**Learning Objectives**

* To grasp operation rule of the logical operators **&&**, **||**, **!**.

**Learning Contents**

* Logical operator (&&)
  + It executes logic and operation on two expressions (it is equivalent to the meaning of “and” in English.)
  + Syntax: **Operation result = expression 1 && expression 2**
  + Operation result can be any variable, which is like a container. The operation result is put in this container.
  + **and** means and in English. **Only** when both **expression 1** and **expression 2** are correct (that is to say, both are **true**) , the result will be **true** ;
  + It is expressed with a list:

| **Operation results** | **expression 1** | **expression 2** |
| --- | --- | --- |
| true | true | true |
| false | true | false |
| false | false | true |
| false | false | false |

* We can see from the above table, **as long asexpression 1** is **true**, the operation result is **true** (the pity expression 2 is ignored - \_ - ); otherwise, value of the operation result shall be consistent with the result of the **expression 2**.
* This phenomenon is the same as logical operation **&&** as mentioned above. Do you remember it? It is called **short circuit operation**.
* Logical negation operator (!)
  + It executes logical negation operation on an expression.
  + Syntax: **Operation result = !Expression**
  + Its meaning of operation result is the same as the above two.
  + **Negation** means **no** **not**, so the result is contrary to the expression.
    - A vivid explanation is given here: Facing naughty rascal, mums always kid: I let you go eastward but you insist on going westward.( ^ \_ ^)
    - I think of a comment of Romance of the Three Kingdoms: Those big treacherous officials appear to be loyal and those great fake things seem to be real.
  + It is expressed with a list:

| **Operation results** | **expression 1** |
| --- | --- |
| true | false |
| false | true |

* Who is **true** and who is **false**.
  + Expressions which can be converted to be **false** :**null** , **NaN** , **0** , **空字符串("")** , **undefined**

**Recommended Resources**

* Logical Operator（<https://developer.mozilla.org/zh-CN/docs/Web/JavaScript/Reference/Operators/Logical_Operators>）