02.03 Lab

Multiple "if conditions"

1. Given three variables, R, G, B, write an "if else" where:
    - if all R, G, B values are the same:
        - set 'allSame' to true
        - else set 'allSame' to false.

R, G, B values must be integers in the 0-255 range

```
```js
let R = 0, G = 0, B = 0;
let allSame;

// ANS:
if(R == G && R == B) {
    allSame = true;
} else {
    allSame = false
}

console.log('allSame:', allSame);
```
```

2. Expanding upon #1 above, given a color variable:

```
let color = "";
```

Set the color value according to these rules:

- if R, G and B are ALL the same exact number:
    - if R, G, B are all 0, set color to "black",
    - if R, G, B are all 255, set color to "white",
    - otherwise, set color to "gray",
- if R, G and B are NOT all the same:
    - set color to "not gray"

Log both variables: allSame and color.
Try different values of R, G and B to get all possible results.

```
```js
// ANS:
if(R == G && R == B) {
    allSame = true;
```
```

```
    if(R == 0) {
        color = "black";
    } else if(R == 255) {
        color = "white";
    } else {
        color = "gray";
    }
} else {
    allSame = false;
    color = "not gray";
}

console.log('allSame:', allSame, ' - color:', color);
```

3. Expanding upon #2, above, add logic where:

- if gray R,G,B values are in the 1-55 range, log "dark gray"
- if gray R,G,B values are in the 56-199 range, log "medium gray"
- if gray R,G,B values are in the 200-254 range, log "light gray"

```
// ANS:
if(R == G && R == B) {
    allSame = true;
    if(R == 0) {
        color = "black";
    } else if(R == 255) {
        color = "white";
    } else {
        // color = "gray";
        if(R <= 55) {
            color = "dark gray";
        } else if(R <= 199) {
            color = "medium gray";
        } else {
            color = "light gray";
        }
    }
} else {
    allSame = false;
    color = "not gray";
}

console.log('allSame:', allSame, ' - color:', color);
```

Converting if-else to ternary:

4. Write an if-else and then convert it to a ternary;

- if x is less than or equal to y, divide x by y
- if x is greater than y, divide y by x
- in either case, set z equal to the answer

Try different x and y values so that the if and else parts both run.
The logic is such that z can never be greater than 1.

```
```js
let x = 45;
let y = 15;
let z = 0;

// ANS:
if (x <= y) {
    z = x / y;
} else {
    z = y / x;
}

console.log(z); // 0.5

// ANS:
// TERNARY:
z = x <= y ? x / y : y / x;

console.log(z); // 0.5
```
```

5. Given these variables:

```
let msg = "";
let str1 = 'apple';
let str2 = 'banana';
```

Using "if - else if - else" logic, compare str1 and str2, alphabetically, such that:

- if str1 comes before str2 (str1 = "apple", str2 = "banana")
    - set msg to "apple before banana"
- if str2 comes before str1 (str1 = "dog", str2 = "cat")
    - set msg to "cat before dog"
- if they are identical (str1 = "kiwi", str2 = "kiwi")
    - set msg to: "double kiwi"

Assume str1 and str2 are lowercase, non-empty strings.
Test the logic for all 3 outcomes.

```js
// ANS:
    if (str1 < str2) {
    msg = `${str1} before ${str2}`;
} else if(str1 > str2) {
    msg = `${str2} before ${str1}`;
} else {
    msg = `double ${str1}`;
}

console.log(msg);
```

6. Expanding upon #5, given this additional variable:

```
let half = "";
```

In a separate piece of "if - else if - else" logic, set the value of half, according to these rules:

- if str1 and str2 both start with "a" - "m" (str1 = "bat", str2 = "man")
    - set half to "both 1st half"
- if str1 and str2 both start with "n" - "z" (str1 = "north", str2 = "south")
    - set half to "both 2nd half"
- if str1 and str2 start with letters from different halves (str1 = "east", str2 = "west")
    - set half to "different halves"
- if str1 and str2 are the same
    - don't change half; it stays an empty string

Concatenate msg and half into a single string and log it:
Examples:

- str1 = "apple", str2 = "cat" logs "apple before cat - both 1st half"
- str1 = "noodle", str2 = "rice" logs "noodle before rice - both 2nd half"
- str1 = "up", str2 = "down" logs "down before up - different halves"
- str1 = "papaya", str2 = "papaya" logs "double papaya"

```
// ANS:
if(str1 < 'n' && str2 < 'n') {
    half = "both 1st half";
} else if(str1 >= 'n' && str2 >= 'n') {
    half = "both 2nd half";
} else {
    half = "different halves";
}
```

```
console.log(msg);
```

7. Given these variables, num and doubleDigit, where we may assume that num is a positive integer, write an "if else" where:

- if num is 2-digits (10-99), set doubleDigit to true
- if num is NOT 2-digits (0-9, 100+), set doubleDigit to false

```
let num = 8;
let doubleDigit;

// ANS:
if(num >= 10 && num <= 99) {
    doubleDigit = true;
} else {
    doubleDigit = false;
}

console.log('doubleDigit:', doubleDigit);
```

8. Convert the "if else" for #7 to a ternary

```
// ANS:
doubleDigit = (num >= 10 && num <= 99) ? true : false;

console.log('doubleDigit:', doubleDigit);
```

9. Convert the following "if - else if - else" to "switch - case - break - default"; here is a recap of the syntax:

- compare value in switch parentheses to the case value:
- switch("apple") case: "apple"
- if they match, the code after case runs, stopping at break
- if they do not match, go on to consider the next case
- if end is reached with no switch-case match, default runs

```
let country = "Ghana";
let continent = "";

if (country === "Canada") {
    continent = "North America";
} else if (country === "China") {
```

```
    continent = "Asia";
} else if (country === "Ghana") {
    continent = "Africa";
} else if (country === "Bolivia") {
    continent = "South America";
}  else if (country === "France") {
    continent = "Europe";
} else {
    continent = "continent unknown";
}

console.log(`${country} is in ${continent}`);


// ANS ("switch - case - break - default" version):
country = "Paraguay";

switch (country) {

    case "Canada":
    continent = "North America";
    break;

    case "China":
    continent = "Asia";
    break;

    case "Ghana":
    continent = "Africa";
    break;

    case "Bolivia":
    continent = "South America";
    break;

    case "Frane":
    continent = "Europe";
    break;

    default: // no case is true, so do this (like an else part)
    continent = 'continent unknown';
    break;
}

console.log(`${country} is in ${continent}`);
```