DECISION/CONTROL STATEMENT

Normal flow of control

- When all the statements of a program is executed one by one from beginning to end, the flow of control is known as Normal flow of control.

Conditional flow of control

- During the course of programming, it may happen that we want to execute a block ignoring another block based on a given condition.
- In this situation, the control is diverted to perform the task accordingly.
- It is known as Conditional flow of control.

DECISION / CONTROL STATEMENT:

The decision statement helps the programmer to skip the block of instructions from the execution if the condition is not satisfied.

TYPES OF DECISION STATEMENTS:

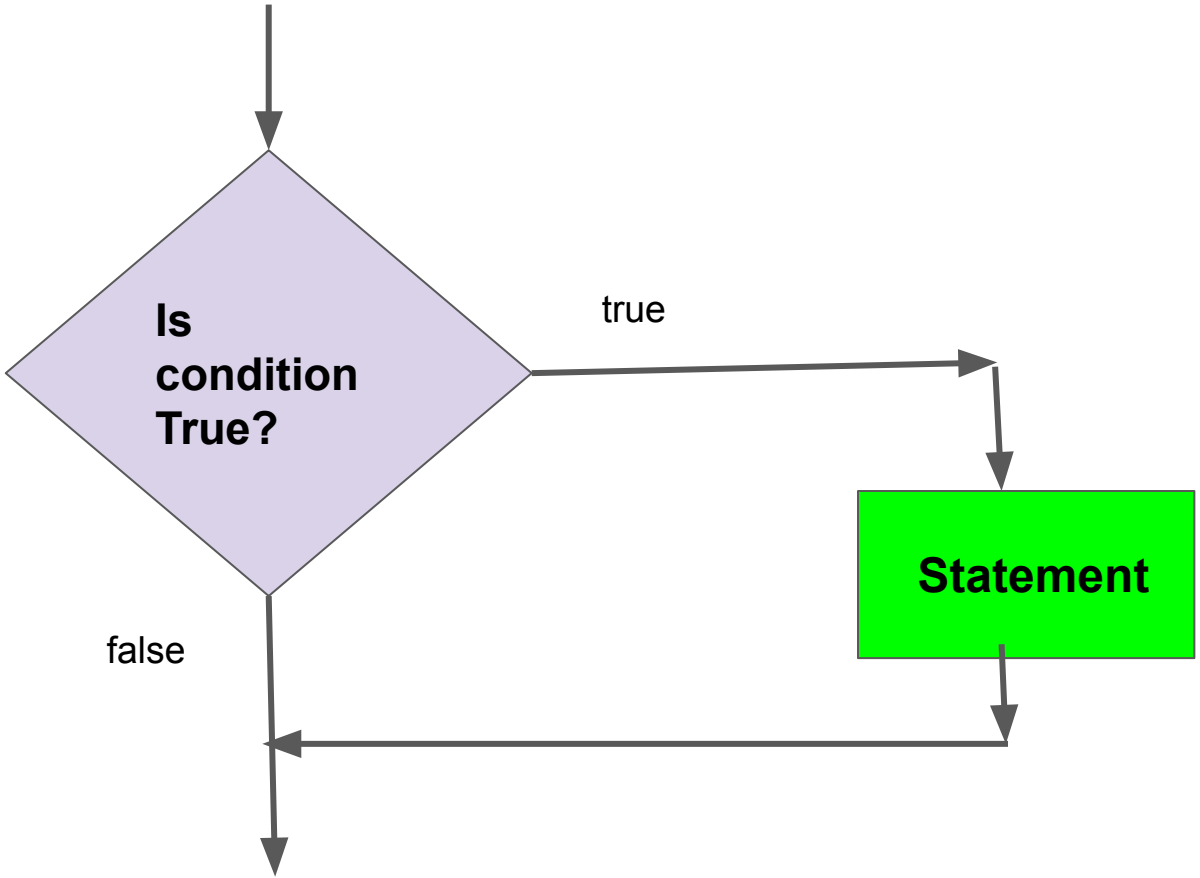
1) if statement
2) if-else statement
3) if-else if ladder
4) switch

