Solve as many of the following problems as possible. Start by solving the coloured highlighted problems. Then move on to the others. The “others” are more easily solved when you understand logical operators, nested ifs and compound conditions but many can still be solved without these concepts (although they will be more difficult).

Exercise : Divisible by 10?

Write a program that takes in a number and checks if the number is divisible by 10.

```
let number=+prompt("Enter a number!");
let remainder=number%10;
if(remainder==0)
{
  alert("It's divisible by 10!");
}
else
{
  alert("The number is not divisible by 10!");
}
```

Exercise : Highest of Three

Write a program that takes in three numbers and returns the highest number.

```
let numb1=+prompt('Type FIRST number rn.');
let numb2=+prompt('Type SECOND number rn.');
let numb3=+prompt('Type THIRD number rn.');
if(numb1>numb2 && numb1>numb3){
  console.log(numb1 + ', your first number, is the largest!');
}
else if(numb2>numb1 && numb2>numb3){
  console.log(numb2 + ', your second number, is the largest!');
}
else{
  console.log(numb3 + ', your third number, is the largest!');
}
```

Exercise : Consecutive Number

Write a program that takes in a number and either a `+` or a `-`. The program should return the consecutive number either before (`+`) or after (`-`) the number.

```
let consecutiveNumber=+prompt('Write a number!');
let symbol=prompt('Write either + or - !');
if(symbol=='+'){
  consecutiveNumber++;
  console.log('Your new number is ' + consecutiveNumber + '.');
}
```

```
else if(symbol=='-'){
  consecutiveNumber--;
  console.log('Here is your new number  ' + consecutiveNumber + '.');
}
else{
  console.log('pls enter a symbol!');
}
```

Exercise : Sum Less than 100?

Write a program that takes in two numbers and checks if the sum of the two numbers is less than 100.

```
let sumNum1=+prompt('Enter your number.');
let sumNum2=+prompt('Enter your second number.');
let sumOfNum=sumNum1+sumNum2;
if(sumOfNum<100){
  console.log('Your sum is less than 100 and I love you!');
}
else{
  console.log('Your sum is more than 99 and I love you a little less!');
}
```

Exercise : Is the Number Even?

Write a program that takes in an integer and checks if the number is even.

```
let number=+prompt("Enter a number!");
let remainder=number%2;
if(remainder==0){
  alert("It's even!");
}
else{
  alert("Its odd!");
}
```

Exercise : Divisible by a Number

Write a program that takes in two integers. The program will check if the first integer is divisible by the second integer.

```
let number=+prompt("Enter a number!");
let number2=+prompt(“Enter the second number”);
let remainder=number%number2;
if(remainder==0)
{
  alert("The two numbers are divisible!");
}
else
{
  alert("The 2 numbers are not divisible!");
}
```

Exercise : Perpendicular Lines

Lines are perpendicular if their slopes are negative reciprocals. Write a program that takes in the numerators and denominators of the slope of two lines and checks if the lines are perpendicular. Given two fractions, a/b = c/d , lines are perpendicular if a/b = - d/c .

```
let rise1=+prompt("Give me the rise of the first slope.");

let run1=+prompt("Give me the run of the first slope.");

let rise2=+prompt("Give me the rise of the second slope.");

let run2=+prompt("Give me the run of the second slope.");

let slope1=rise1/run1;

let slope2=rise2/run2;

slope1=-1*(1/slope1);//calculate the negative inverse of the slope and reassign this value back to the variable

if(slope1==slope2)

{

  alert("The slopes are perpendicular");

}

else

{

  alert("The slopes are not perpendicular!");

}
```

Exercise : At Capacity

Write a program that determines if a stadium is at maximum capacity. A stadium is at capacity if at least 80% of the seats are sold out.

```
let capacity=+prompt("enter the maximum capacity of the stadium");
let seats=+prompt("enter the amount of seats sold");
remainder=+(seats/capacity)*100;
if(remainder>=80){
  alert("The event is at maximum capacity");
} else {
  alert("The event is not at maximum capacity");
}
```

Exercise : Heart Rate

Write a program that determines whether or not a given resting heart rate is healthy. A healthy heart rate for the average human over 10 years of age is between 60-100 beats per minute.

```
let heartBPM=+prompt('Please tell me your heart rate!');
let ageInfo=+prompt('Enter your age here!');

if(heartBPM>=60 && heartBPM<=100 && ageInfo>=10){
  alert('Your heart rate is healthy');
}
else if(ageInfo<10){
  alert('bruh worry about sum else!');
}
else{
  alert('Your heart rate is not healthy.');
}
```

