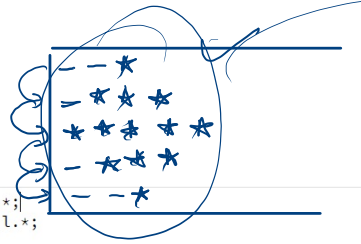
Diamond



n=3

row<5

star = 1 3 5 3 1 -1

space = n-1 = 2 1 0

1 2 3

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

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        int star = 1;
        int space = n-1;

        for(int row = 0; row < (2*n-1) ; row++){    //work for 2n-1 times
            for(int sp = 0; sp < space; sp++){
                System.out.print(" ");
            }
            for(int st = 0; st < star; st++){
                 System.out.print("*");
            }
            System.out.println();
            //update

            if(row < n-1){
                star += 2;
                space--;
            }else{
                star -= 2;
                space++;
            }

        }
    }
}
```

st = 0 0 < 1

1 1 1 < 1

row = 0 1 2 3

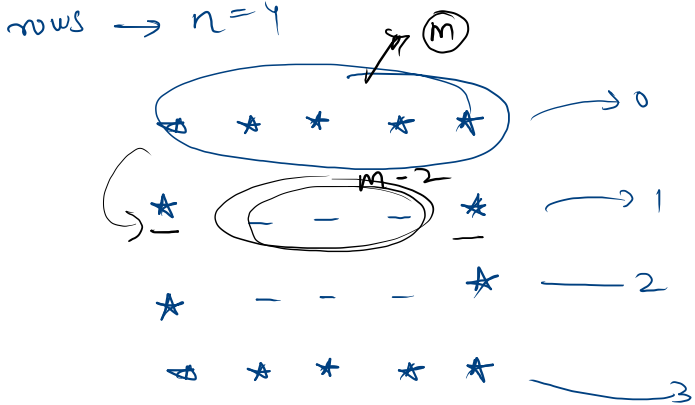
3 < 3-1

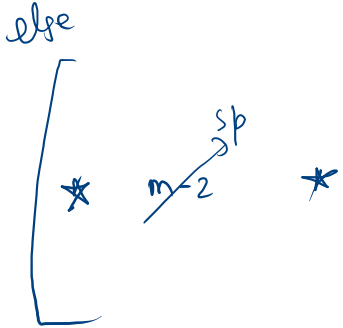
Pattern 7 - Print a hollow m by n star rectangle.

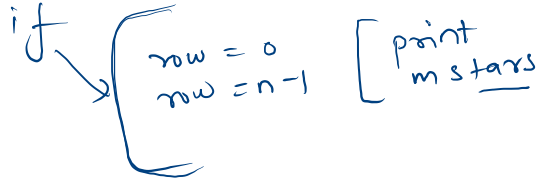
Sample Input 0

Sample Output 0

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







m = 6

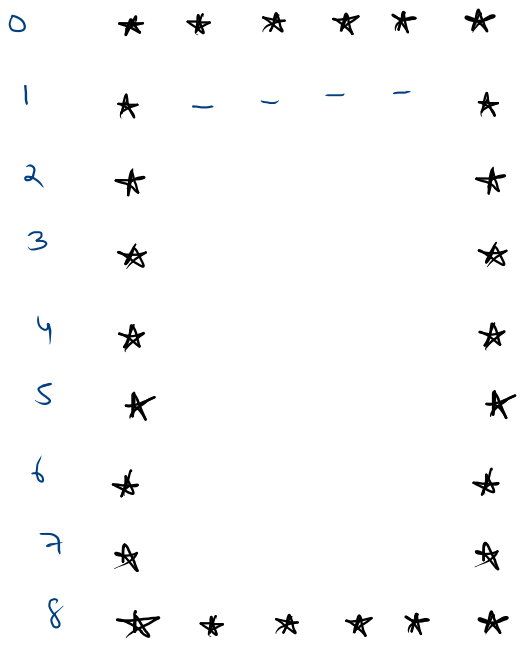
n = 9

Sample Input 2