IF STATEMENT

- This statement checks the condition first.
- If the condition is true then the next statement is executed,or
- Normal flow of the execution continues(instructions written inside the if block is skipped)

Syntax:- if statement

```
if (condition)
{
    //statements
}
```


Is condition True?
true
Statement
false

```
class Program1
{
	public static void main(String[] args)
	{
		int a=100,b=20;
		//condition
		if(a>b)//100>20 true
		{
		System.out.println(a);//100
		}

		System.out.println("Hello World");
	}
}
```

```
class Program2
{
	public static void main(String[] args)
	{
		int n=7;

		if(n%2==0)//7%2==0-->1==0false
		{
		System.out.println(n+" is an Even number");
		}

		System.out.println("Hello World");
	}
}
```

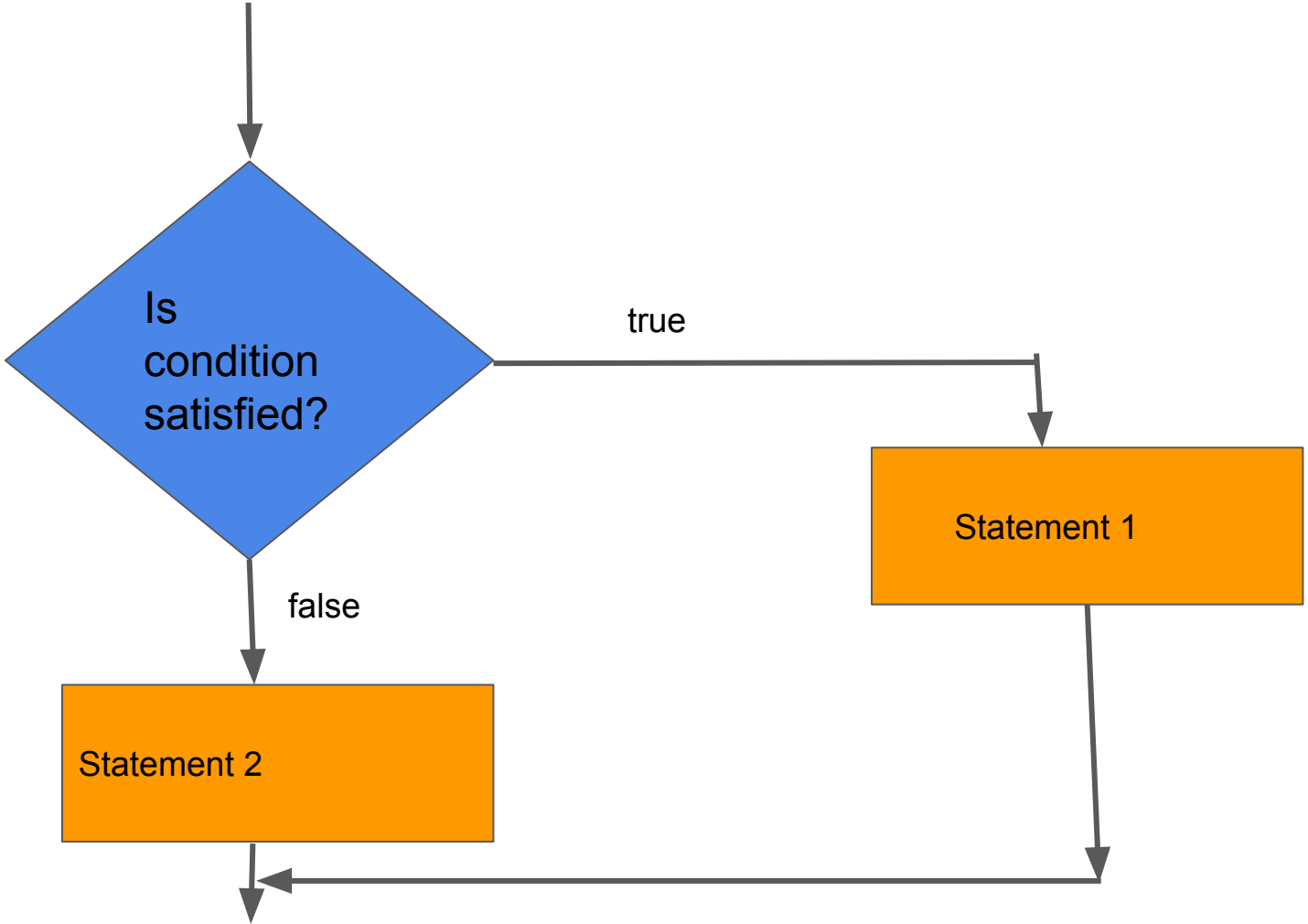
IF ELSE STATEMENT

If the condition is satisfied then the instruction written inside the if block gets executed

if not satisfied else block gets executed (any one of the blocks will be skipped based on a condition.)

Syntax:- if-else if statement

```
if (condition) {
 //statements   }
else   {
  // statements   }
```


Is condition satisfied?
true
false
Statement 1
Statement 2

```
class Program5
{
	public static void main(String[] args)
	{
		int a=6;
		if(a%2==0 && a%3==0)
		{
		System.out.println(a+" is divisible
by both 2 and 3");
		}
		else
		{
		System.out.println(a+" is not
divisible by both 2 and 3");
		}

	}
}
```

```
class Program4
{
	public static void main(String[] args)
	{
		int n=7;
		if(n%2==0)//7%2==0-->1==0false
		{
		System.out.println(n+" is an Even
number");
		}
		else
		{
		System.out.println(n+" is an Odd
number");
		}
		System.out.println("Hello World");
	}
}
```

