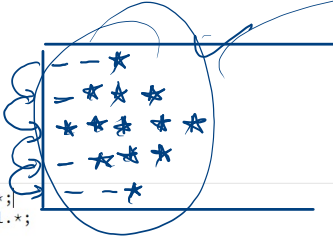
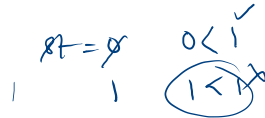
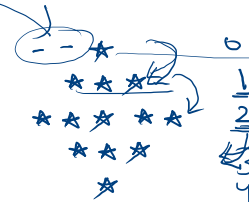


Diamond



$n=3$
row ≤ 5



star = ~~1~~ ~~3~~ ~~5~~ ~~3~~ ~~1~~
space = $n-1 = 2$ ~~1~~ ~~0~~
1 2 3

row = ~~1~~ ~~2~~ ~~3~~ ~~2~~ ~~1~~ 3

$3 < 3-1$

```
1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static void main(String[] args) {
7         Scanner scn = new Scanner(System.in);
8         int n = scn.nextInt();
9         int star = 1;
10        int space = n-1;
11
12        for(int row = 0; row < (2*n-1) ; row++){ //work for 2n-1 times
13            for(int sp = 0; sp < space; sp++){
14                System.out.print(" ");
15            }
16            for(int st = 0; st < star; st++){
17                System.out.print("*");
18            }
19            System.out.println();
20            //update
21
22            if(row < n-1){
23                star += 2;
24                space--;
25            }else{
26                star -= 2;
27                space++;
28            }
29
30        }
31    }
32 }
```

Pattern 7 - Print a hollow m by n star rectangle.

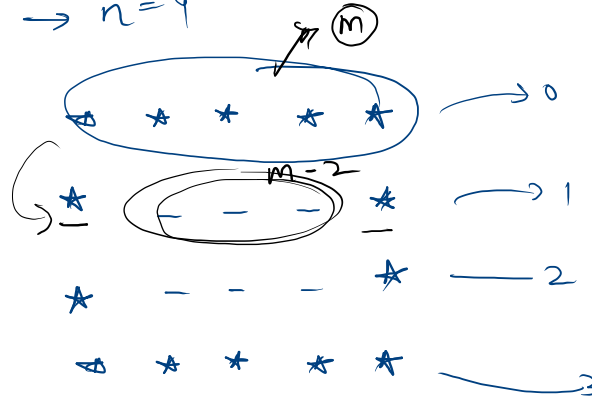
Sample Input 0

5 \rightarrow m
4 \rightarrow n

Sample Output 0

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

rows $\rightarrow n=4$



if $\left\{ \begin{array}{l} \text{row} = 0 \\ \text{row} = n-1 \end{array} \right. \left[\text{print } \underline{\text{m stars.}} \right]$

else

$\left[\begin{array}{c} * \quad \text{sp} \\ * \quad \text{m-2} \quad * \end{array} \right]$

$$m = 6$$

$$n = 9$$

$$\begin{matrix} \text{row} = 0 \\ = n-1 \end{matrix} \left\{ \begin{matrix} m \text{ stars} \end{matrix} \right.$$

$$\text{else } \star \quad m-2 \quad \star$$

Sample Input 2

6
9

Sample Output 2

```

*****
*      *
*      *
*      *
*      *
*      *
*      *
*      *
*****

```

0	★	★	★	★	★	★
1	★	-	-	-	-	★
2	★					★
3	★					★
4	★					★
5	★					★
6	★					★
7	★					★
8	★	★	★	★	★	★

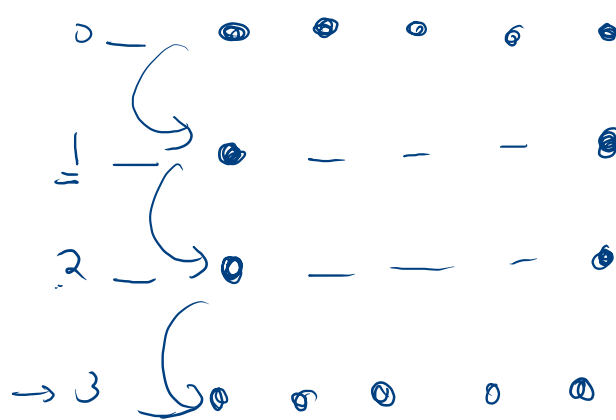
```

1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static void main(String[] args) {
7         Scanner scn = new Scanner(System.in);
8         int m = scn.nextInt();
9         int n = scn.nextInt();
10
11         for(int row = 0; row < n; row++){
12             if(row == 0 || row == n-1){
13                 //print m stars
14                 for(int st = 0; st < m; st++){
15                     System.out.print("*");
16                 }
17             }else{
18                 /* m-2 sp *
19                 System.out.print("*");
20                 for(int sp = 0; sp < m-2; sp++){
21                     System.out.print(" ");
22                 }
23                 System.out.print("*");
24             }
25             System.out.println();
26         }
27     }
28 }
29 }

