Lab 2. JavaScript Fundamentals. Attach your code solution after every task.

## Task 1. Basic Operators

1. If your country split in half, and each half would contain half the population, then how many people would live in each half?
2. Increase the population of your country by 1 and log the result to the console
3. Finland has a population of 6 million. Does your country have more people than Finland?
4. The average population of a country is 33 million people. Does your country have less people than the average country?
5. Based on the variables you created, create a new variable 'description'

which contains a string with this format: 'Portugal is in Europe, and its 11 million people speak Portuguese'.

let population = 19000000;

let country = 'Portugal';

let continent = 'Europe';

let language = 'Portuguese';

console.log(population/2)

population++;

console.log(population);

console.log(population > 6);

console.log(population < 33);

const description =

    country +

    'is in ' +

    continent +

    ', and its ' +

    population +

    ' million people are speak ' +

    language;

console.log(description);

## Task 2. Strings and Template Literals

1. Recreate the 'description' variable from the last assignment, this time using the template literal syntax

const description = {

    population: 19000000,

    country: 'Portugal',

    continent: 'Europe',

    language: 'Portuguese'

};

console.log(description['country'] + ' is in ' + description['continent'] +

' , and its ' + description.population + ' million people are speak ' +

description['language']);

## Task 3. Taking Decisions: if / else Statements

1. If your country's population is greater that 33 million, log a string like this to the console: 'Portugal's population is above average'. Otherwise, log a string like 'Portugal's population is 22 million below average' (the 22 is the average of 33 minus the country's population)

let population = 19000000;

let country = 'Portugal';

let continent = 'Europe';

let language = 'Portuguese';

if(population > 33000000 ){

    console.log(country + "'s population is above average")

}

else{

    console.log(country + "'s population is 22 million below average")

}

if(population > 33000000 ){

    console.log(country + "'s population is above average")

}

else{

    if(continent == 'Europe' && country == 'Portugal'){

        console.log(country + "'s population is 22 million below average")

    }

    else{

        console.log("It's not Portugal")

    }

}

1. After checking the result, change the population temporarily to 13 and then to

130. See the different results, and set the population back to original

Portugal's population is 22 million below average

## Task 4. Type Conversion and Coercion

1. Predict the result of these 5 operations without executing them: '9' - '5';

'19' - '13' + '17';

'19' - '13' + 17;

'123' < 57;

5 + 6 + '4' + 9 - 4 - 2;

'9' - '5'; // 4

'19' - '13' + '17'; // 23

'19' - '13' + 17;

'123' < 57; //false

5 + 6 + '4' + 9 - 4 - 2; // 18

1. Execute the operations to check if you were right

console.log('9' - '5')

console.log('19' - '13' + '17')

console.log('19' - '13' + 17)

console.log('123' < 57)

console.log(5 + 6 + '4' + 9 - 4 - 2)

4

617

23

false

1143

5

## Task 5. Equality Operators: == vs. ===

1. Declare a variable 'numNeighbours' based on a prompt input like this: prompt('How many neighbour countries does your country

have?');

1. If there is only 1 neighbour, log to the console 'Only 1 border!' (use loose equality

== for now)

1. Use an else-if block to log 'More than 1 border' in case 'numNeighbours' is greater than 1
2. Use an else block to log 'No borders' (this block will be executed when 'numNeighbours' is 0 or any other value) /

let numNeighbours = prompt('How many neighbour countries does your country have?');

if(numNeighbours === 1){

    console.log("Only 1 border!");

}

else if(numNeighbours > 1){

    console.log("More than 1 border");

}

else{

    console.log("No borders");

}

1. Test the code with different values of 'numNeighbours', including 1 and 0.
2. Change == to ===, and test the code again, with the same values of 'numNeighbours'. Notice what happens when there is exactly 1 border! Why is this happening?
3. Finally, convert 'numNeighbours' to a number, and watch what happens now when you input 1
4. Reflect on why we should use the === operator and type conversion in this situation

if(numNeighbours === 1){

    console.log("Only 1 border!");