```
6
9
```

Sample Output 2

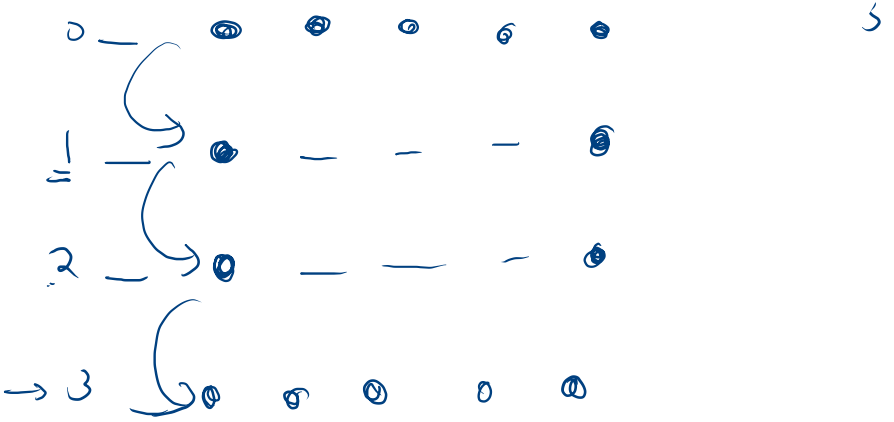
```
******
*    *
*    *
*    *
*    *
*    *
*    *
******
```



row = 0 } m stars.
= n-1 }

else * m-2 *

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

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int m = scn.nextInt();
        int n = scn.nextInt();

        for(int row = 0; row < n; row++){
            if(row == 0 || row == n-1){
                //print m stars
                for(int st = 0; st < m; st++){
                    System.out.print("*");
                }
            }else{
                //* m-2 sp *
                System.out.print("*");
                for(int sp = 0; sp < m-2; sp++){
                    System.out.print(" ");
                }
                System.out.print("*");
            }

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



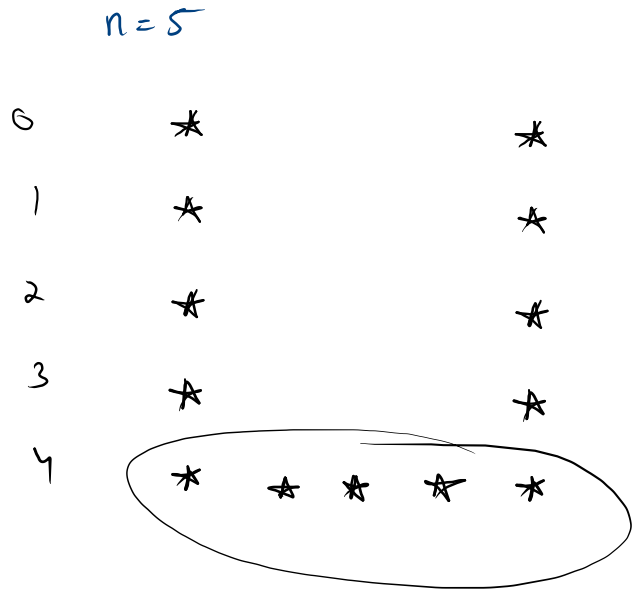
Pattern 8 - Print a hollow square without top

Sample Input 0

