

S =

	0	1	2	3	4
0	*	-	-	-	-
1	-	*	-	-	-
2	-	-	*	-	-
3	-	-	-	*	-
4	-	-	-	-	*

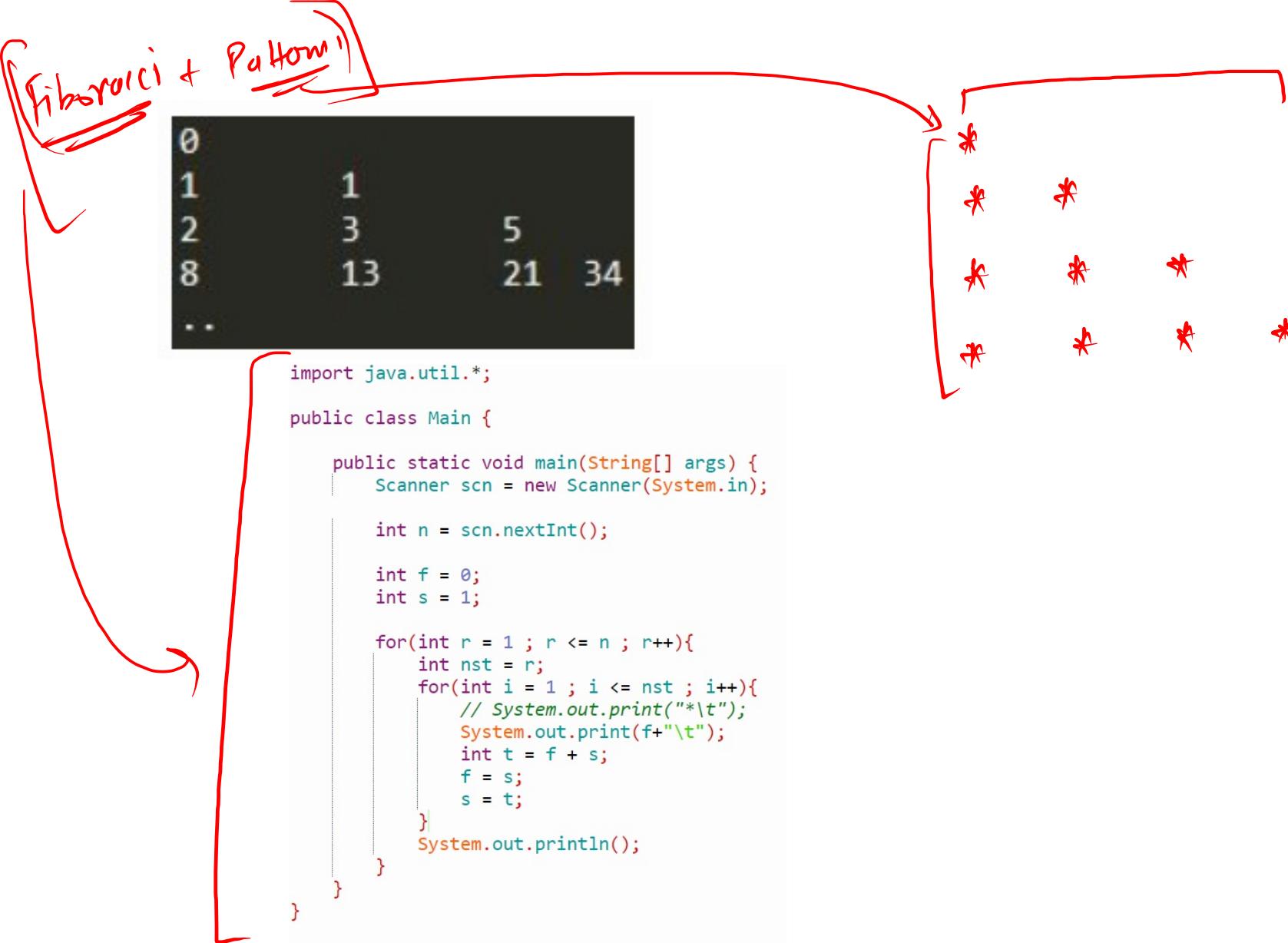
Pattern - *

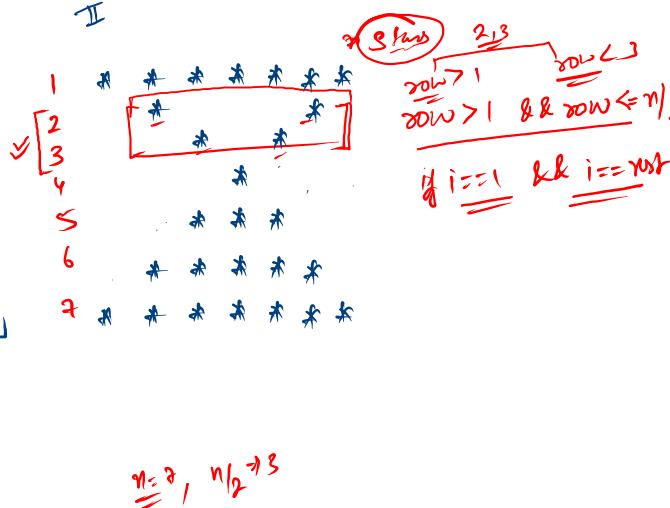
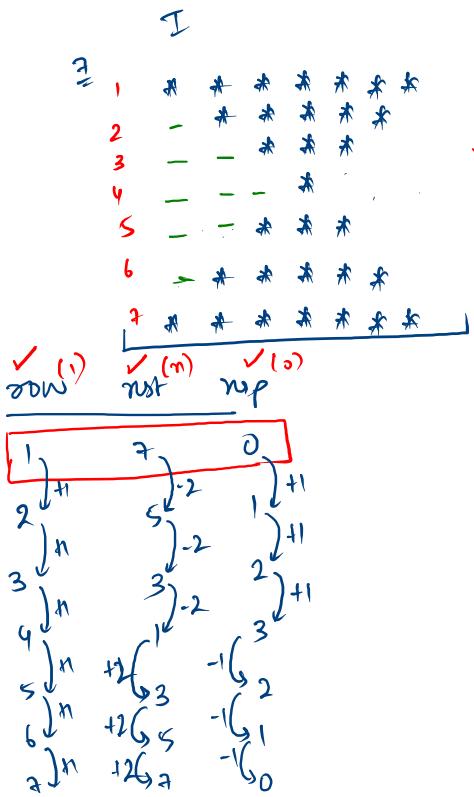
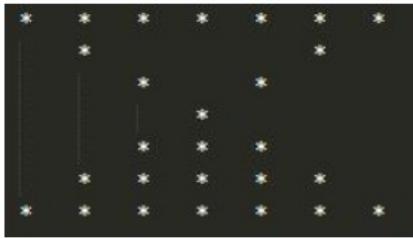
```
public static void main(String[] args) {  
    Scanner scn = new Scanner(System.in);  
  
    int n = scn.nextInt();  
  
    for(int r = 0 ; r < n ; r++){  
        for(int c = 0 ; c < n ; c++){  
            if(r == c){  
                System.out.print("*\t");  
            }else{  
                System.out.print("\t");  
            }  
        }  
        System.out.println();  
    }  
}
```

Pattern - 8

r	0	1	2	3	4
0	-	-	-	-	*
1	-	-	-	*	-
2	-	-	*	-	-
3	-	*	-	-	-
4	*	-	-	-	-

```
int n = scn.nextInt(); //5  
  
for(int r = 0 ; r < n ; r++){  
    for(int c = 0 ; c < n ; c++){  
        if(r+c == n-1){  
            System.out.print("*\t");  
        }else{  
            System.out.print("\t");  
        }  
    }  
    System.out.println();  
}
```





```

int n = scn.nextInt();

int row = 1, nsp = 0, nst = n;
while(row <= n){
  // code for each row
  for(int i = 1 ; i <= nsp ; i++){
    System.out.print("\t");
  }
  for(int i = 1 ; i <= nst ; i++){
    if(row > 1 && row <= n/2){
      if(i == 1 || i == nst){
        System.out.print("*\t");
      }else{
        System.out.print("\t");
      }
    }else{
      System.out.print("*\t");
    }
  }
  // move to next line
  System.out.println();

  // preparation for next row
  if(row <= n/2){
    nst = nst - 2;
    nsp = nsp + 1;
  }else{
    nst = nst + 2;
    nsp = nsp - 1;
  }
  row++;
}
  
