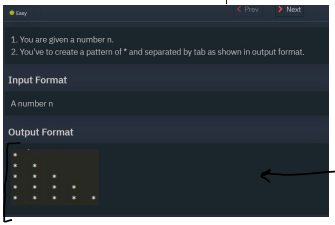
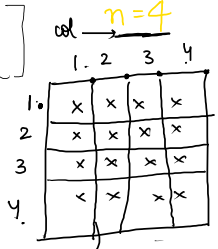
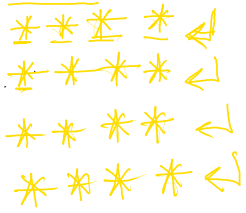
Patterns

① Rotate
② Inverse





Console



i=1 2 3 4 5
n=4
j=T

3 Questions

① How many rows? → n
② How many columns in any generic ith row → n
③ What to print → *

① Row by row
② Row → col

```
int i = 1
while (i <= n) {
    int j = 1;
    while (j <= n) {
        Syso.Print ( * );
        j++
    }
    i++, Print newline.
}
```

n=4 1 2 3 4
even ✓1 * ↵
✓2 * * ↵
✓3 * * * ↵
→4 * * * * ↵

odd n=5 1 2 3 4 5
✓1 * ↵
✓2 * * ↵
✓3 * * * ↵
✓4 * * * * ↵
✓5 * * * * * ↵

① How many rows → n
② How many col in i th row → i
③ What we are printing → * ↵

1 —
2 —
3 —

Dry run

Console
* ↵
* * ↵
i=3 * * * ↵
i=4 * * * * ↵

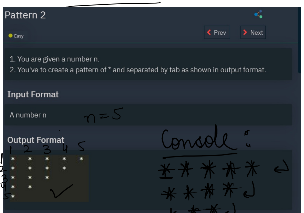
Variables
i = 1 2 3 4 5
n = 4
j = 1 2 1 2 3
2 <= 1
3 <= 2

✓ int i = 1 false
while (i <= n) {
int j = 1;
while (j <= i) {
Syso ("*");
}
j++
i++
Print new line.

```
for (i=1; i<=n; i++)
{
    for (j=1; j<=i; j++) {
        syso ("*");
    }
    Print new line.
}
```

"\t"

Pattern 2



n=5

Console :

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

① rows – n

② ith row columns → n – i + 1

③ print? → *

i=1
n=5
j=1

```
for (int i=1; i<=n; i++)
{
   for (int j=1; j<=(n-i+1); j++) {
       syso ("*");
   }
   Print new line
}
```

n-i+1		
1	5 - 1 + 1	= 5
2	5 - 2 + 1	= 4
3	5 - 3 + 1	= 3
4	5 - 4 + 1	= 2
5	5 - 5 + 1	= 1

	5	4	3	2	1
i = 1	*	*	*	*	*
2	*	*	*	*	
3	*	*	*		
4	*	*			
5	*				

- 5 or n
- i — 1 — 1, 2 — 2, 3 — 3 — 5 – i
- *

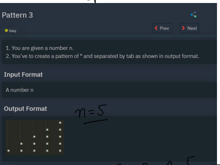
j >= i

```
for (int i=1; i<=n; i++) {
   for (j=n; j>=i; j--) {
       syso ("*" "\t")
   }                      n times
} Print "\n"
}
```

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

Pattern 3

spaces *



Pattern 3

Easy

Prev | Next

1. You are given a number n.
2. You've to create a pattern of * and separated by tab as shown in output format.

Input Format

A number n

Output Format

n=5

	1	2	3	4	5
1	_	_	_	_	*
2	_	_	_	*	*
3	_	_	×	×	×
4	_	×	×	×	×
5	×	×	×	×	×

n − i

5 − i

Pattern 4 − HW ✓

1. rows? n ✓ — T1, * T2
2. ith row
3. What needs to be printed — T1 _, T2 *

i	T1 (n−i)	T2 ✓
1	4	1
2	3	2
3	2	3
4	1	4
5	0	5

```
for(i=1; i<=n; i++){
    // T1
    for(j=1; j<=(n-i); j++){   ✓
        ✓ Print "_"
    }
    // T2
    for(j=1; j<=(i); j++){   ✓
        ✓ Print *
    }
    Print new line.
}
```