```
5
```

Sample Output 0

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



rows → (n)

row == n-1

↳ n stars

else

sp

★ n-2 ★

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

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);

        int n = scn.nextInt();

        for(int row = 0; row < n; row++){
            if(row == n-1){
                //print n stars
                for(int st = 0; st < n; st++){
                    System.out.print("*");
                }
            }else{
                //* n-2 sp *
                System.out.print("*");
                for(int sp = 0; sp < n-2; sp++){
                    System.out.print(" ");
                }
                System.out.print("*");
            }

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

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.

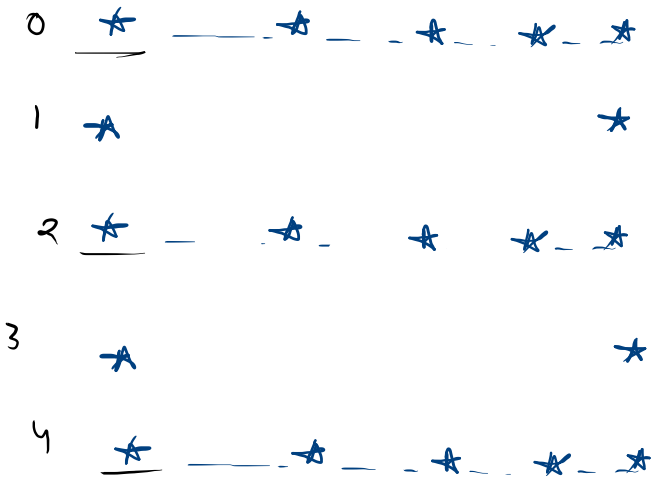
then in the **fourth** line print a star, then **n-2** tabs, then print a star .

Example: n=5

Pattern will be:

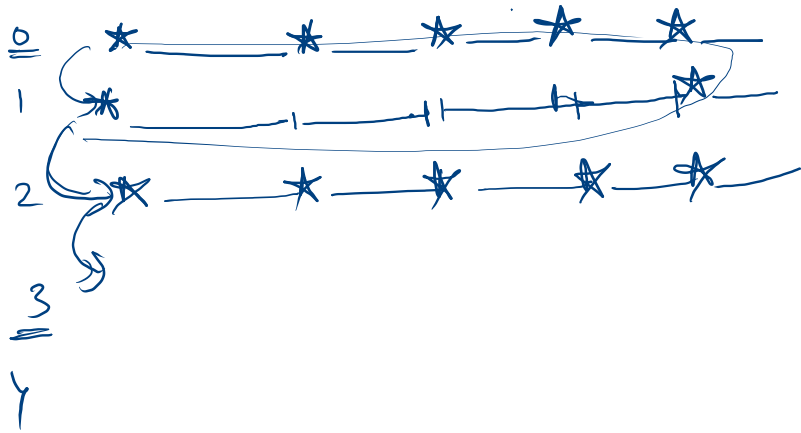
row → even → n star

odd → ★ n-2 ★



n = 5

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

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        for(int row = 0; row < n; row++){
            if(row % 2 == 0){   // n star
                for(int i = 0; i < n; i++){
                    System.out.print("*\t");
                }
            }else{
                System.out.print("*\t");
                for(int i = 0; i < n-2; i++){
                    System.out.print("\t");
                }
                System.out.print("*\t");
            }
            System.out.println();
        }
    }
}
```



function.

