→ while loop

(1) → For

(2) While loop :-

Syntax :-

```
initialization;
while ( condition )
{
    logic
    → increment / decrement;
}
```

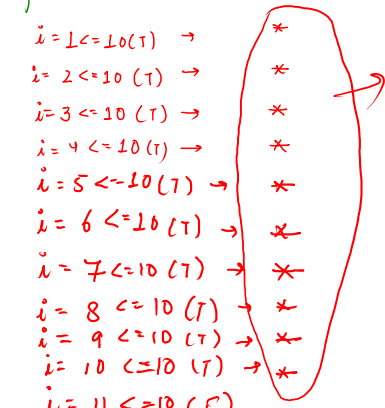
Print 10 stars

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

```
int i = 1;
while ( i <= 10 ) {
    syso (" * ");
    i++;
}
```

```
for (int i = 1; i <= 10; i++)
{
    syso ( * );
}
```

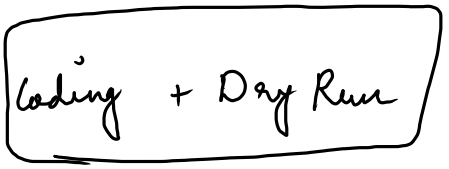
i = 1 <= 10 (T) →
i = 2 <= 10 (T) →
i = 3 <= 10 (T) →
i = 4 <= 10 (T) →
i = 5 <= 10 (T) →
i = 6 <= 10 (T) →
i = 7 <= 10 (T) →
i = 8 <= 10 (T) →
i = 9 <= 10 (T) →
i = 10 <= 10 (T) →
i = 11 <= 10 (F)



```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN
        int i=1;
        while(i<=10){
            System.out.println("*");
            i++;
        }
    }
}
```

Your Output

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

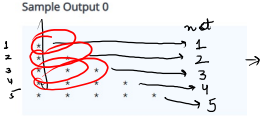


Pattern 1 (04th June)

Sample Input 0

```
n = 5
```

Sample Output 0



rows (horizontal)

vertical (columns)

1st row = 1 star

2nd row = 2 stars

3rd → 3 stars

4th → 4 stars

5th → 5 stars

```
int row = 1;
while (row <= n)  → no of rows
{
    int stars = 1;
    while (stars <= row)
    {
        cout << "* \t";
        stars++;
    }
    cout << endl;
    row++;
}
```

row = 1 <= 5 (T)

stars = 1 <= 1 (T)

stars = 2 <= 1 (F)

row = 2 <= 5 (T)

stars = 1 <= 2 (T)

stars = 2 <= 2 (T)

stars = 3 <= 2 (F)

row = 3 <= 5 (T)

stars = 1 <= 3 (T)

stars = 2 <= 3 (T)

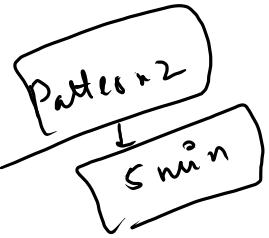
stars = 3 <= 3 (T)

stars = 4 <= 3 (F)

row = 4 <= 5 (T)

row = 5 <= 5 (T)

row = 6 <= 5 (F)



5 min

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        int row = 1;
        while(row <= n){
            int stars = 1;
            while(stars <= row){
                System.out.print("*\t");
                stars++;
            }
            row++;
            System.out.println();
        }
    }
}
```

Pattern 2 (10th June)

Sample Input 0

```
5
```

Sample Output 0

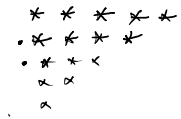

```
int row = n
while (row > 0) {
    int stars = 1;
    while ( stars <= row) {
        sysos ("* \t");
        stars++;
    }
    row--;
    sysos ();
}
```

row = 5 > 0 (T)

stars = 1 <= 5 (T)
stars = 2 <= 5 (T)
stars = 3 <= 5 (T)
stars = 4 <= 5 (T)
stars = 5 <= 5 (T)
stars = 6 <= 5 (f)

row = 4 > 0 (T)

stars = 1 <= 4 (T)
stars = 2 <= 4 (T)
stars = 3 <= 4 (T)
stars = 4 <= 4 (T)
stars = 5 <= 4 (F)



row = 3 > 0 (T)

row = 2 > 0 (T)

row = 1 > 0 (T)

row = 0 > 0 (F)

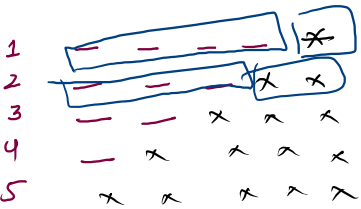
Pattern-03 → 5 mins

5 min →

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Pri
        Scanner scn = new Scanner(System.in);
        int n =scn.nextInt();
        int row = n;
        while(row>0){
            int stars = 1;
            while(stars <=row){
                System.out.print("*\t");
                stars++;
            }
            row--;
            System.out.println();
        }
    }
}
```

Pattern-03

n = 5

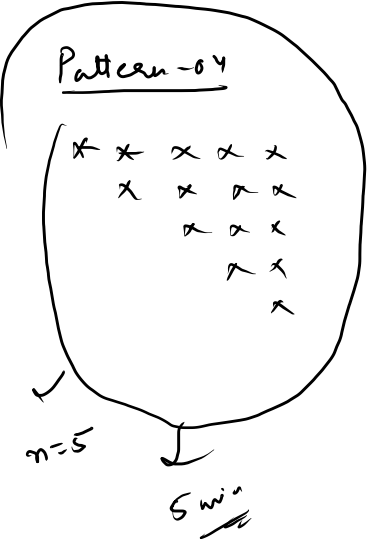


nsp → no. of spaces

nst → no. of stars

row	nsp		nst	
1	4	-1	1	+1
2	3	-1	2	+1
3	2	-1	3	+1
4	1	-1	4	+1
5	0		5	

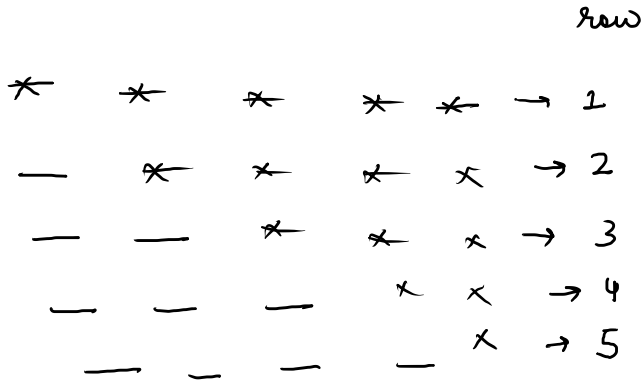
```
nst = 1
nsp = n-1
int nsp=n-1, nst=1
int row = 1
while (row<=n){
    for (int i=1; i<=nsp ; i++)
        sysout(" ");
    for (int i=1; i<=nst; i++)
        sysout("* ");
    row++; nsp--; nst++;
}sysout()
}
```



3 min

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print o
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        int row =1, nsp = n-1, nst = 1;

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

            row++;
            nsp--;
            nst++;
            System.out.println();

        }
    }
}
```

Pattern - 04

n = 5 → 


```
row = 1; nsp = 0; nst = n;
while (row <= n)
    → nsp;
    → nst;

    row++      nsp++;
    nst--
```

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to S
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();

        int row = 1,nst = n, nsp = 0;

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

            row++;
            nsp++;
            nst--;
            System.out.println();
        }
    }
}
```