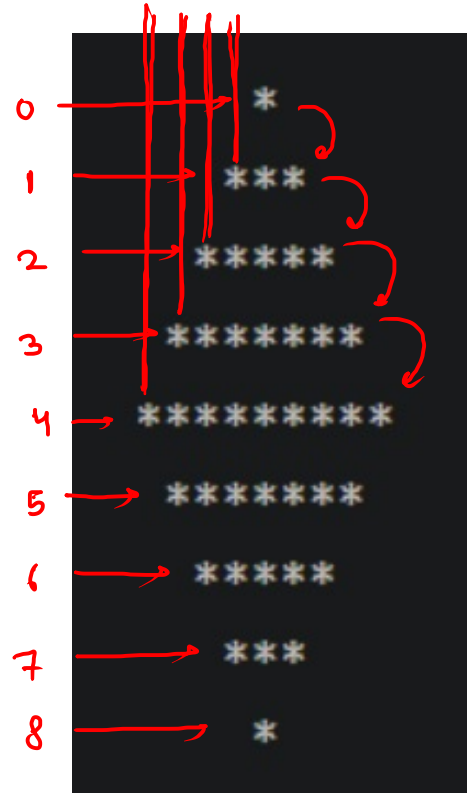
GKSTR29_Pattern_12_Diamond

n = 5

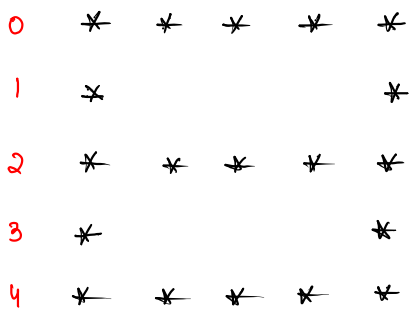
```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();

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



Pattern 9 - Square Ladder with top and bottom

n = 5



even index of row

odd :- 2 stars in boundary of col.

Code

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

    for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
            if ( i % 2 == 0 ) {
                System.out.print("*" + "\t");
            } else {
                if ( j == 0 || j == n - 1 ) {
                    System.out.print("*" + "\t");
                } else {
                    System.out.print("\t");
                }
            }
        }
        System.out.println();
    }
}
```

⟹ Functions

↳ saperate piece of code

1) Function declaration :- where we write that piece of code

2) Function calling :- where you want to use that piece of code.

Note :- main function always called first

flow of console

```
1  import java.io.*;
2  import java.util.*;
3
4  public class Main {
5      public static void hello() {    // function declaration
6          System.out.println("hello !!!");
7      }
8
9      public static void main(String[] args) {
10         System.out.println("Hi");
11         for (int i = 0; i < 5; i++) {
12             hello();    // function calling
13         }
14         System.out.println("Hi1");
15     }
16
17 }
```

line no.