Exercise : Enough Paint

Write a program that indicates if an artist has enough paint to paint their ceiling. `The program` takes two inputs, the number of gallons of paint, and the square footage of the ceiling. 1 gallon of paint is enough to cover 5 square feet.

```
let gallons=+prompt("How many gallons of paint do you have?");
let squarefeet=+prompt("What is the square footage of your ceiling?");
let enough=squarefeet-gallons*5;
if(enough<=0){
  alert("You have enough paint");
} else {
  alert("You do not have sufficient paint");
}
```

Exercise : Sum Evens

Write a program that takes three integers and sums that value of those integers, but only if the value of the integers are even.

```
let int1=+prompt('I humbly request for an integer!');
let int2=+prompt('I once again request for an integer!');
let int3=+prompt('For thy last time grant me an integer!');
let ifEven1=int1%2;
let ifEven2=int2%2;
let ifEven3=int3%2;
let sumOfInt=0;

if(ifEven1==0 && ifEven2==0 && ifEven3==0){
  sumOfInt=int1+int2+int3;
```

```
  alert('Heres your sum, ' + sumOfInt + '.');
}
else{
  alert('Sorry but one or more of your integers were not even. Truly unfortunate!');
}
```

Exercise : Nums in Order

Write a program that takes three numbers, and only returns true if all three numbers are input in increasing order.

```
let numbre1=+prompt('Number, NOW!');
let numbre2=+prompt('Another number, NOW!');
let numbre3=+prompt('Just one more will not hurt right?');

if(numbre1<numbre2 && numbre1<numbre3 && numbre2<numbre3){
  alert('Your numbers restated are: ' + numbre1 + ', ' + numbre2 + ', ' + numbre3 + '.');
}
else{
  alert('Your numbers are not in increasing order!');
}
```

Exercise : Can we Make it?

Write a program that determines whether or not a driver can make it a specific distance in miles based on their current amount of gas and the car's miles per gallon.

```
//Exercise : Can we Make it?
let distance=+prompt("What distance in miles would you like to travel?");
```

```
let gas=+prompt("How much gas do you have?");
let cargas=+prompt("What is your car's miles per gallon?");
answer=+ distance/gas
if(answer<cargas){
  alert("You do not have enough gas");
} else {
  alert("You DO have enough gas");
}
```

Exercise : Tax Rate

Write a program that adds taxes to the cost of a purchase depending on what province you're in. The three provinces that we will use for this exercise will be Ontario(13.00% sales tax), Quebec (6.5%), and Manitoba (5.5%). If one of those states is not given as an input, then the tax rate added will be 7%.

Use the provinces abbreviation (Ontario = ON) for the input of the province.

```
//Exercise : Tax Evasion???????????? Rate
let price=+prompt("What is the cost of your item?")
let province=prompt("What is the abbreviated province you live in?");
if(province=="ON"){
  answer=price*0.13+price;
  console.log("Your item with tax costs "+answer);
} else if(province=="QC"){
  answer=price*0.065+price;
  console.log("Your item with tax costs "+answer);
} else if(province=="MN"){
```

```
  answer=price*0.055+price;
  console.log("Your item with tax costs "+answer);
} else {
  answer=price*0.07+price;
  console.log("Your item with tax costs "+answer);
}
```

Exercise : Lucky 13

Write a program that takes in two values and outputs whichever number is closest to 13 without going over the value 13.

For example,inputs `9, 12` would output `12`, whereas `1, 14` would output `1`.

If both values are above 13, then output the value 0.

**

```
let ln1=+prompt("Enter your first number");
let ln2=+prompt("Enter your second number");
if(ln1>ln2&&ln1<=13 || ln1<ln2&&ln2>13){
  console.log(ln1);
} else if (ln2>ln1&&ln2<=13 || ln2<ln1&&ln1>13){
  console.log(ln2);
} else {
  console.log("None of your numbers are below 13")
}
```

Exercise : How Tired Am I?

