Code Academy
Rock Paper Scissors Challenge

First let us insure that the user input will be converted into lower case.

```
let userInput = 'house';
userInput = userInput.toLowerCase();
console.log(`You have selected option; ${userInput}.`)
```

This code will convert the user input into lower case.

Second let's make sure that we can only enter the following values. We can use an if/else statement to check that the user input is only; rock, paper or scissors.

```
if ((userInput == 'rock') || (userInput == 'paper') ||
(userInput == 'scissors')) {
    console.log('Correct.');
} else {
    console.log('Incorrect.');
}
```

Remember we need to compare strings so we need to use '===='. This will ensure that the value and the type are the same. If we enter 'ROCK' as the user input, it will get converted into lower case. The console will then print 'Correct.' This verifies that our if/else statement works.

Next we need to create an arrow function.

Remember that arrow functions follow this syntax:

ZERO PARAMETERS

```
const functionName = () => {};
```

ONE PARAMETER

```
const functionName = paramOne => {};
```

TWO OR MORE PARAMETERS

```
const functionName = (paramOne, paramTwo) => {};
```

We will also need to implement our if/else statement to ensure that the correct options have been selected.

```
const getUserChoice = (userInput) => {
    if ((userInput === 'rock') || (userInput === 'paper') ||
(userInput === 'scissors')) {
        return 'You have selected correctly.';
    }
    return 'You need to select rock, paper or scissors.';
};
```

In this code we have defined the function using arrow notation; => .

The if statement has been implemented to determine if the user input matches the parameters set.

```
console.log(getUserChoice(userInput));
```

We then call the function with this code.

We now need a JavaScript to generate a random number between 0 and 2. This will give us 3 variables; 0, 1 and 2. To do this we need to use Math.floor. Remember that Math.floor will always **round down**. This means that;

Math.floor(0.4) = 0
Math.floor(0.5) = 0
Math.floor(1.1) = 1
Math.floor(2.9) = 2

Hence we get values between 0 and 2.

In this example we can see how it works:

Because we have asked JavaScript to generate a random number between 0 and 1 and to then multiply that number by 3, this means there are a range of numbers between;

Here is an example of Math.random and Math.floor Working.

```
//Starting Number.
//Starting Number.
let valueOne = Math.random();
console.log(`The Random number is ${valueOne}`);

//Multiply by 3.
let valueTwo = valueOne * 3;
console.log(`Multiply by 3 gives the value; ${valueTwo}.  And
now we need to round down....`);

//Math.floor to Round down.
console.log(Math.floor(valueTwo));
```

Now if we compare it to some of the output codes;

Output 1:

```
The Random number is 0.4533928807625103
Multiply by 3 gives the value; 1.3601786422875308.  And now we
need to round down....
1
```

Output 2:

```
The Random number is 0.2907370123933286
Multiply by 3 gives the value; 0.8722110371799858.  And now we
need to round down....
0
```

Output 3:

```
The Random number is 0.9317075500925927
Multiply by 3 gives the value; 2.795122650277778.  And now we
need to round down....
2
```

Here we can clearly see three different scenarios where we have generated a random number and then rounded down. Think of the 'floor' bit as rounding down!

We know that our code for generating random numbers works. We now need to implement this into a function.

We can write this more concisely;

```
let randomNumber = Math.floor(Math.random() * 3 );
```

Here we have created a variable called 'randomNumber'. We can then print this to the console.

Now that we know how to generate a random number between 0 and 2, we can use this to assign values. One method of doing this is with an if/else statement. Or we could use a switch statement.

```
const getComputerChoice = () => {
    let randomNumber = Math.floor(Math.random() * 3 );
    switch (randomNumber) {
        case 0:
            return 'rock';
        case 1:
            return 'paper';
        case 2:
            return 'scissors';
    }
} ;
console.log(getComputerChoice());
```