}

else if(numNeighbours > 1){

    console.log("More than 1 border");

}

else{

    console.log("No borders");

}

## Task 6. Logical Operators

1. Comment out the previous code so the prompt doesn't get in the way
2. Let's say Sarah is looking for a new country to live in. She wants to live in a country that speaks english, has less than 50 million people and is not an island.
3. Write an if statement to help Sarah figure out if your country is right for her. You will need to write a condition that accounts for all of Sarah's criteria. Take your time with this, and check part of the solution if necessary.
4. If yours is the right country, log a string like this: 'You should live in Portugal :)'. If not, log 'Portugal does not meet your criteria :('
5. Probably your country does not meet all the criteria. So go back and temporarily change some variables in order to make the condition true

let language = 'english';

let population = 19000000;

let iceland = false;

if(language == 'english' && population < 50000000 && iceland == false){

    console.log("You should live in Portugal :)");

}

else{

    console.log("Portugal does not meet your criteria :(")

}

## Task 7. The switch Statement

1. Use a switch statement to log the following string for the given 'language': chinese or mandarin: 'MOST number of native speakers!'

spanish: '2nd place in number of native speakers' english: '3rd place'

hindi: 'Number 4'

arabic: '5th most spoken language'

for all other simply log 'Great language too :D'

let language = 'english';

switch(language){

    case 'chinese':

        console.log("MOST number of native speakers!");

        break;

    case 'mandarin':

        console.log("MOST number of native speakers!");

        break;

    case 'spanish':

        console.log("2nd place in number of native speakers");

        break;

    case 'english':

        console.log("3rd place");

        break;

    case 'hindi':

        console.log("Number 4");

        break;

   case 'arabic':

        console.log("5th most spoken language");

        break;

    default:

        console.log("Great language too :D");

        break;

}

**Task 8.**

Aíman and Kuat aíe tíying to compaíe theií BMI (Body Mass Index), which is calculated using the foímula:

BMI = mass / height \*\* 2 = mass / (height \* height) (mass in kgand height in meteí).

# Youí tasks:

1. Stoíe Aíman’s and Kuat ‘s mass and height in vaíiables
2. Calculate both theií BMIs using the foímula (you can even implement both veísions)
3. Cíeate a Boolean vaíiable 'armanHigherBMI' containing infoímation about whetheí Aíman has a higheí BMI than Kuat.

# ľest data:

* Data 1: Aímans weights 78 kg and is 1.69 m tall. Kuat weights 92 kg and is 1.95m tall.

let ArmansWeight = 78;

let ArmansHeight = 1.69;

let KuatWeight = 92;

let KuatHeight = 1.95;

let ArmanBMI = ArmansWeight/ArmansHeight\*2;

let KuatBMI = KuatWeight/KuatHeight\*2;

if(ArmanBMI > KuatBMI){

    let armanHigherBMI = true;

    console.log(armanHigherBMI);

}

else{

    let armanHigherBMI = false;

    console.log(armanHigherBMI);

}

Data 2: Aímans weights 95 kg and is 1.88 m tall. Kuat weights 85 kg and is 1.76m tall.

let ArmansWeight = 95;

let ArmansHeight = 1.88;

let KuatWeight = 85;

let KuatHeight = 1.76;

let ArmanBMI = ArmansWeight/ArmansHeight\*2;

let KuatBMI = KuatWeight/KuatHeight\*2;

if(ArmanBMI > KuatBMI){

    let armanHigherBMI = true;

    console.log(armanHigherBMI);

}

else{

    let armanHigherBMI = false;

    console.log(armanHigherBMI);

}

**Task 9.**

Use the BMI example fíom ľask 8, and the code you alíeady wíote, and impíove it.

