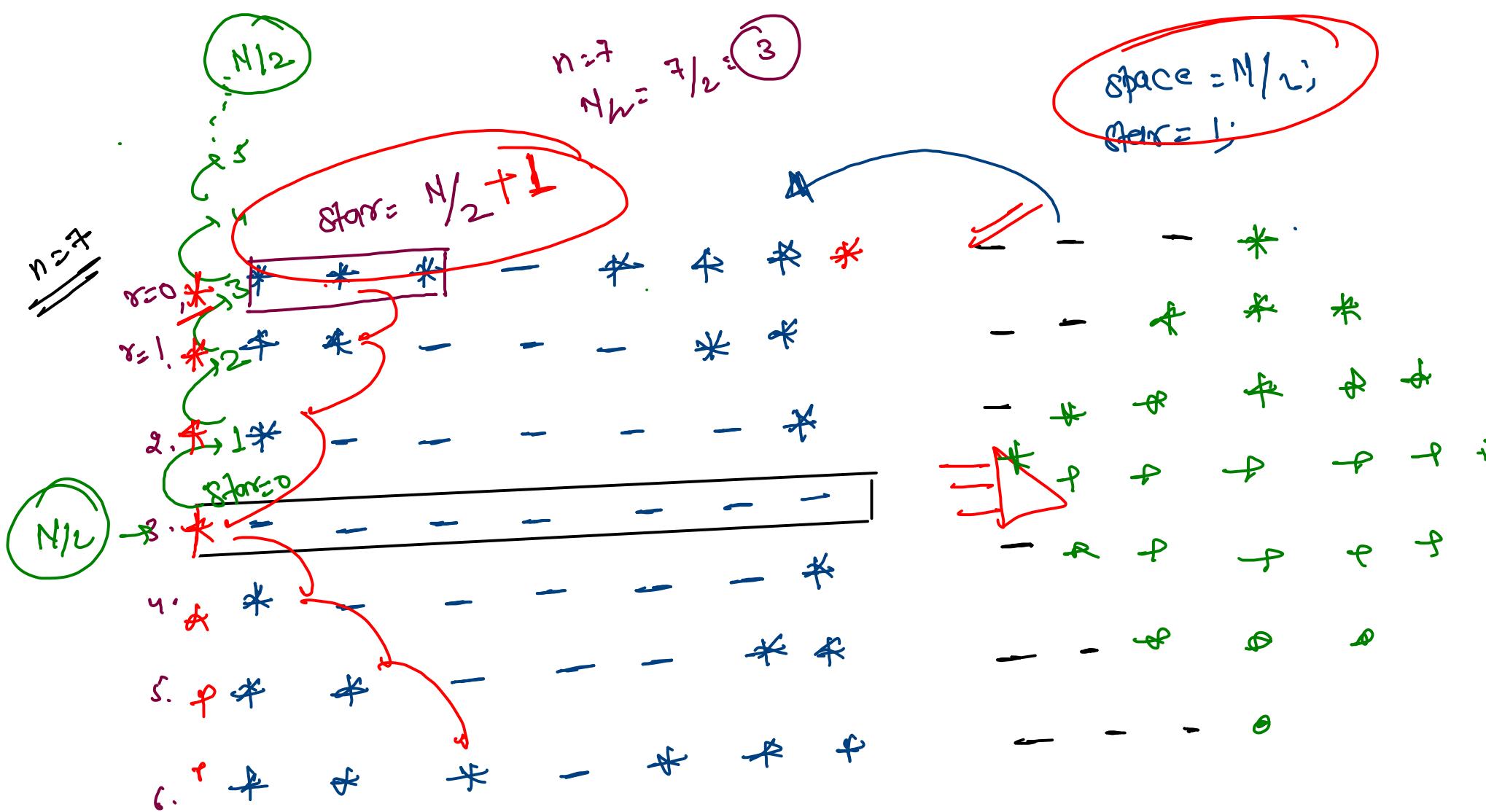
Star pattern output:

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

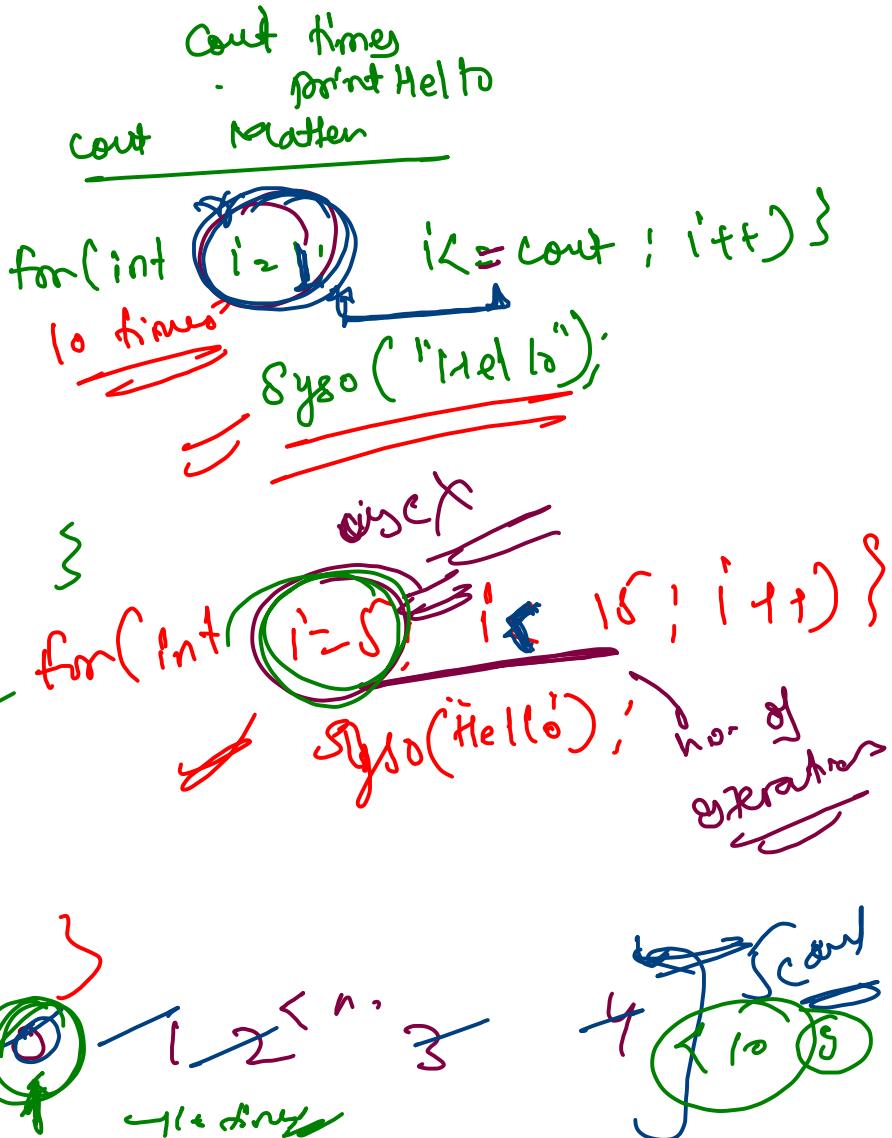
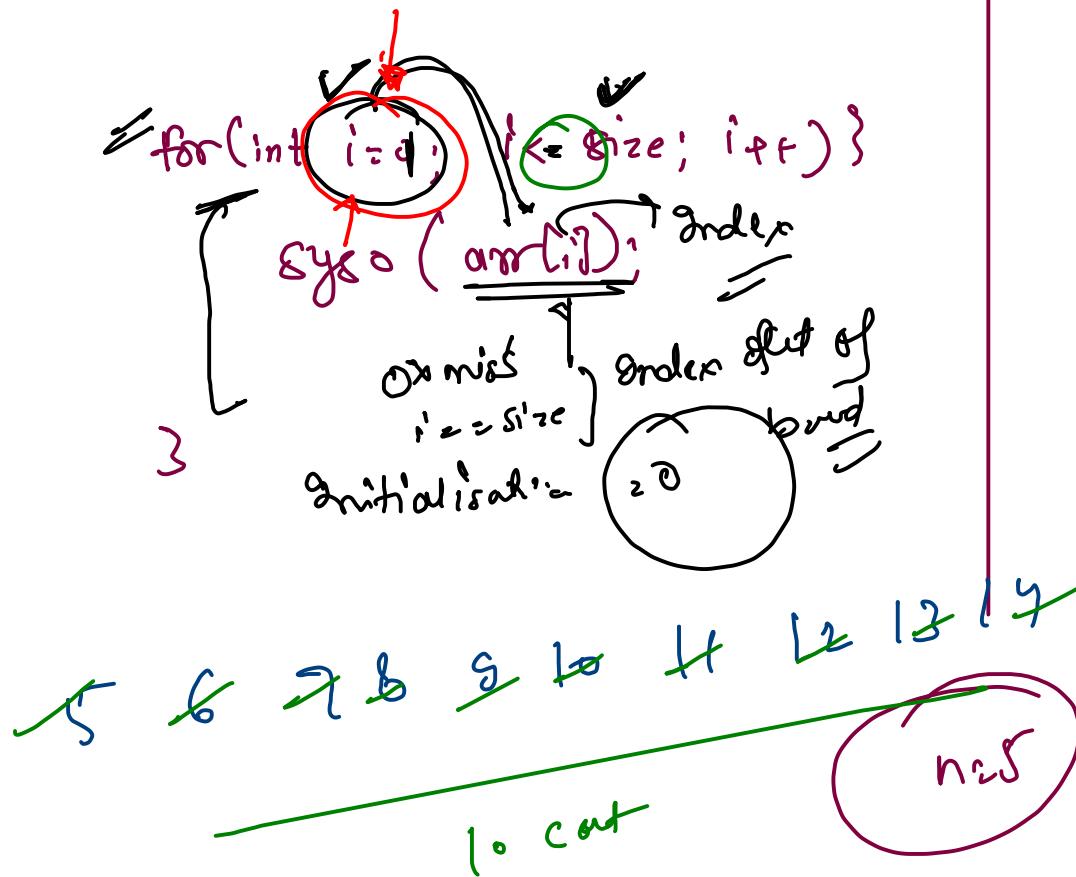
Space management:

~~Space = 1 2 3 2 1 -1~~

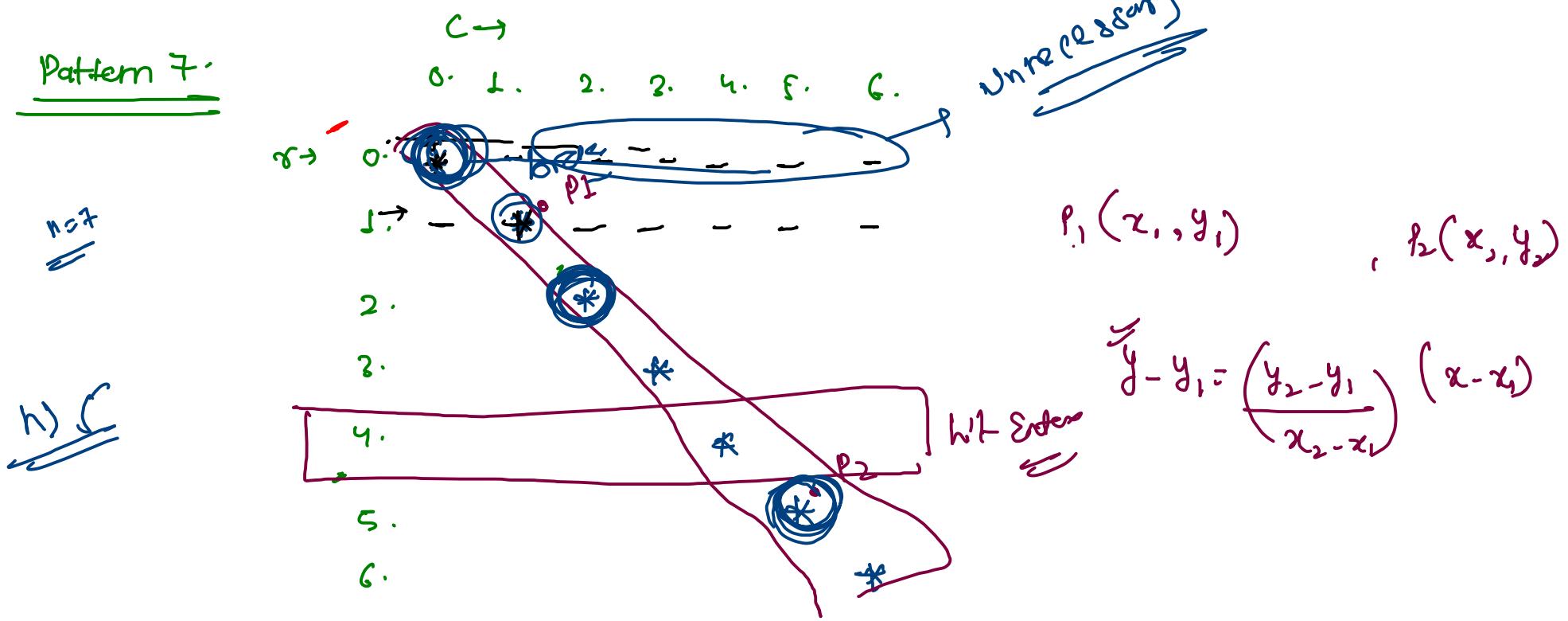
~~Star = 3 2 1 2 3 4~~



loop → generator → g'ng nodes



Pattern 7



$$P_1 = (1, 1) \quad (r_1, c_1)$$

$$P_2 = (5, 5) \quad (r_2, c_2)$$

if $y = C$ {
Syst of $\{x = t\}$ }