$$f(x) = x^2$$

maths

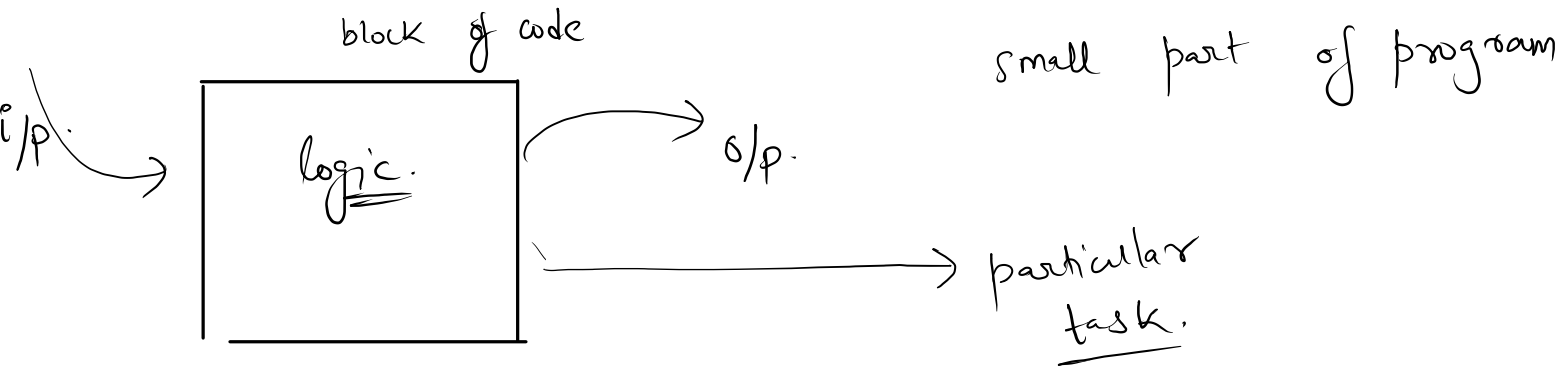
$$f(3) = 9$$

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

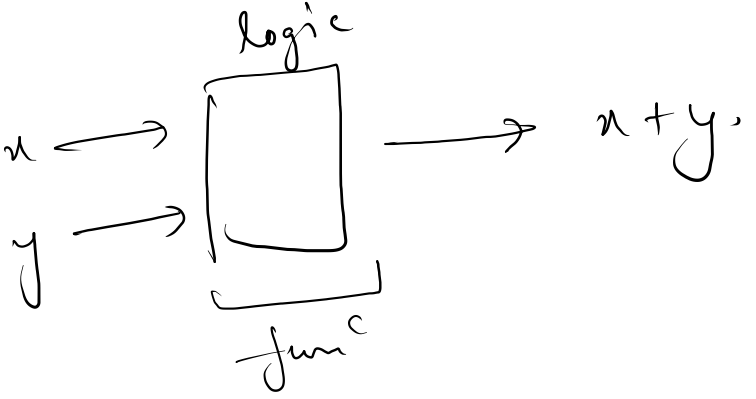
$x = 5$
$y = 3$

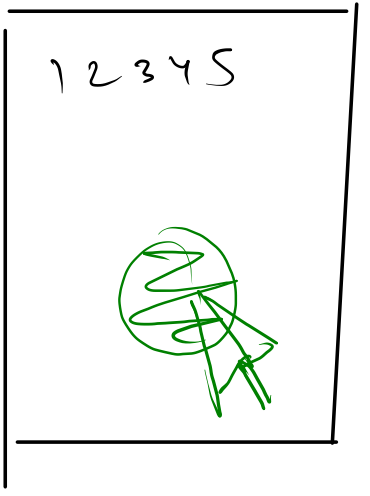
$$= 13$$

function


block of code
small part of program
i/p.
logic.
o/p.
particular
task.

function.





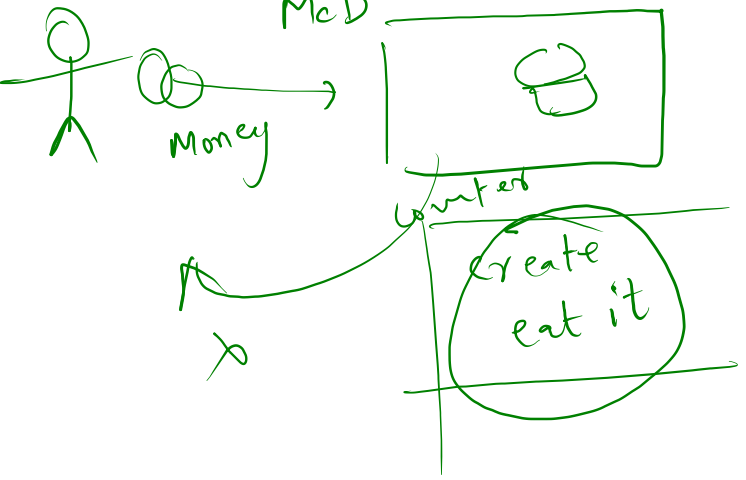
$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$

$6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720.$

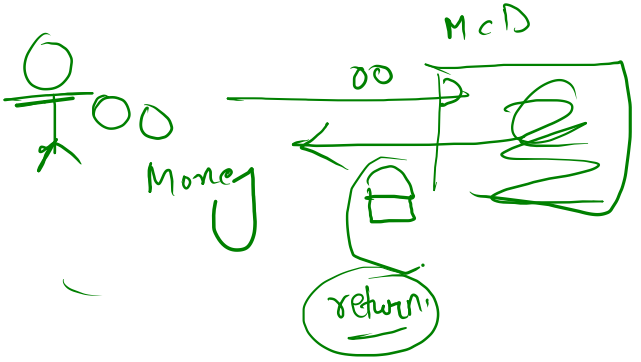
Code 5!

```java

public class Main
{
    public static void main(String[] args) {
        int val = 3;
        int ans = 1;
        for(int i = 1; i <= val; i++){
            ans = ans * i;
        }
        System.out.println(ans);
    }
}

```

void



anything else.



no i/p / void.

```java
import java.util.*;
public class Main
{

    public static void mySelf(){
        System.out.println("Aman");
        System.out.println("52");
        System.out.println("Delhi");
        System.out.println("Pizza");
    }


    public static void main(String [] args){
        mySelf();


    }
```

parameter / void.

```java
import java.util.*;
public class Main
{

    public static void wishMe(String name){
        System.out.println("Hi " + name + " I am eating ur burger");
    }


    public static void main(String [] args){
        Scanner scn = new Scanner(System.in);
        String s = "Shubham";
        wishMe(s);
        wishMe("Nikhil");


    }
}
```