```

$m=5$
 $n=4$

$n-1=3$



Pattern 8 - Print a hollow square without top

Sample Input 0

5

Sample Output 0

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

$n = 5$

```
0      *                      *  
1      *                      *  
2      *                      *  
3      *                      *  
4      *      *      *      *      *
```

rows \rightarrow (n)

row == n - 1
 \hookrightarrow n stars

else
 sp
 * n-2 *

```

1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static void main(String[] args) {
7         Scanner scn = new Scanner(System.in);
8
9         int n = scn.nextInt();
10
11         for(int row = 0; row < n; row++){
12             if(row == n-1){
13                 //print n stars
14                 for(int st = 0; st < n; st++){
15                     System.out.print("*");
16                 }
17             }else{
18                 /* n-2 sp *
19                 System.out.print("*");
20                 for(int sp = 0; sp < n-2; sp++){
21                     System.out.print(" ");
22                 }
23                 System.out.print("*");
24             }
25
26             System.out.println();
27         }
28     }
29 }

```

Pattern 9 - Square Ladder with top and bottom

Take **n** as an integer input, then
print **n** tab separated stars in the first line,
then in the second line print a star, then n-2 tabs, then print a star.
then print **n** tab separated stars in the third line.
then in the **fourth** line print a star, then **n-2** tabs, then print a star .

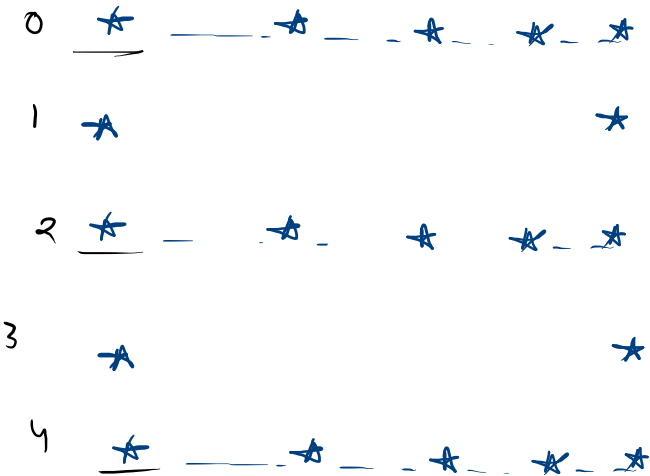
Example: n=5
Pattern will be:



row \rightarrow even \rightarrow n star
odd \rightarrow * n-2 *

$$\{ n = 5$$

$$\backslash t$$

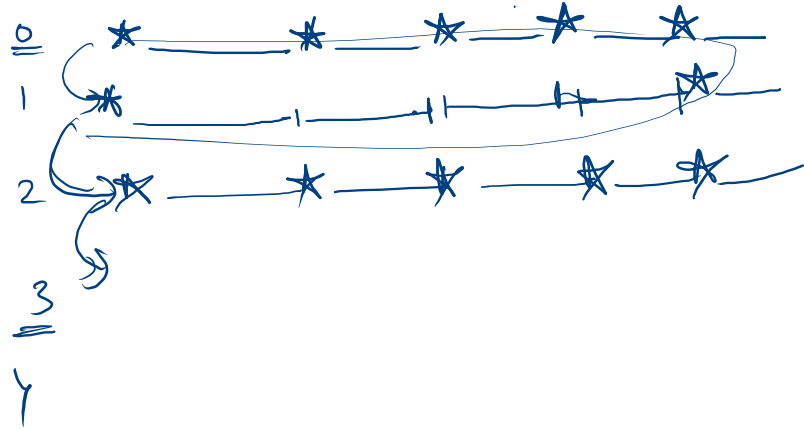


$$n = 5$$

```

1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static void main(String[] args) {
7         Scanner scn = new Scanner(System.in);
8         int n = scn.nextInt();
9         for(int row = 0; row < n; row++){
10             if(row % 2 == 0){ // n star
11                 for(int i = 0; i < n; i++){
12                     System.out.print("*\t");
13                 }
14             }else{
15                 System.out.print("\t");
16                 for(int i = 0; i < n-2; i++){
17                     System.out.print("\t");
18                 }
19                 System.out.print("\t");
20             }
21             System.out.println();
22         }
23     }
24 }

```



function.