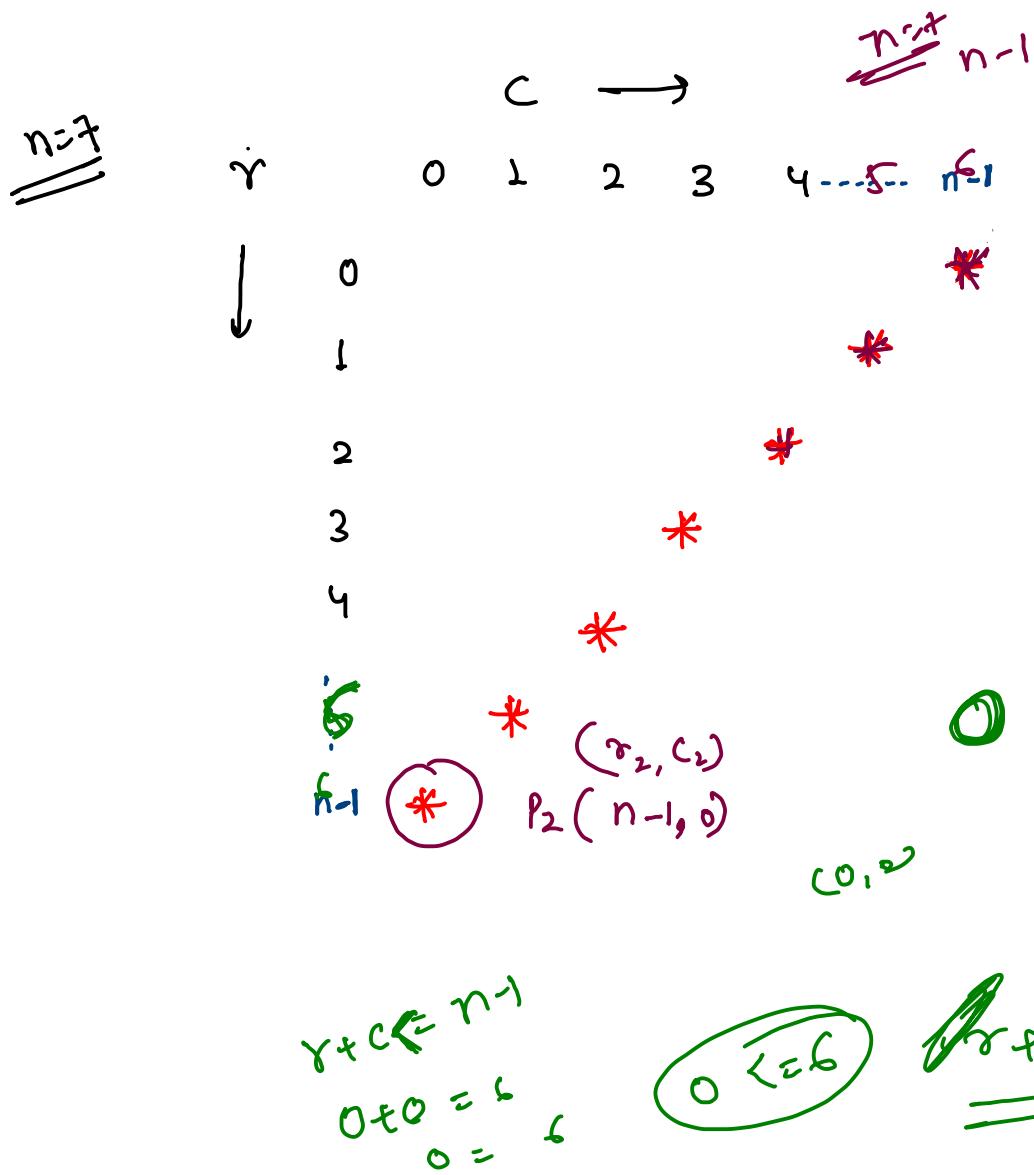
Line of Equation \rightarrow

$$c - c_1 = \frac{(c_2 - c_1)}{(r_2 - r_1)} (x - r_1)$$

$$c - 1 = \frac{5 - 1}{5 - 1} (x - 1)$$

$$c - 1 = x - 1$$

$$\Rightarrow \boxed{y = c}$$



depends on 'n'

