

Software Development Bootcamp – Week 1 Workshop

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Task 1

Use of Variables:

Giving my name, age and favourite drink:

```
1 let favouriteDrink = "tea"; // creates a variable called "favorite drink" and stores the text "tea" in it
2 let age = 51; // creates a variable called "age" and stores the value "51" in it
3 let name = "Steve"; // creates the variable "name" and stores the value "Steve" in it
4 console.log(`Hi, my name ${name}, I am ${age} and my favourite drink is ${favouriteDrink}`);
5 // sends the text "Hi...etc" while inserting the variables by putting them within ${}
```

Output:

```
Hi, my name Steve, I am 51 and my favourite drink is tea
```

Performing Calculations:

Showing if a number is divisible by 3 and 5

```
1 let num = 16 // creates a variable and stores a value
2 if (num % 3 == 0 || num % 5 == 0) { // if "num" is divisible 3 (if it is the remainder will be 0) or by 5 then output {} to console
3 |   console.log(`The number ${num} is divisible by 3 or 5`)
4 } else { console.log(`The number ${num} is not divisible by 3 or 5`) } // if not do this
```

Output:

```
The number 16 is not divisible by 3 or 5
```

Combining Strings:

Combining strings to make a song

```
1 let string1 = "Happy ";
2 let string2 = "Birthday ";
3 let string3 = "to you ";
4 let string4 = "Dave" // store variable strings
5 let string5 = `dear ${string4}` // store variable string with contents of another variable
6 string6 = string1 + string2 + string3;
7 console.log(string6);
8 console.log(string6);
9 console.log(string1 + string2 + string5);
10 console.log(string6); // output strings
```

Output:

```
Happy Birthday to you
Happy Birthday to you
Happy Birthday dear Dave
Happy Birthday to you
```

Using simple if,else statements:

Finding lowest number

```
1 let var1 = 13 // create variable and store value
2 let var2 = 18 // create variable and store value
3 let var3 = 5  // create variable and store value
4 if (var1 < var2 && var1 < var3) { // is var1 is larger than var2 AND var1 is larger than var3
5   console.log(`The lowest number is ${var1}`) // output text and variable to console
6 } else { // otherwise do this
7   if (var2 < var1 && var2 < var3) { // if first comparison and second comparison is true
8     console.log(`The lowest number is ${var2}`) // output text and variable to console
9   } else if (var3 < var1 && var3 < var2) { // if not then do another comparison
10    console.log(`The lowest number is ${var3}`) // output text and variable to console
11  } else {} // if not do nothing
12 }
```

Output:

```
The lowest number is 5
```

Using Loops:

Using loops to output contents of an array

```
1 let films = ["Star Wars IV", "Jaws", "2001", "Terminator"]; // store text into an array
2 films.splice(1, 0, "Back to the Future", "Superman"); // add 2 more items to array after first one
3 for (let i = 0 ; i < films.length ; i++) { // perform a loop the number of times equal to the length of the array
4   console.log(films[i]) // each time through the loop, output item number "i" from the array
5 }
```

Output:

```
Star Wars IV
Back to the Future
Superman
Jaws
2001
Terminator
```

Using Arrays:

Using arrays, and making changes to them using DotNotation

```
1 console.clear(); // clear console output
2 let myArray = [
3   "Curry",
4   "Pizza",
5   "Fish and Chips",
6   "Sausage and Mash"
7 ] // store text into array
8 console.log(myArray); // output array contents to console
9 myArray.pop(); // remove last element from array
10 console.log(`Using pop to take away last item we get : ${myArray}`); // show array again with change
11 myArray.unshift("Garlic Bread", "Pasta"); // add new elements to start of array
12 console.log(`Using unshift to add two items item we get : ${myArray}`); // show array again with change
13 myArray.shift(); // take away first element from array
14 console.log(`Using shift to take away first item we get : ${myArray}`); // show array again with change
15 let bestFood = myArray.slice(0, 2); // create new array with first 2 elements from another array
16 console.log(`Using slice to make a new Array of my first 2 items : ${bestFood}`); // show array again with change
17 myArray.splice(3, 0, "Soup"); // add an element to the array as the 4th item
18 console.log(`Using splice we add an item to position 4: ${myArray}`); // show array again with change
```