# Youí tasks:

1. Píint a nice output to the console, saying who has the higheí BMI. ľhe messageis eitheí *"Aíman’s BMI is higheí than Kuat’s!"* oí *"Kuat’s BMI is higheí than Aíman’s!"*
2. Use a template liteíal to include the BMI values in the outputs. Example: *"Aíman’s BMI (28.3) is higheí than Kuat’s (23.9)!"*

**Hint:** Use an if/else statement

let ArmanBMI = ArmansWeight/(ArmansHeight\*2);

let KuatBMI = KuatWeight/(KuatHeight\*2);

if(ArmanBMI > KuatBMI){

    console.log("Arman's BMI (" + ArmanBMI + ') is higheí than Kuat’s (' + KuatBMI + ")");

}

else{

    console.log("Kuat's BMI (" + KuatBMI + ') is higheí than Arman’s (' + ArmanBMI + ")");

}

**Task 10.**

ľheíe aíe two gymnastics teams, **Almaty** and **Astana**. ľhey compete against eachotheí 3 times. ľhe winneí with the highest aveíage scoíe wins a tíophy!

# Youí tasks:

1. Calculate the aveíage scoíe foí each team, using the test data below
2. Compaíe the team's aveíage scoíes to deteímine the winneí of the competition,and píint it to the console. Don't foíget that theíe can be a díaw, so test foí that as well (díaw means they have the same aveíage scoíe)
3. **Bonus 1**: Include a íequiíement foí a minimum scoíe of 100. With this íule, a team only wins if it has a higheí scoíe than the otheí team, and the same time ascoíe of at least 100 points. **Hint:** Use a logical opeíatoí to test foí minimum scoíe, as well as multiple else-if blocks
4. **Bonus 2:** Minimum scoíe also applies to a díaw! So a díaw only happens whenboth teams have the same scoíe and both have a scoíe gíeateí oí equal 100 points.

Otheíwise, no team wins the tíophy

# ľest data:

* Data 1: Almaty scoíe 96, 108 and 89. Astana scoíe 88, 91 and 110
* Data Bonus 1: Almaty scoíe 97, 112 and 101. Astana scoíe 109, 95 and 123

let Almaty1 = 96;

let Almaty2 = 108;

let Almaty3 = 89;

let Astana1 = 88;

let Astana2 = 91;

let Astana3 = 110;

let avgAstana = (Astana1 + Astana2 + Astana3)/3;

let avgAlmaty = (Almaty1 + Almaty2 + Almaty3)/3;

if(avgAstana > avgAlmaty){

    console.log("Team Astana wins a trophy!");

}

else if(avgAstana < avgAlmaty){

    console.log("Team Almaty wins a trophy!");

}

else{

    console.log("Draw");

}

if(avgAstana > avgAlmaty && avgAstana > 100){

    console.log("Team Astana wins a trophy!");

}

else if(avgAstana < avgAlmaty && avgAlmaty > 100){

    console.log("Team Almaty wins a trophy!");

}

* Data Bonus 2: Almaty scoíe 97, 112 and 101. Astana scoíe 109, 95 and 106
* else{
* console.log("Draw");
* }

**Task 11.**

Kaiíat wants to build a veíy simple tip calculatoí foí wheneveí he goes eating in a íestauíant. In his countíy, it's usual to tip 15% if the bill value is between 50 and

300. If the value is diffeíent, the tip is 20%.

# Youí tasks:

1. Calculate the tip, depending on the bill value. Cíeate a vaíiable called 'tip' foí this. It's not allowed to use an if/else statement (If it's easieí foí you, you can staít with an if/else statement, and then tíy to conveít it to a teínaíy opeíatoí!)

staít with an if/else statement, and then tíy to conveít it to a teínaíy opeíatoí!)

1. Píint a stíing to the console containing the bill value, the tip, and the final value (bill + tip). Example: *“ľhe bill was 275, the tip was 41.25, and the total value 316.25”*

# ľest data:

* Data 1: ľest foí bill values 275, 40 and 430

# Hints:

* ľo calculate 20% of a value, simply multiply it by 20/100 = 0.2
* Value X is between 50 and 300, if it's >= 50 && <= 300

let bill = 275;

let tip;

let total;

bill <= 50 ? tip=bill\*0.2 : bill >= 300 ? tip=0.15\*bill;

total = bill+tip;

console.log("Bill: " + bill + ", tip: " + tip + ", and the total value: " + total)