8005006152

$$P_1(0, n-1)$$

$$(r_1, c_1)$$

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

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

$$c - (n-1) = -\frac{(n-1)}{(n-1)} (r)$$

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

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

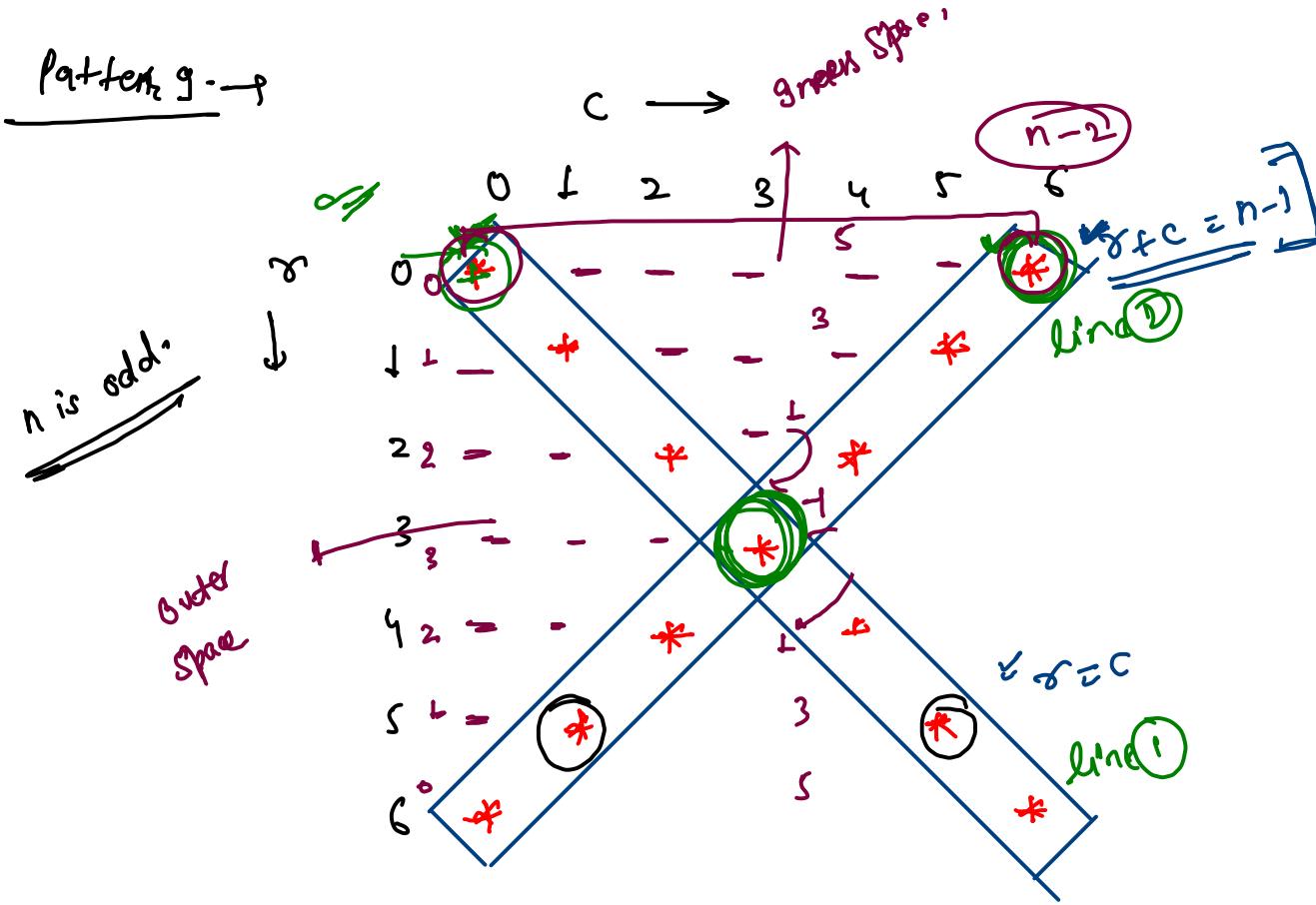