Output:

```
[ 'Curry', 'Pizza', 'Fish and Chips', 'Sausage and Mash' ]
Using pop to take away last item we get : Curry,Pizza,Fish and Chips
Using unshift to add two items item we get : Garlic Bread,Pasta,Curry,Pizza,Fish and Chips
Using shift to take away first item we get : Pasta,Curry,Pizza,Fish and Chips
Using slice to make a new Array of my first 2 items : Pasta,Curry
Using splice we add an item to position 4: Pasta,Curry,Pizza,Soup,Fish and Chips
```

Using Simple Functions:

Using functions to simulate a cash machine withdraw funds

```
1 console.clear();
2 let accnumber = 99994210;
3 let balance = 250;
4 let actualpin = 1234 // create variables and store numbers required in it
5 const cashWithdrawal = (pin, amount, accnum) => { // declare a variable as a function and define contents
6   if (pin == actualpin) { // if 2 variables match..
7     console.log(`Pin number is correct`) //... output this text
8     if (amount > fundsCheck()){ // if one variable is larger than the function variable...
9       console.log("insufficient funds") //... output this text
10    }else{ // if not...
11      balance = balance - amount; // deduct variable from variable
12      console.log(`withdrawing £${amount} from ${accnum}`); // ouput results
13      console.log(`your new balance is £${balance}`) // output variable
14    }
15  } else {
16    console.log(`Sorry you pin number is incorrect please try again`)
17  }
18 }
19
20 const fundsCheck = () =>{ // perform function
21   return balance; // put value of variable into function caller
22 }
23
24 cashWithdrawal(1234, 250, accnumber); // call function and store values
```

Output:

```
Pin number is correct
withdrawing £250 from 99994210
your new balance is £0
```

Task 2

Card Dealing

Easy Challenge

Take each bullet point in turn and get that working before you move onto the next point.

- Create a program that will simulate the rolling of a six-sided dice.
- Log the output of the dice roll to check it works.
- Create an array and get it to store the results of 10 dice rolls.
- Log to the console the array of 10 dice rolls.
- Log the average of the 10 dice rolls (rounded to the nearest whole number) Display this in the format "The average of the 10 dice rolls is <average>"
- Log the lowest number rolled, output the result in a similar way.
- Log the highest number rolled. , output the result in a similar way.

My code:

```
// dice roller

console.clear();
let dice = 0;
let diceTotal = 0
const diceA = [];
```

```

for (let i = 0 ; i < 10 ; i++) {

    dice = (Math.floor(Math.random() * 7)) // set variables
    if (dice == 0) {
        dice = (Math.floor(Math.random() * 7)) // roll dice again if result is zero
    } else {}

    diceA.splice(i, 0, dice)
}

console.log(`The 10 rolls of a dice where ${diceA}`); // output result
for (let i = 0 ; i < 10 ; i++) {
    diceTotal = diceTotal + diceA[i];
}
let diceAver = Math.round(diceTotal / 10);
console.log(`The average of the 10 dice role is ${diceAver}`); // work out the average roll
let max =diceA[0]
for (let i = 0 ; i < 10 ; i++) {
    if (diceA[i] > max) {
        max = diceA[i]
    }
}
console.log(`The highest role was ${max}`);
let min =diceA[0]
for (let i = 0 ; i < 10 ; i++) {
    if (diceA[i] < min) {
        min = diceA[i]
    }
}
console.log(`The lowest role was ${min}`);

```

The output was:

```

The 10 rolls of a dice where 3,2,1,5,4,3,6,1,3,4
The average of the 10 dice role is 3
The highest role was 6
The lowest role was 1

```

Moderate challenge. Dice roller version 2.

Create a dice roller that will store the values of five dice rolls.

Make the program so it will store two sets of dice rolls. One set will be the dice scores for player 1, the other will be the dice rolls for player 2.

Compare the totals of the two sets and output who got the highest total.

Stretch:

We will turn this into a game. The rules are as follows:

- Player scores begins with adding up the total of the dice as before. But now they can get bonuses as follows:
 - Players score 10 points for every six they roll.
 - Players get 50 points if all five dice are the same.

- Players get an additional 50 points if all five dice show a 6
- Players get no score at all if four or more dice are all showing 1

Make this game and display the scores for each player, and output who won.