Dry run: ~~6~~ ~~5~~

Variables

i = ~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ 6

n = 5

j = ~~1~~ 1

4

n − i

i = [illegible]

Console:

_ _ _ _ * ↵

_ _ _ × × ↵

_ _ × × × ↵

_ × × × × ↵

× × × × × ↵

Home work

Pattern 4

Easy

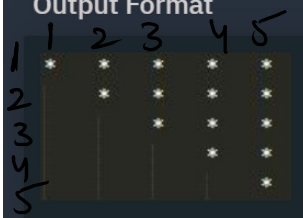
Prev Next

1. You are given a number n.
2. You've to create a pattern of * and separated by tab as shown in output format.

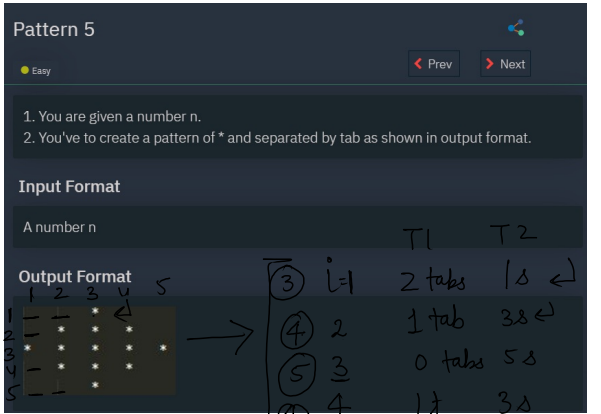
Input Format

A number n

Output Format



Pattern 5


Pattern 5
Easy
Prev
Next
1. You are given a number n.
2. You've to create a pattern of * and separated by tab as shown in output format.
Input Format
A number n
Output Format
T1
T2
i=1
2 tabs
1s
2
1 tab
3s
3
0 tabs
5s
4
1t
3s
5
2t
1s

Pattern 6 ✓ HW

Pattern 6

Easy

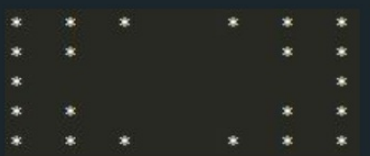
Prev Next

1. You are given a number n.
2. You've to create a pattern of * and separated by tab as shown in output format.

Input Format

A number n

Output Format



Pattern 5 — again → drop

1. Dry Run ✓
2. Everything again — idea

```java
for(int i=1; i<= ((n/2) + 1); i++){
    // type 1
    for(int j=1; j<= ((n/2) - i + 1); j++){
        System.out.print("\t");
    }


    // type 2
    for(int j=1; j<=((2*i)-1); j++){
        System.out.print("*\t");
    }



    System.out.println();
}
```

n=5

Dry run Variables

i = 1 2 3 4

n=5 4<=3

$\frac{n}{2}+1=3$

$2\times i-1$

5

Console

\t \t * ↵

— * × ×↵

× × × × ×↵

```java
// lower half

for(int i=1; i<= (n/2); i++){
    // type 1
    for(int j = 1; j<=i; j++){
        System.out.print("\t");
    }

    // type 2
    for(int j=1; j<=(n-2*i); j++){
        System.out.print("*\t");
    }

    System.out.println();

}
```

Variables

i = 1 2 3

$\frac{n}{2}$ = $\frac{5}{2}$ = 2

3<=2

T1

(2)

T2

$n-2\times i$

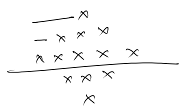
$5-2\times 2$

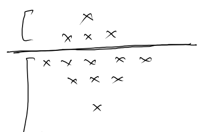
$5-4=1$

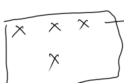
Console

— × × ×↵

— — ×↵







st = 3

st- = 2

st = st - 2

n−2i

n=5 → cst = n-2;

for (i=1; i<=(n/2); i++) {

for (j=1; j<=i; j++)
syso ("\t");

for (j=1; j<= cst; j++) {
syso (*)
}

Print new line,

cst-=2

}

n=5

cst = 3

$cst=\frac{n}{2}+1$

n=7, cst=5

5

n-2

n-2

✓

n=5, cst=3

n=7, cst=5

n=9, cst=7