```

$\eta = ?$

	1	2	3	4	5	6	7
1	*	*	*	*	*		
2	*			*	*		
η_1	(3)	(4)					
η_2							
$\eta_{2,n}$							
n	(7)						

stars $\rightarrow ?$

spacu $\rightarrow ?$

	1	2	3	4	5	6	7
1	*	*	*	*	*	*	
2	*	*	*	*	*	*	
3	*	*	*	*	*	*	
4	*	*	*	*	*	*	
5	*	*	*	*	*	*	
6	*	*	*	*	*	*	
7	*	*	*	*	*	*	

stars

$c = n \quad || \quad c \leq \eta_1 + 1$

$c \leq n \quad || \quad c = \eta_1 + 1$

-

$c = 1 \quad || \quad c = \eta_1 + 1$

$c = 1 \quad || \quad c > \eta_1 + 1$

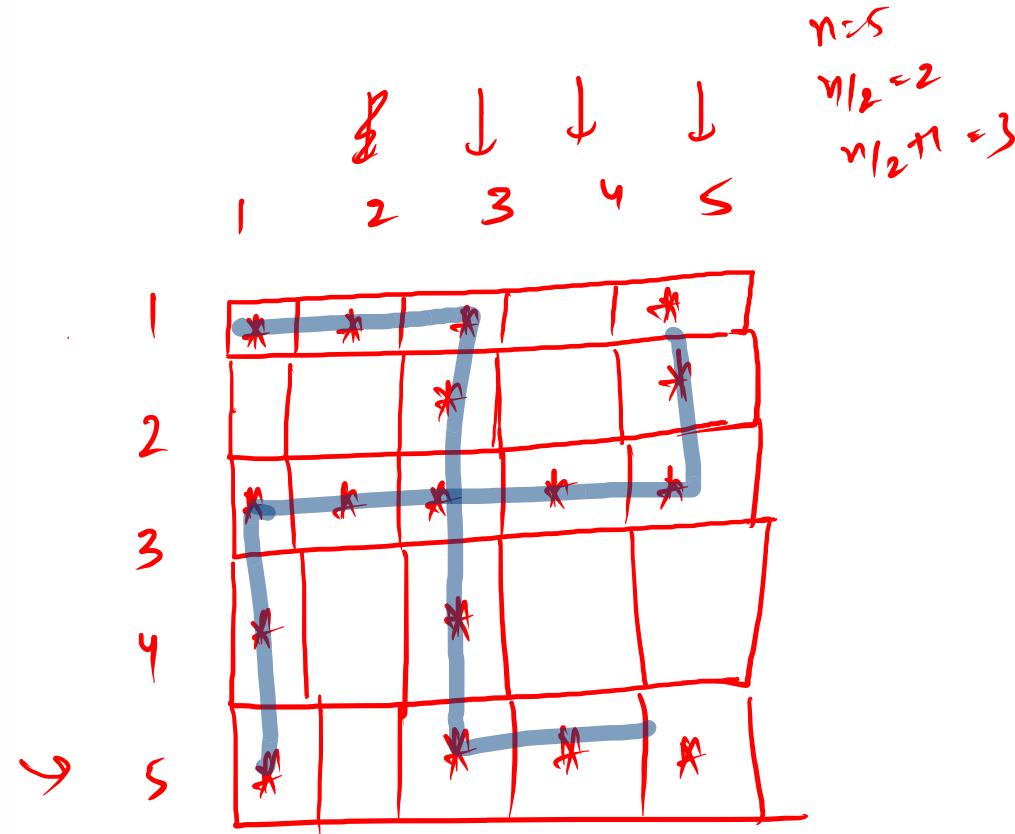
	1	2	3	4	5	6	7
1	*	*	*	*	*	*	*
2				*			*
3					*		*
4			*	*	*	*	*
5					*		
6					*		
7						*	*