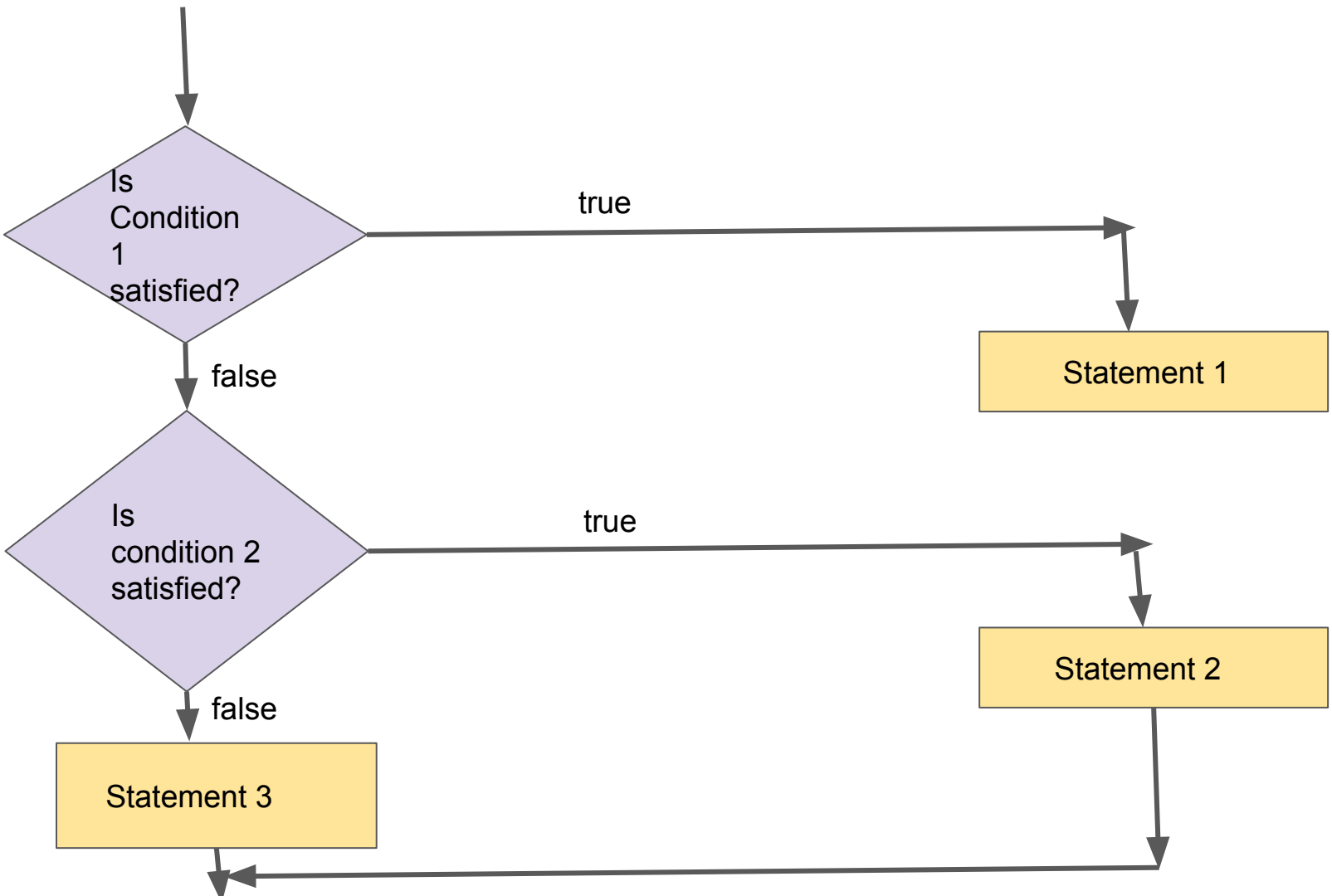
IF ELSE IF STATEMENT

- If the condition is satisfied then the instructions written inside the if block gets executed.
- If the condition is not satisfied then the else if block will be executed.
- If the condition is not satisfied in any one of the else if block then only else block will be executed,skipping if and else if block.
- else block is optional,

Syntax:- if else if statement

```
if(condition)
{
//statements
}
else if(condition)
{
//statements
}
else if( condition)
{
  //statements
}

else
{
    //statements
}
```


Is Condition 1 satisfied?
true
Statement 1
false
Is condition 2 satisfied?
true
Statement 2
false
Statement 3

```
class Program9
{
	public static void main(String[] args)
	{
		int a=0;
		if(a>0)
		{
		System.out.println(a+" is a positive
number");
		}
		else if(a<0)
		{
		System.out.println(a+" is a negative
number");
		}
		else
		{
		System.out.println(a+" is a zero");
		}

	}
}
```

```
class Program8
{
	public static void main(String[]
args)
	{
		char ch='+';
		if((ch>='A' &&
ch<='Z')||(ch>='a' && ch<='z'))
		{
		System.out.println(ch+" is an
Alphbet");
		}
		else if(ch>='0' && ch<='9')
		{
		System.out.println(ch+" is an
Number");
		}
		else
		{
		System.out.println(ch+" is a
Special character");
		}
```

SWITCH STATEMENT

- The value / variable / expression passed in the switch gets compared with the value passed in the case from top to bottom order.
- If any of a case is satisfied, the case block is executed and all the blocks present below get executed,if break statement is not used.
- If no case is satisfied then the default block gets executed.
- For a case we can use a break statement which is optional.

NOTE:

- **For a switch we can’t pass long, float, double, boolean.**
- **For a case we can’t pass a variable.**

BREAK:

- break is a keyword, it is a control transfer statement.
- break is used inside the switch and loop block
- When the break statement is executed control is transferred outside the block.

Syntax to create switch block

```
switch(value / variable / expression )
{
        case value / expression :
        {
            statement;
        }
        [break ;]
        case value / expression :
        {
            statement;
        }
        [break ;]
        .
        .
        .
        default :
        {
            statement ;
        }
        [break ;]
        }
```

```
class Program11
{
	public static void main(String[] args)
	{
		int n=2;
		switch(n+2)//=2+2=4
		{
			case 1:{
			   System.out.println("case1");
			}
			break;
			case 2:{
			   System.out.println("case2");
			}
			break;
			case 3:{
			   System.out.println("case3");
			}
			break;
			case 4:{//matched
			   System.out.println("case4");
			}
			break;
			case 5:{

System.out.println("case5");
			}
			break;
			default:{

System.out.println("default executing");
			}
		}
	}
}
```