1. Declare arrow function variable called 'getComputerChoice'.
2. There are no parameters, therefore the parenthesis ( ) can remain empty.
3. Declare an arrow function with: =>
4. In the code block we first need to generate our random number using Math.floor and Math.Random.
5. After randomNumber has been generated we can use a switch statement to determine which value to return.
6. We now have code that will change a random numerical value into either rock paper or scissors.
7. The function is called with the console.log(getComputerChoice());

```
The computer has chosen rock.
The computer has chosen scissors.
The computer has chosen scissors.
The computer has chosen paper.
The computer has chosen rock.
The computer has chosen paper.
The computer has chosen rock.
```

Remember that this is a function for generating a random result. It will produce a different result every time it is called. This means that we need to create a variable that takes this into account.

```
//Validate User Input
const getUserChoice = userInput => {
```

The getUserChoice is also a function. This means it can be different every time. In this case it is not as we run it from userInput – but it needs to be 'called.'

One method we could use to compare results is to create two new variables that run our functions. 'computerChoice' and 'userChoice' can be our new variables.

```
let computerChoice = (getComputerChoice());
console.log(computerChoice);
console.log(computerChoice);
let userChoice = (getUserChoice(userInput));
console.log(userChoice);
console.log(userChoice);
```

This code creates a variable by calling our function from earlier.

Now we have created two variables that we can easily compare. We can finalise our if/else statement to determine the winner.

```
if (computerChoice === userChoice) {
    console.log(`Your choice was ${userChoice} and the
computer chose ${computerChoice}, its a draw!`);
} else if (computerChoice === 'paper' && userChoice ===
'scissors' || computerChoice === 'rock' && userChoice ===
'paper' || computerChoice === 'scissors' && userChoice ===
'rock') {
    console.log(`Congratulations, ${userChoice} beats
${computerChoice}!  You win!`);
} else {
    console.log(`You chose ${userChoice} and the computer
chose ${computerChoice}, the computer wins!`);
}
```

Because we have already stated the draw and win scenario, we do not need to detail the loss scenario in the same way. Anything other than a draw or win is a loss.

You Win Scenarios

User Choice	Computer Choice
Rock	Scissors
Paper	Rock
Scissors	Paper

You Lose Scenarios

User Choice	Computer Choice
Rock	Paper
Paper	Scissors
Scissors	Rock

You Draw Scenarios

User Choice	Computer Choice
Rock	Rock
Paper	Paper
Scissors	Scissors

It would be quicker to link all 'win' scenarios together (As well as lose and draw). If we didn't we would have to come up with a rule for every single scenario.

A switch statement is one method in which we could do this.

Final Code Block

```
'use strict';


//User Input
let userInput = 'rock';
userInput = userInput.toLowerCase();
console.log(`You have selected option; ${userInput}.`)


//Validate User Input
const getUserChoice = userInput => {
    if ((userInput === 'rock') || (userInput === 'paper') || (userInput
=== 'scissors') || (userInput === 'bomb')) {
        return userInput;
    }
    return 'You need to select rock, paper or scissors.';
};




console.log(`The validated userChoice is ${getUserChoice(userInput)}.`);


//Generate Random Number and assign to Rock, Paper or Scissors.
const getComputerChoice = () => {
    let randomNumber = Math.floor(Math.random() * 3 );
    switch (randomNumber) {
        case 0:
            return 'rock';
        case 1:
            return 'paper';
        case 2:
            return 'scissors';
```

```
    }
} ;

//Determine Winner
let computerChoice = (getComputerChoice());
console.log(`The computer has chosen...${computerChoice}.`);
let userChoice = (getUserChoice(userInput));


if (userChoice === 'bomb') {
    console.log(`Wow, that was a pretty impressive choice, your bomb destroys everything!!`);
} else if (computerChoice === userChoice) {
    console.log(`Your choice was ${userChoice} and the computer chose ${computerChoice}, its a draw!`);
} else if (computerChoice === 'paper' && userChoice === 'scissors' || computerChoice === 'rock' && userChoice === 'paper' || computerChoice === 'scissors' && userChoice === 'rock') {
    console.log(`Congratulations, ${userChoice} beats ${computerChoice}! You win!`);
} else {
    console.log(`You chose ${userChoice} and the computer chose ${computerChoice}, the computer wins!`);
}
```