$$\boxed{0 < r \leq 6}$$

$$\cancel{r+c \geq n-1}$$

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5	3	6	2	0	4	7	3
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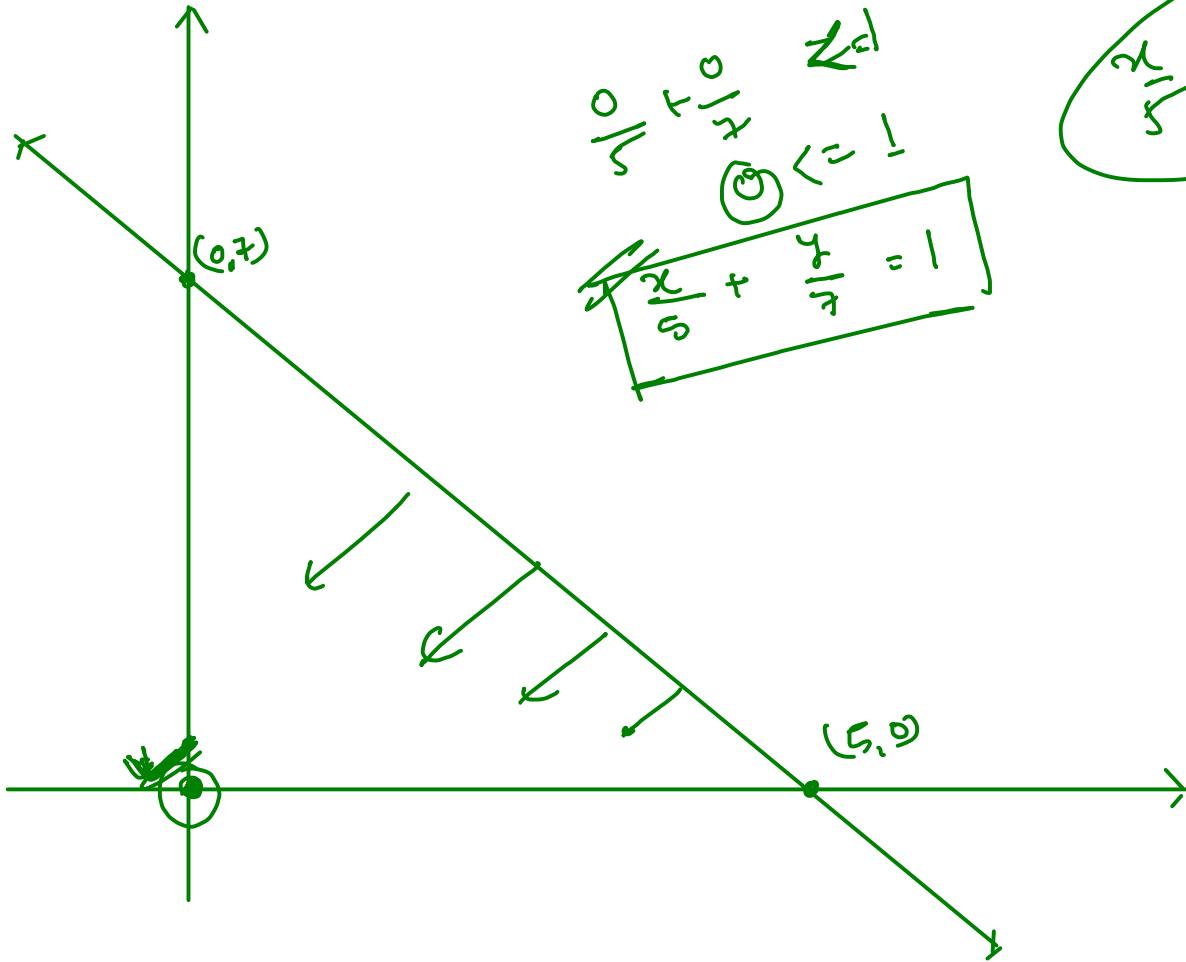
- ① Fear → ↗
 - ② Anorexia → ↗



```

if( r == c || r + c == n - 1 )
    $y0( * )  
tab sep
{
    br
}
else
    $y0( space )
{
}