9
10
11
12
5
6
7
13
11
12
5
6
7
13
14
15

K5

o/p

Hi
hello
hello
hello
hello
hello
hi1

Syntex

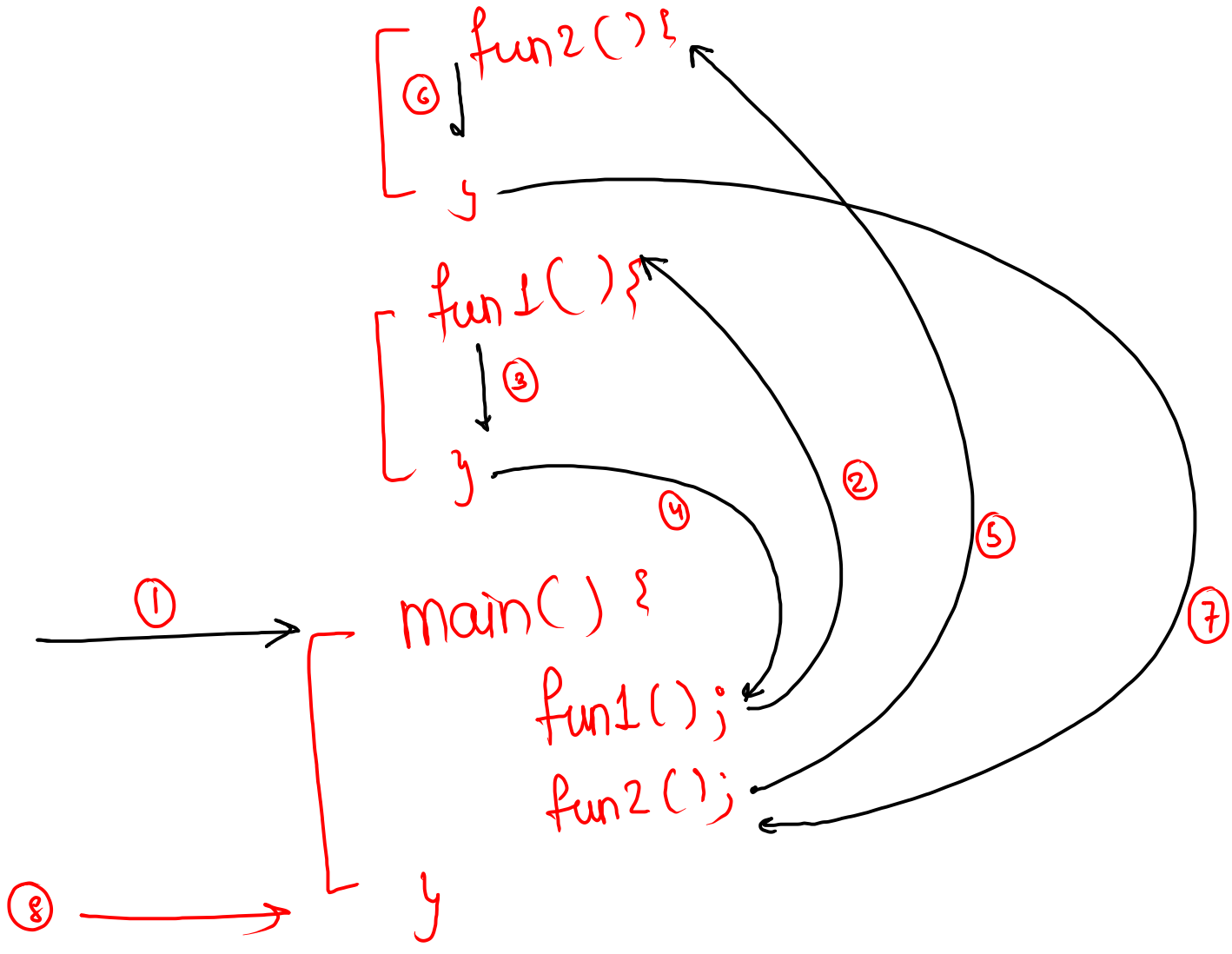
OOPs

1) Function declaration :-

```
public static void func_name(){
    // statement
}
```

2) Function calling :-

```
func_name();
```


fun2(){
⑥
y
fun1(){
③
y
②
④
⑤
⑦
①
main(){
fun1();
fun2();
⑧
y

Types of functions:-

- Non-parameterised:-

```
public static void fun1(){

}
fun1();
```

- Parameterised:-

```
public static void fun2(int n){

}
fun2(3);
```

Parameterised function

```java
public class Main {
    public static void hello(String str) {    // function declaration
        System.out.println(str);
    }

    public static void main(String[] args) {
        hello("Hello");
        hello("Hi");
        System.out.println("Hi1");
    }
}
```

Find sum using a function

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int t = scn.nextInt();
    for (int i = 0; i < t; i++) {
        int x = scn.nextInt();
        int y = scn.nextInt();
        findSum(x, y);
    }
}
public static void findSum(int a, int b) {
    int sum = a + b;
    System.out.println(sum);
}
```

Code

multiple function calling

```java
public class Main {
    public static void sum(int a, int b) {
        System.out.println(a + b);
    }
    public static void sub(int a, int b) {
        System.out.println(a - b);
    }
    public static void prod(int a, int b) {
        System.out.println(a * b);
    }
    public static void div(int a, int b) {
        System.out.println(a / b);
    }

    public static void main(String[] args) {
        int x = 7;
        int y = 3;
        sum(x, y);
        sub(x, y);
        prod(x, y);
        div(x, y);
    }
}
```