$$\downarrow$$
$$\underline{f(x) = x^2}$$

maths

$$f(3) = 9$$

$$f(x, y) = 2x + y$$

$$\begin{matrix} x = 5 \\ y = 3 \end{matrix}$$

$$= 13$$

function

i/p. →

block of code

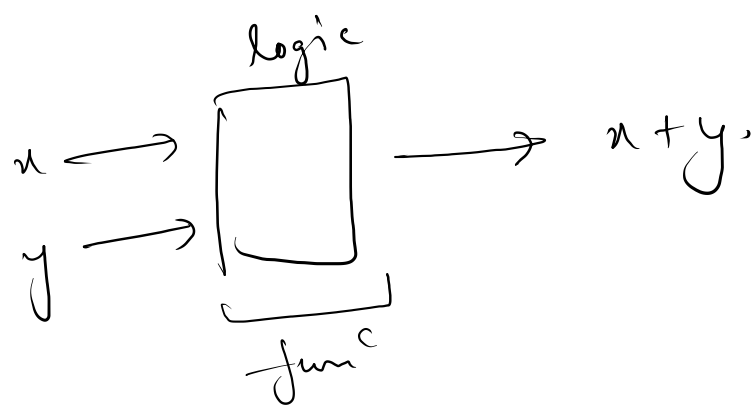


→ o/p.

small part of program

→ particular task.

function.



$$\begin{aligned} [5!] &= 5 \times 4 \times 3 \times 2 \times 1 = \underline{\underline{120}} \\ 6! &= 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720. \end{aligned}$$

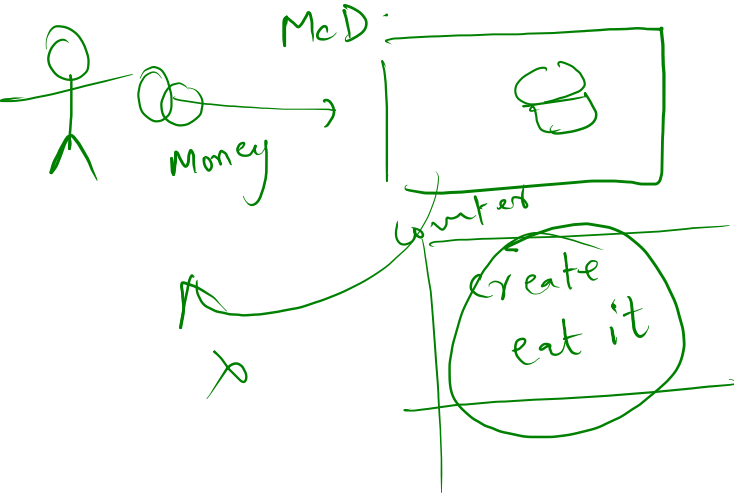
code 5!

```

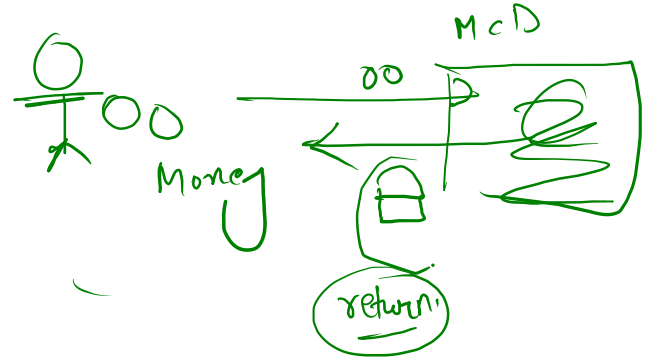
1
2 public class Main
3 {
4     public static void main(String[] args) {
5         int val = 3;
6         int ans = 1;
7         for(int i = 1; i <= val; i++){
8             ans = ans * i;
9         }
10        System.out.println(ans);
11    }
12 }
13

```

void



anything else.



no i/p / void.

```
1- import java.util.*;
2- public class Main
3- {
4-
5-     public static void mySelf(){
6-         System.out.println("Aman");
7-         System.out.println("52");
8-         System.out.println("Delhi");
9-         System.out.println("Pizza");
10-    }
11-
12-
13-    public static void main(String [] args){
14-        mySelf();
15-
16-
17-
18-    }
```

parameters / void.

```
1- import java.util.*;
2- public class Main
3- {
4-
5-     public static void wishMe(String name){
6-         System.out.println("Hi " + name + " I am eating ur burger");
7-     }
8-
9-
10-    public static void main(String [] args){
11-        Scanner scn = new Scanner(System.in);
12-        String s = "Shubham";
13-        wishMe(s);
14-        wishMe("Nikhil");
15-
16-
17-
18-    }
19-
20- }
```