```



$$\frac{x^2}{5} + \frac{y^2}{7} \leq 1$$

$$\frac{x^2}{5} + \frac{y^2}{7} \leq 1$$

pattern 10

$n=9$

n is always odd

Reduce

$n = 8$ is even

Smart
choice
 $\frac{n+1}{2}$

0 1 2 3 $(0, n/2)$ 4 5 6 7 8

0

1

2

3

4

5

6

7

8

The No. ↓

$(n/2, 0)$

*

Line No. 2

*

*

*

$(n, n/2)$

*

*

*

Line No. 3

$\frac{2}{n}$

0

$n=1$

3, 5, 7, 9, 11

⇒

$C - n/2 = \frac{2}{n}$, $C - r = n/2$

$n=9$

$n=9$

$P_1 \rightarrow (0, n/2) (r_1, c_1)$

$P_2 \rightarrow (n/2, n-1) (r_2, c_2)$

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

$$C - n/2 = \left(\frac{n-1 - n/2}{n/2} \right) (r)$$

$$C - n/2 = \left(\frac{n/2 - 1}{n/2} \right) (r)$$

$$C - n/2 = \left(1 - \frac{2}{n} \right) r$$

0 1 2 3 4 5 6
 0 * $p_1 (0, n_{12})$
 1 + *
 2 +
 $p_4 (n_{12}, 0)$
 3 +
 4 +
 5 +
 6 +
 $p_3 (n, n_{12})$