Write a program that outputs `true` if the user is tired. A user is tired if the amount of sleep they get is less than 8 hours. If they've slept at least 5 hours, but have had coffee, the user is not tired.

```
let hoursSlept=+prompt('How many hours have you slept?');
let coffee='';

if(hoursSlept>=5 && hoursSlept<=7){
  coffee=prompt('Did you have coffee (Type yes or no)');
  if(coffee=='yes' || coffee=='Yes'){
    alert('I can confirm that you are not tired!');
  }
  else if(coffee=='no' || coffee=='No'){
    alert('Sorry to tell you this but you need to sleep.');
  }
  else{
    alert('Please be considerate and type one of the two values provided!')
  }
}
else if(hoursSlept>=8){
  alert('I can confirm that you are not tired!');
}
else{
  alert('Sorry to tell you this but you need to sleep.');
}
```

Exercise : +,- or 0?

- Using if..else, write the code which gets a number via prompt and then shows in alert:

1, if the value is greater than zero,

-1, if less than zero,

0, if equals zero.

```
//Exercise : +,- or 0?
let input=+prompt("Enter your value");
if(input==0){
  console.log("0");
} else if(input>0){
  console.log("1");
} else if (input<0){
  console.log("-1");
} else {
  console.log("invalid");
}
```

Exercise : Max Number

Write a program to find the maximum between two numbers using if else.

```
//Exercise : Max Number
let number1=+prompt("put your first number");
let number2=+prompt("put your second number");
if(number2>number1){
  console.log(number2);
} else {
```

```
  console.log(number1);
}
```

Example

Input

```
Input num1: 10
Input num2: 20
```

Output

```
Maximum = 20
```

Exercise : Divisible by 5 and 11?

- Write a program to check whether a number is divisible by 5 and 11 or not using if else.

Example

Input

```
Input number: 55
```

Output

```
Number is divisible by 5 and 11
```

```
let sampleNumber=+prompt('Give me a number please!');
let divBy5=sampleNumber%5;
let divBy11=sampleNumber%11;

if(divBy5==0 && divBy11==0){
   alert('Congrats, your number ' + sampleNumber + ' is divisible by both 5 and 11!');
}
else if(divBy5==0 && divBy11!=0){
   alert('Ehh, your number ' + sampleNumber + ' is divisible by 5 but not by 11. TT');
}
else if(divBy5!=0 && divBy11==0){
  alert('Ehh, your number ' + sampleNumber + ' is divisible by 11 but not by 5. TT');
}
else{
  alert('Your number ' + sampleNumber + ' is neither divisible by 5 or 11!');
}
```

Exercise : A vowel or consonant?

- Write a program to check whether an alphabet is vowel or consonant using if else.

Example

Input

```
Input character: a
```

Output

```
'a' is vowel
```

(Disclaimer you don't need to use arrays to solve this)

```
let userInput=prompt('Please give me a letter.');
if(userInput==”a”)
{
  alert('Nice, we got a vowel!');
}
else if(userInput==”e”)
{
  alert('Nice, we got a vowel!');
}
else if(userInput==”i”)
{
  alert('Nice, we got a vowel!');
}

else if(userInput==”o”)
{
  alert('Nice, we got a vowel!');
}

else if(userInput==”u”)
{
  alert('Nice, we got a vowel!');
}
else
{
  alert('Sad, it is a consonant. =(');
}
```

Exercise : Your Grade?

- Write a program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer, calculate percentage and grade according to given conditions:
  If percentage >= 90% : Grade A
  If percentage >= 80% : Grade B
  If percentage >= 70% : Grade C
  If percentage >= 60% : Grade D
  If percentage >= 40% : Grade E
  If percentage < 40% : Grade F

Example

Input

```
Input marks of five subjects: 95 95 97 98 90
```

Output

```
Percentage = 95.00 Grade A
```

```
//Exercise : Your Grade?
let sub1=+prompt("what is your physics average?");
let sub2=+prompt("what is your chemistry average?");
let sub3=+prompt("what is your biology average?");
let sub4=+prompt("what is your math average?");
let sub5=+prompt("what is your computer average?");
let average=+(sub1+sub2+sub3+sub4+sub5)/5
if(average>=90){
  alert("grade A");
} else if (average>=80){
  alert("grade B");
} else if (average>=70){
  alert("grade C");
} else if (average>=60){
  alert("grade D");
} else if (average>=40){
  alert("grade E");
} else {
  alert("You have been registered as an F for failure");
}
```

-

Exercise : Is it Equal?