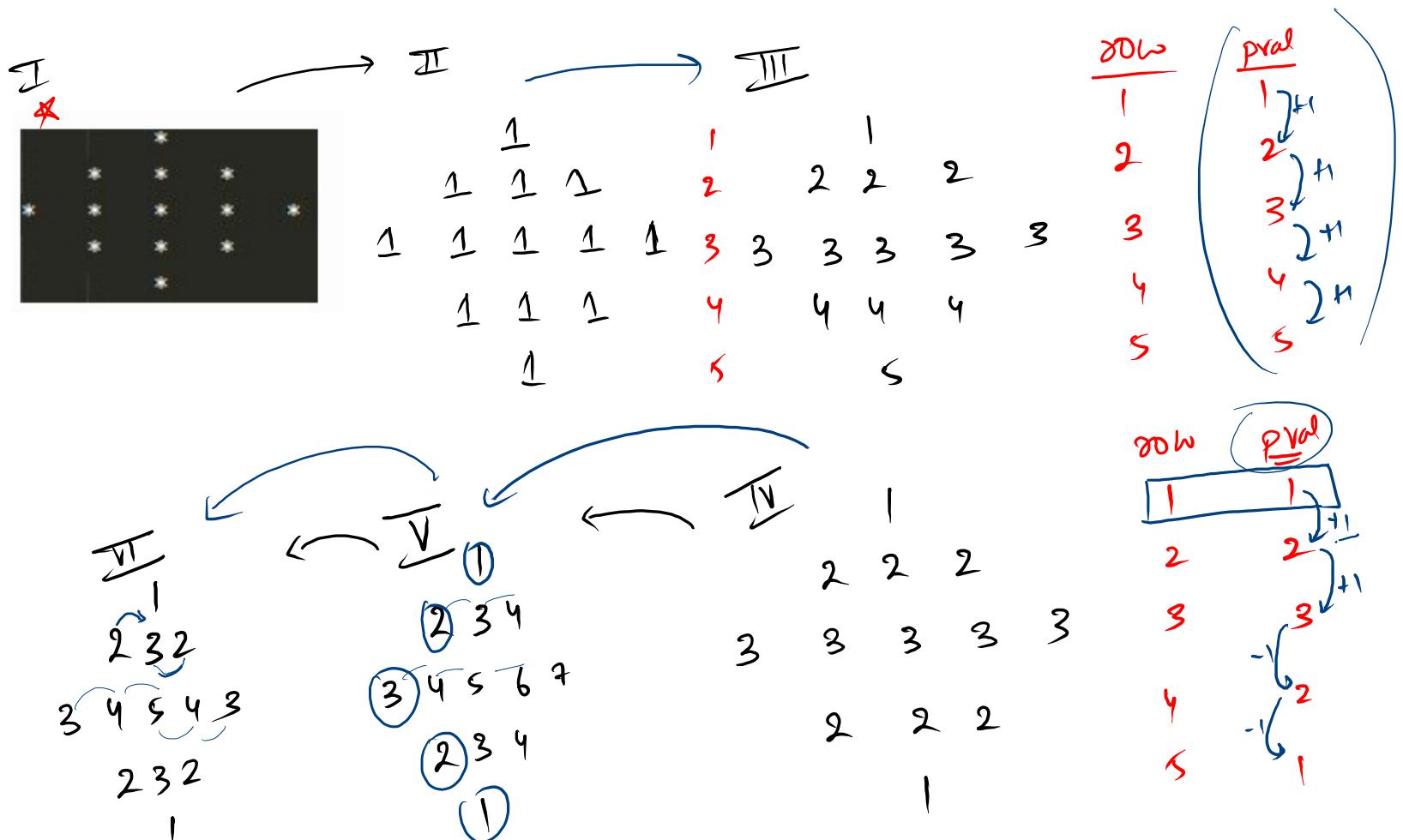
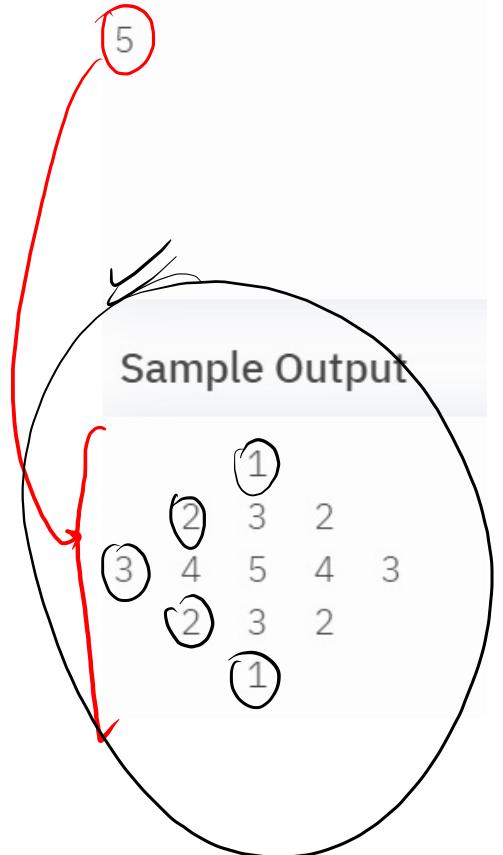

```

int n = scn.nextInt(); // 5

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