line ①

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

$$n = 7$$

$$3n/2 \rightarrow (3n/2)/2 \rightarrow 21/2 = 10$$

$$3n(n/2) \rightarrow 9$$

for line ① \rightarrow
 $P_1 \rightarrow$

$$(0, n_{12}), P_4 \rightarrow (n_{12}, 0)$$

$$c - n_{12} = \left(\frac{0 - n_{12}}{n_{12} - 0} \right) (r)$$

for line No. 2 \rightarrow

$$P_2 \rightarrow (0, n_{12}), P_2 \rightarrow (n_{12}, n)$$

$$(c - n_{12}) = \left(\frac{n}{n_{12}} \right) (r)$$

$$c - r = \left(\frac{n}{n_{12}} \right) = \left(\frac{n-1}{2} \right)$$

Line ②

*

$$(n_{12}, n) l_2$$

Line ③

*

$$(3n/2, n)/2 \quad \text{line No. 4,}$$

$$P_4 \rightarrow (n_{12}, 0), P_3 \rightarrow (n, n_{12})$$

$$c - 0 = \left(\frac{n}{2} - 0 \right) (r - n_{12})$$

$$c = 1(r - n_{12})$$

$$\text{if } (\text{line ①}) || (\text{line ②}) : \boxed{r - c = n_{12}} = \left(\frac{n-1}{2} \right)$$

$$|| (\text{line ③}) || (\text{line ④}) \}$$

$$\text{sysgo } \{\ast\}$$

{ else { sysgo }

line - No. 3

$$P_2 \rightarrow (n_{12}, n) \quad P_3 \rightarrow (n, n_{12})$$

$$c - n = \left(\frac{n_{12} - n}{n - n_{12}} \right) (r - n_{12})$$

$$c - n = -1(r - n_{12})$$

$$r + c = n + n_{12} = \frac{3n}{2}$$

$$r + c = \boxed{\frac{3n}{2}} = 3n(n/2)$$

$$\text{iff. line ① } 3n(n/2)$$

$$\text{else if (line ②) } \boxed{\frac{3n}{2}}$$

$$\text{else if (line ③) } \boxed{\frac{3n}{2}}$$

$n=5$

$r=0, L$
one

1. 2 3

2. 4 5 6

3. 7 8 9 10

4. 11 12 13 14 15

0. 1. 2. 3. 4.

0. *

1. * *

2. * * *

3. * * *

4. * * * *

Structure

Var

(t)

L J

L L L

L L J J

L T T T

(Var)

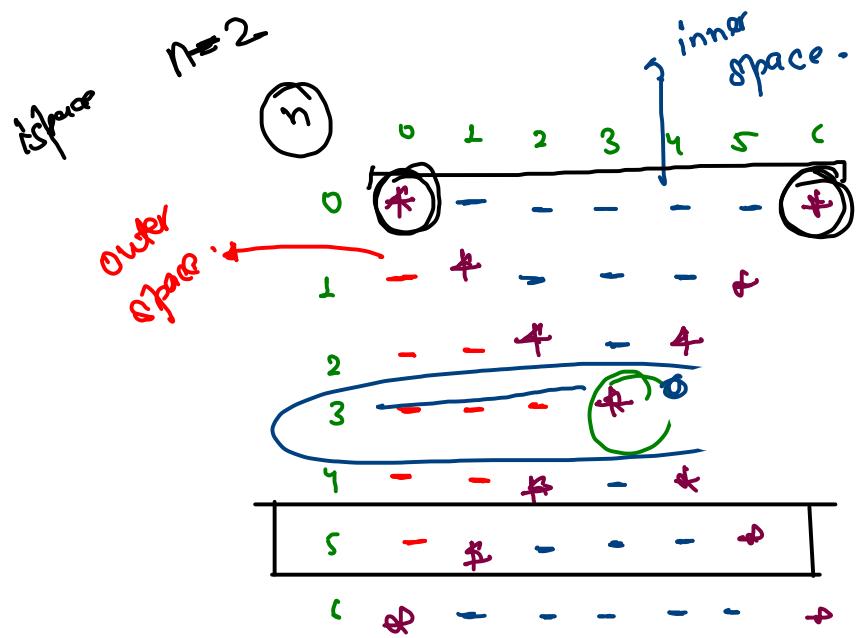
L

2 3

4 5 6

7 8 9 10

11 12 13 14 15



Outer Space

inner space

0	
1	o space ff
2	
<u>3</u>	
2	
1	
0	

is pac $\rightarrow z^2$

is pac + z^2

point outer space?

point single story

print inner spec if ($r^{\frac{1}{2}} = n_2$)

Print single Story

Bütt Endr

$$\cancel{w} \cancel{s}pace = 0$$

$$\text{Vspace} = n-2$$