My Code:

```
// dice roller
console.clear();
let dice = 0;
let diceTotal = 0 // set variables
const diceA = [];
for (let i = 0 ; i < 10 ; i++) { //10 rolls of the dice

    dice = (Math.floor(Math.random() * 6)) // get a random number from 0-5
    diceA.splice(i, 0, (dice + 1)) // add result to array
}
let diceP1 = diceA.slice(0 , 5); // take first 5 rolls into P1 array
let diceP2 = diceA.slice(5 , 10); // take next 5 rolls into P2 array

console.log(`Player 1 rolled ${diceP1}`);
console.log(`Player 2 rolled ${diceP2}`); // output results
let total1 = 0
for (let i = 0 ; i < 5 ; i++) {
    total1 = total1 + diceP1[i]
}
console.log(`Player 1's total was ${total1}`) //get P1's total and display it
let total2 = 0
for (let i = 0 ; i < 5 ; i++) {
    total2 = total2 + diceP2[i]
}
console.log(`Player 2's total was ${total2}`) //get P2's total and display it
if (total1 == total2) {
    console.log(`Player 1 and 2 got the same total!`)
} else if (total1 > total2) {
    console.log(`Player 1 got the highest total`)
} else { console.log(`Player 2 got the highest total`) //show who scored the most
}
```

The output:

```
Player 1 rolled 2,4,1,3,1
Player 2 rolled 1,1,6,2,6
Player 1's total was 11
Player 2's total was 16
Player 2 got the highest total
```

Tough challenge - Card dealer

You are going to create a program that will deal two hands of cards and display them on the screen. This will be done in stages as follows:

Stage 1 – Build the deck.

Create a new VS.code file in your week1 folder called **dealer.js** In this program create two arrays:

Array 1 (you should name it something **suitable**) will hold the four suits.

```
["Hearts", "Diamonds", "Clubs", "Spades"]
```

Array2 will hold the card **values**.

```
["Ace", "2", "3", "4", "5", "6", "7", "8", "9", "10", "Jack", "Queen", "King"]
```

Stage 2 – Build a card

Create a variable that will hold **one card**. Using the arrays, make this variable hold a card value.

e.g. "Ace of Hearts"

Stage 3 – stack the deck.

Create a third array called **deck**.

Build a complete deck of cards in this new array. You should fill this array using the contents of your suits and values arrays and the card variable you have created.

Your finished deck should contain 52 cards in order and look something like:

```
["Ace of Hearts", "Two of Hearts", "3 of Hearts", ..... "King of Spades"]
```

Help: The *push* command will help you here. You will need to use one loop to cycle through each value, and then figure out how you will loop through each deck in turn.

Stage 4 – Pick a card, any card!

Create a new variable called **drawnCard** and fill it with a card drawn at random from the deck.

Stage 5 – Do you need a hand?

Create an array to hold a hand of five drawn cards. Display the contents of your hand of cards.

Stretch and Challenge

In theory your hand could contain the same card twice. How could you avoid this? See if you can come up with a solution.

Here is my solution, including the stretch element:

```
console.clear(); // clears the console

let suitsA = ["Hearts","Diamonds","Clubs","Spades"]; // store suits in array
let cardsA = ["Ace","2","3","4","5","6","7","8","9","10","Jack","Queen","King"]; // store cards
let card1 = [`${cardsA[0]}`, `of`, `${suitsA[0]}`] // build a card
let number = 0
let deck = [];
let currentsuit = "";
let drawncard = [];
let hand = [];
let rand1 = 0; // create variables used in program

for (i = 0 ; i < suitsA.length ; i++) {
  currentsuit = ( `${suitsA[i]} `) // sets the suit of cards to make
  for (j = 0 ; j < cardsA.length ; j++) {
    deck.push( `${cardsA[j]} of ${suitsA[i]} `) // adds each of the cards in that suit
    number = number++
  } // now we have all 52 cards
}

for (i = 0 ; i < 5; i++) { // loop to create a hand of 5 cards
  rand1 = (Math.floor(Math.random() * (deck.length))) // creates a random number within the range
  drawncard = [`${deck[rand1]}`] // draws a card from those that are available
  hand.push(`${drawncard}`); // adds that to the player's hand
  deck.splice(rand1,1); // removes that card from the available deck
}

console.log(`My hand is ${hand}`) //outputs the hand
```

Here is a screengrab of the output:

```
My hand is 6 of Clubs,King of Diamonds,2 of Hearts,5 of Spades,Ace of Diamonds
```