```





```

int n = scn.nextInt();

int row = 1, nst = 1, nsp = n/2, pval = 1;

while(row <= n){

    // code for each row

    for(int i = 1 ; i <= nsp ; i++){
        System.out.print("\t");
    }

    int tmp = pval;
    for(int i = 1 ; i <= nst ; i++){
        System.out.print(tmp+"\t");
        if(i <= nst/2){
            tmp++;
        }else{
            tmp--;
        }
    }

    // move to next row
    System.out.println();

    // preparation for next row
    if(row <= n/2){
        nsp = nsp - 1;
        nst = nst + 2;
        pval = pval + 1;
    }else{
        nsp = nsp + 1;
        nst = nst - 2;
        pval = pval - 1;
    }
    row++;
}

```

row nst nsp (pval(sp))

$$\begin{array}{r} 1 & 1 & 2 & 1 \\ \hline 2 & 3 & 1 & 2 \end{array}$$

$$\begin{array}{r} 3 & 5 & 0 & 3 \\ \hline 4 & 3 & 1 & 2 \end{array}$$

$$\rightarrow \quad \quad \quad \quad 1$$

$$\rightarrow \quad \quad \quad \quad 2 \ 3 \ 2$$

$$\rightarrow \quad \quad \quad \quad 3 \ 4 \ 5 \ 4 \ 3$$

$$\rightarrow$$

$\underline{\underline{\text{tmp}}} = \underline{\underline{2}} \ \underline{\underline{4}} \ \underline{\underline{8}} \ \underline{\underline{16}}$
 $i = 1, 2, 3, 4, 5$

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

$n=4$

```

* - - - -
* - - - *
* * - * *
* * * * *

```

row rst rsp

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

lsp = 1
lsp++

Pattern II + 14

lsp: 10
lsp: n

n: 5

```

* - - - -
* - - -
* - -
* -
* -

```

<u>row</u>	<u>rst</u>	<u>rsp</u>
1	1	7
2	2	5
3	3	3
4	4	1
5	5	-1

rsp = row
rsp = n-1
row = n (rsp = n-1)

```

1- II
2- 1 2
3- 1 2 3
4- 1 2 3 4
5- + 2 3 4 5

```

int row = 1, rst = 1,

rsp = ?;

while (row <= n) {

// print stars (rst) → lp

// print spaces (rsp)

// print stars (rst) → rp *

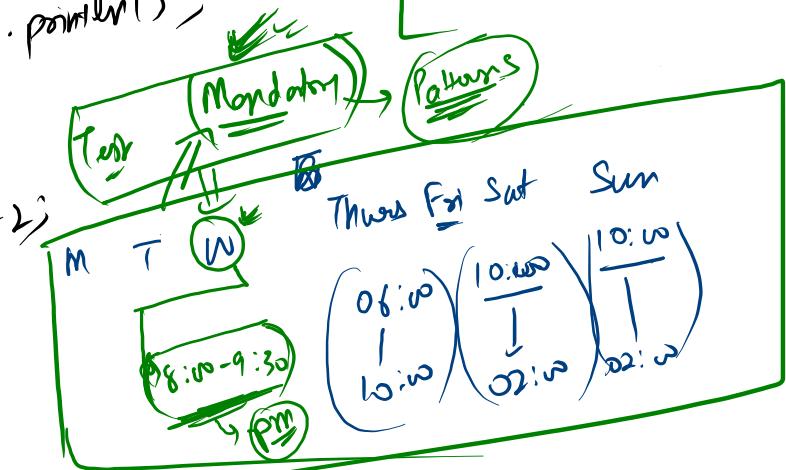
System.out.println();

rst++;

rsp = rsp - 2;

row++;

if (row == n) {
 rst = rst - 1;
}





`int n = 5;`

```

✓ System.out.println(n++);
✓ System.out.println(++n);
✓ System.out.println(++n);
✓ System.out.println(n++);
✓ System.out.println(++n);
→ System.out.println(++n);

```

8888999911
n

{
5
7
8
8
10
11

n: 567

```
int n = 5;
```

```
System.out.println(n++ + ++n);
```

```
int m = 5;
```

```
System.out.println(++m + m++);
```

$$5 + 7 \Rightarrow 12$$

$$6 + 6 \Rightarrow 12$$

m: 867