- Write a program to accept two integers and check whether they are equal or not.
  Test Data : 15 15
  Expected Output :
  Number1 and Number2 are equal

```
//Exercise : Is it Equal?
let int1=+prompt("What is your first integer?");
let int2=+prompt("What is your second integer");
if(int1==int2){
  console.log("Your integers are equal");
} else {
  console.log("NOOOOOOO");
}
```

Exercise : Odd or Even?

- Write a program to check whether a given number is even or odd.

Test Data : 15
Expected Output :
15 is an odd integer

```
let number = +prompt("Enter a number.");
if(number % 2 == 0)
{
  console.log("The number is even.");
}
else
{
  console.log("The number is odd.");
}
```

Exercise : Voting?

- Write a program to read the age of a candidate and determine whether it is

eligible for casting his/her own

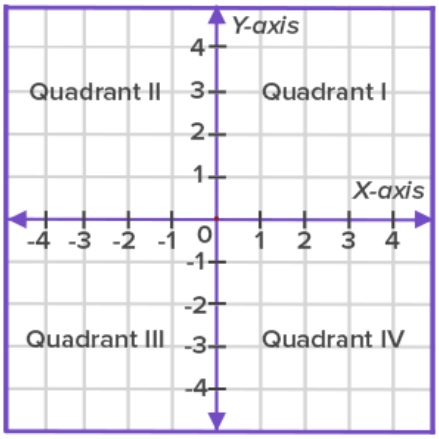
Test Data : 21
Expected Output :
Congratulations! You are eligible for casting your vote.

```
let age=+prompt("please enter your age to confirm if you can or cannot vote");

if (age>=18){
  alert("you are legally eligible to vote!");
}
else{
  alert("You are not legally eligible to vote.");
}
```

Exercise : The Cartesian Coordinate

Write a program to accept a coordinate point in a XY coordinate system and determine in which quadrant the coordinate point lies.
Test Data : 7 9



Expected Output :
The coordinate point (7,9) lies in the First quadrant.

```
let Xc = +prompt("Enter your x coordinate");
let Yc = +prompt("Enter your y coordinate");

if (Xc > 0 && Yc >0)
{
  alert("The coordinate point (" + Xc + "," + Yc + ") lies in the first quadrant");
}
else if (Xc < 0 && Yc > 0)
{
   alert("The coordinate point (" + Xc + "," + Yc + ") lies in the second
```

```
quadrant");
}
else if (Xc < 0 && Yc < 0)
{
   alert("The coordinate point (" + Xc + "," + Yc + ") lies in the third
quadrant");
}
else
{
   alert("The coordinate point (" + Xc + "," + Yc + ") lies in the fourth
quadrant");
}
```

//Edit: I removed the last else if and its condition as it is not required

Exercise : Bills?

- Write a program to input electricity unit charge and calculate the total electricity bill according to the given condition:
  For first 50 units Rs. 0.50/unit
  For next 100 units Rs. 0.75/unit
  For next 100 units Rs. 1.20/unit
  For unit above 250 Rs. 1.50/unit
  An additional surcharge of 20% is added to the bill.

```
let unitsBought=+prompt('How many units do you need?');
let additionalUnits=0;
let totalCost=0;
let totalCostWithTax=0;

if(unitsBought>0 && unitsBought<=50){
  totalCost=unitsBought*0.5;
  totalCostWithTax=totalCost+(totalCost*0.2);
  alert('You have to pay ' + totalCostWithTax + 'rs.');
}
else if(unitsBought>50 && unitsBought<=150){
  additionalUnits=(unitsBought-50)*.75;
  totalCost=(50*.5)+additionalUnits;
  totalCostWithTax=totalCost+(totalCost*0.2);
  alert('Your total cost is ' + totalCostWithTax + 'rs.')
```

```
}
else if(unitsBought>150 && unitsBought<=250){
  additionalUnits=(unitsBought-150)*1.20;
  totalCost=(50*.5+100*.75)+additionalUnits;
  totalCostWithTax=totalCost+(totalCost*0.2);
  alert('Your total cost is ' + totalCostWithTax + 'rs.')
}
else if(unitsBought>250){
  additionalUnits=(unitsBought-250)*1.5;
  totalCost=(50*.5+100*.75+100*1.2)+additionalUnits;
  totalCostWithTax=totalCost+(totalCost*0.2);
  alert('Your total cost is ' + totalCostWithTax + 'rs.')
}
else{
  alert('Maybe go somewhere else?!!');
}
```