ternary expressions

&& (AND) operator

|| (OR) operator

ternary expression

A ternary expression is a concise alternative to an if-else statement. What takes an if-else five lines of code to accomplish, a ternary expression gets done in one.

Let's start with an if-else statement.

1. Declare three number variables and do some conditional math. If x is less than y, add them; othewise (else) multiply them:

```
let x = 5;
let y = 8;
let z = 0;

if(x < y) {
    z = x * y
} else {
    z = x + y;
}

console.log(z);
```

console.log(z);

Now to convert the if-else to a ternary:

2. Add a question mark right inside the if-block:

```
if(x < y) {
    ? z = x * y;
} else {
    z = x + y;
}
```

3. Add a colon right inside the else-block:

```
if(x < y) {
    ? z = x * y;
} else {
    : z = x + y;
}
```

4. Delete the if() and else, including parentheses:

```
x < y {
    ? z = x * y;
} {
    : z = x + y;
}
```

5. Delete all the curly braces:

```
x < y
  ? z = x * y;
  : z = x + y;
```

6. This is all one line now, so get rid of the first semi-colon and back everything up onto the same line:

```
x < y ? z = x * y : z = x + y;

console.log(z);
```

7. You can even get rid of the second "z=" since it is assumed by the first one:

```
x < y ? z = x * y : x + y;

console.log(z);
```

CHALLENGE:

8. Convert this if-else into a ternary:

```
let n = 5;

if(n == 7) {
    n = 0;
} else {
    n++;
```

```
}

console.log(n);
```

9. Convert this if-else into a ternary:

```
let num = 20;

if(num == 20) {
  num++;
} else {
  num--;
}

console.log(num);
```

multiple conditions

Multiple conditions can be evaluated with the && (AND) and || (OR) operators:

The **&&** (AND) operator requires at least two conditions to be true.

10. Do an if statement with && where two conditions must be true.

```
    let city = 'Texarkana';
    let state = 'Texas';
    let msg = '';

    // && (AND) operator
    if(city == 'Texarkana' && state == 'Texas') {
        msg = `Welcome to ${city}, ${state}!`;
    } else {
        msg = 'This is not Texarkana, Texas--but it could be Texarkana,
Arkansas or Houston, Texas';
    }

    console.log(msg); // Welcome to Texarkana, Texas
```

11. Do an if statement with || where only one condition must be true.

```
    // || (OR) opertor
    if (city == 'Texarkana' || city == 'Houston') {
        msg = `Welcome to ${city}`; // runs
    } else {
        msg = 'This is neither Texarkana nor Houston';
    }
```

```
    console.log(msg); // Welcome to Texarkana
```

12. Change city to 'Dallas'`, and run it again. The else part will run both times.

There can be more than two **&&** conditions.

13. Try one with three conditons; if *any* of them are false, the **else** part runs:

```
    let R = 123;
    let G = 155;
    let B = 202;

    if(R > 100 && G > 100 && B > 100) { // true
        msg = 'All RBG values are greater than 100';
    } else {
        msg = 'At least one RBG value is 100 or less';
    }

    console.log(msg); // All RBG values greater than 100
```

14. Set any R, G, B values to below 100, and run it again. Now you get the else part.

15. Try using more than two || operators:

```
    let car = 'blue';

    if (car == 'black' || car == 'silver' || car == 'blue') {
        msg = 'car is black, sliver or blue.';
    } else {
        msg = 'The car is not black, sliver, or blue. It is actually ' +
car;
    }

    console.log(msg);
```

16. Change the car color to red so that the else part runs.

switch case break

An alternative to if-else if-else logic is a **switch-case-break** statement. Unlike a ternary, a switch-case-break is used for evaluating multiple conditions, which would otherwise require "else if" logic.

Convert if-else if-else to switch-case-break by following these guidelines:

- the evaluated variable is written just once
- there is only one set of curly braces
- there is only one set of parentheses

- there are no equality operators (==, ===)

Other differences: switch, case and break replace if-else keywords

- switch instead of if to start
- case instead of else if
- default instead of else

17. Write out this if-else if-else:

```
let moneySymbol = "JPY";
let currency = "";

if (moneySymbol === "USD") {
    currency = "US Dollar";
} else if (moneySymbol === "JPY") {
    currency = "Japanese Yen";
} else if (moneySymbol === "GBP") {
    currency = "British Pound";
} else {
    currency = "Unknown";
}
```

18. Convert the if-else if-else to a switch-case-break:

```
switch (moneySymbol) {
    case "USD":
    currency = "US dollar";
    break;
    case "JPY":
    currency = "Japanese Yen";
    break;
    case "GBP":
    currency = "British Pounds";
    break;
    default:
    currency = "Unknown";
    break;
}
```

- **END Lesson 02.03**
- **NEXT Lab 02.03**
- **NEXT Lesson 02.04**