Logical Operators

What is Logical Operators ?

Whenever we need to connect two statements.

In the Last class we learn about conditional statements, that says that if one condition is true then do X otherwise do Y.

For Example: In traffic lights , If the lights are green then Move and if the lights are red then Stop.

But In real, there might be multiple condition on which some result depends.

For Example: Suppose I need to submit some documents in Masai, and the documents are pan card and License Id then only I will get the admission.

here, you can observe that I will only get the admission only when I have the PAN Card and License Id (Both are important).

1. **AND Operator**

PAN Card	License Id	Admission	
True	False	False	I will not get the admission if I have the PAN Card but not License Id.
False	True	False	I will not get the admission if I have not the PAN Card but have License Id.
False	False	False	I will not get the admission if neither I have the PAN Card nor the License Id.
True	True	True	I will not get the admission if I have the PAN Card as well as License Id.

Similarly, we can have multiple condition on which , the result is dependent.

- Our Boolean operators takes the input values as boolean and produce the result in boolean.
- In programming, we use to denote the AND operator like in this way **&&**.
- **Input (Boolean Value) ——&&-—> Output (Boolean Value)**

// PIC of && Table

Code 1 : AND Operator

```
var a = true;
var b = true;

var c = a && b;
console.log(c);

a = true;
b = false;
console.log(a&&b);

a = false;
b = true;
console.log(a&&b);

a = false;
b = false;
console.log(a&&b);
```

Code 2 : AND with numbers

```
var a = 5>3;
var b = 6>3;

var c = a && b;
console.log(c);
```

Code 3 : if/else

```
// Ist Part : Without AND

if(5>3)
{
  if(6>3)
  {
    console.log("Both are true");
  }
}


// IInd Part : With AND

if(5>3 && 6>3)
{
  console.log("Both are true");
}
```

Code 3 : Combination of multiple statements

```
// Try out on Console

(5<4) && (3>1) && (2>1) && (4<1)
```

Code 4 : [Student Task] Check whether Rahul passed or not

```
// For English Subject, Check whether Rahul passed or not

var subject = "english";
var passing_marks = 70;

var rahul_marks = 75;
var rahul_subject = "english";

if((rahul_subject == subject) && (rahul_marks >= passing_marks))
```

```
{
  console.log("Rahul Passed");
}
else
{
  console.log("Rahul not passed");
}
```

Code 5 : [Student Task] Marriage Problem

Gender is male and age ≥ 21 : He can marry

Gender is female and age ≥ 18 : She can marry

```
var gender = "male";
var age = 21;

if((gender == "male") && (age >= 21))
{
  console.log("Male : Can Marry");
}
else if((gender == "female") && (age >= 18))
{
  console.log("Female : Can Marry");
}
else
{
  console.log(gender,"Can't get Marry");
}
```

Code 6 : Differentiate between ,(coma) and +

```
var a = 2;
var b = 3;
var c = "hello";

console.log(a,b,c);
console.log(a+b+c);
```

```
// Case 2 : Integers
var a = 2;
var b =. 3;
console.log(a+b);
console.log(a,b);


// Case 3 : Strings
var a = "Hello";
var b = "World";

console.log(a+b);


// Case 4 : Integer with Strings
var a = 2;
var b = "hello";

console.log(a,b);
console.log(a+b);


// Case 5 : "\n"
var a = 2;
var b = "hello";

console.log(a,"\n",b);
```

Code 7 : Mom wants to make Palak Paneer , So he send sunny to the shop to buy palak and paneer.

Since , She asked for palak paneer . In this case, both items palak and paneer is required to make palak paneer, if any of the item is not available in the shop then it is not possible to make palak paneer dish.

```
var palak_availaible = false;
var paneer_availaible = false;

if(paneer_availaible && palak_availaible)
{
  console.log("Today, we will have a party");
}
else
{
```

```
  console.log("No Party");
}
```

OR Operator ||

If any of the statement is true , then the result will be true

For Example : DriveZy is a Renting bike service Startup, If you want to rent a bike then you need to submit any of the Identity Document

Aadhar Card or PAN Card or License or Voter id Card

Aadhar Card	PAN Card	License	Voter ID card	Result
True	True	True	True	**True**
True	True	True	False	**True**
True	True	False	False	**True**
True	False	True	True	**True**
False	False	False	False	**False**

and many more cases are possible

Observation :

1. If any of the case is true then the final result will be true.
2. If all the cases are false, then only the result will be false.

For Example : Masai ask for documents After Msat in the documentation phase, either submit the 12th Mark Sheet or Diploma

12th Marksheet	Diploma	Admission Result

True	True	True
True	False	True
False	True	True
False	False	False

- Show in console

Code 8 : OR Operator

```
var a = true;
var b = true;

var c = a || b;
console.log(c);

a = true;
b = false;
console.log(a||b);

a = false;
b = true;
console.log(a||b);

a = false;
b = false;
console.log(a||b);
```

Code 9 : [Student Task] OR Operator

1. true || false || true
2. false || true || false
3. false || false || true

Code 10 : Mom wants to prepare something for dinner, she decide that either the will make Potato or Paneer , So she send sunny to the shop to buy potato or paneer.

Since , Either she will prepare potato or panner in the dinner . In this case, if any of the item is available in the shop then it is possible to prepare dinner.

```
var potato_availaible = true;
var paneer_availaible = false;

if(potato_availaible || paneer_availaible)
{
  console.log("Dinner : Possible");
}
else
{
  console.log("Dinner : Not Possible");
}
```

Code 11 : Marriage Problem

Male : age≥21

Female : age≥18

```
var gender = "female";
var age = 18;

if((gender == "male" && age>=21) || (gender == "female" && age>=18))
{
  console.log(gender,": Can get Married");
}
else
{
  console.log(gender,": Can't get married");
}
```

Switch Case

Whenever we have multiple options and we have a choice .

For Ex : ATM Machine , we have multiple options of Deposit, Withdraw, Change Pin , others

- Every option is connected to some code
  - Deposit ——————————> Code 1 [To deposit the money]
  - Withdraw ——————————→ Code 2
  - Change Pin ——————————> Code 3
  - Default ——————————————> Code 4

// pic

In switch case, there are multiple cases, and with each case some code is connected.

Code 12 : Day Schedule

```
var option = 3;

switch(option)
{
  case 1 :
           console.log("Day 1 : Scrum + Coding");

  case 2 :
           console.log("Day 2 : Scrum + Coding + Skillathon");

  case 3 :
           console.log("Day 3 : Scrum + Skillathon + Standups");

  default :
              console.log("Holiday");

}
```

- On choosing the option in above code, it will output the code present corresponding to the given option and also print all the output of all the cases which present below the chosen option.
- To avoid this, we will use break

Code 13 : Day Schedule [with Break]

```
var option = 3;

switch(option)
{
  case 1 :
           console.log("Day 1 : Scrum + Coding");
           break;

  case 2 :
           console.log("Day 2 : Scrum + Coding + Skillathon");
           break;

  case 3 :
           console.log("Day 3 : Scrum + Skillathon + Standups");
           break;

  default :
           console.log("Holiday");
           break;
}
```