in this video we're going to be beginning to look at javascript and how we can start to use it inside of our web applications before we start to look at javascript itself and i want to give you a little bit of a background on kind of how it came to be and why it is so commonly used within web applications nowadays so javascript itself was originally designed as a scripting language that ran inside of of netscape navigator and originally that was the the only browser platform that could use it but it became so so popular that it started to to move across to all of the different browser platforms it's used in a number of web tasks nowadays it's actually used in quite a wide range of programming tasks just because of its dynamic nature and it's got a very very easy learning curve when you're you're starting to use it and it seems to have gained quite a lot of popularity because of that unfortunately it did have a little bit of it of a checkered past it originally was very buggy the initial javascript compilers that existed within browsers didn't all work the same way so if even if you made something on on one browser it might not work in something else luckily we've moved beyond that kind of thing nowadays and things are a little bit easier to to figure out but things like this cartoon here were fairly commonplace so never have i felt so close to another soul and yet so helplessly alone is when i google an error and there's a result thread by someone with the same problem and no answer and posted into it in 2003. that kind of thing still happens every now and again um especially if you're looking at very very particular things however the the browser wars that we were talking about before have helped considerably when it comes to actually making stable javascript engines and it's something that is is fairly straightforward nowadays so even though javascript just started as a traditional scripting language it has moved on considerably since those easy easy scripting days it is now a fully fully functioning objects orientated language you can do classes you can do methods you can do inheritance you can really do anything that you'd like inside of of it does have a lot of features that we aren't going to be covering in detail in this module we're really just going to be scratching the surface in terms of showing you how javascript works and trying to get you up to speed so that you can easily create things in your in your web course works and also when you're creating web applications in the future the main challenge that arises when we're using javascript however is that most of the time when people start to develop in this they aren't programmers to start with so you're quite lucky in that you're mostly going to be doing a degree inside of the discipline of computing so more likely than not you will have also been doing modules relating to java and in different programming techniques the skills that you're learning and the techniques that you're learning and all of these other modules will actually apply when we're looking at javascript as well um a function is is still a function a for loop is still a for loop an if statement is still an if statement so if you can get these things nailed down it's just a case of translating them across to these different languages another thing that is worth mentioning with javascript is that even though the word java is in the name it has absolutely nothing and then to do with java at all okay it's just think of it as more of a coincidence than that javascript and java both have the word java in them okay they're not the same just because you can do one doesn't mean that you can translate a crowd across easily to the other and but it is an object-oriented language which is quite nice it's commonly seen as the scripting language of the web and and it does have a number of features which are traditional in in pretty much most modern programming languages nowadays it does support a weak typing which means that we don't need to say specifically what type of a variable it is so you don't need to say that something is a string or an integer you can just say this is a variable what do you think and the javascript engine will will deal with it going forward there are different languages that are kind of based on javascript that are more strongly typed so things like typescript and i would encourage you to have a look at that in your own time to try and explore that in a bit more detail um we'll give you a little bit of an example of a a fairly straightforward javascript program and point out some of the the features inside of this that are are quite common and hopefully quite a lot of this will make sense to you already so what i'll do is i'll annotate this and then we'll look at each of the different bits in turn so the first part here that i want to explain is the function so the function is basically just your method and so what we do is we've got a function that we can create and we use our curly brackets to say signify this is the start of the function and our other curly brackets signify the end of the function as well if we want we can pass in parameters into functions by doing things like uh putting putting them in in like that and that means that we can then refer to them inside of the function which can also be quite handy to to do and when we've also got variables inside of these as well so like things like total is available so we can set that variable and see what we want it to be and we can do things like have for loops as well so you can see here that we've got an old style for loop which we can then do something with as well okay so there's a number of different things that you can see inside of javascript which are actually fairly common to other types of programming languages it's mostly just the syntax that is different and i'm going to go through some of the different syntactic elements just to give you a quick overview of how they how they work and hopefully that will help to to start to understand all these things as well i'll make sure that i put up a very straightforward forward javascript cheat sheet onto the uh the lab sheet for for this uh for the learning exercises for this week as well and hopefully that'll help in actually consolidating all of these things together so the first thing and probably most importantly is commenting two different ways that we can do commenting inside of javascript uh first and foremost we can do forward slash forward slash if we want to do any any single link comments or we can do forward slashes with asterisks if we want to have any block comments same rules as always and comment consistently comment if something is overly complicated and someone would need to read the comment to understand what it does i normally do this at the beginning of functions it's a function if you're not really sure what a function is going to do later on you might want to put in a comment and just use your commenting as a method to explain how different parts of your code work imagine that you are someone that's coming to the code for the first time and you want to to use it what information are you going to need to be able to do that okay moving forward different ways that we can look at variables this is the most straightforward way of declaring variables inside of javascript there are other ways that we can do it but we're not going to cover them in this module that's really for something for you to extend upon in your own time we don't need to worry about types as i previously said so javascript is loosely typed which means that we don't need to say whether or not something is a string an integer a boolean it just kind of goes along like that and here we've got different ways that we declare our variables so the first thing that we always do is we say var and then we say what the name of the variable is then we can set the variable to whatever we want it to be so it should be fairly straightforward to to get your variables set in terms of naming your variables there are some rules inside of javascript that we need to to pay attention to always have to start your variable names with a letter and best practice as always is to have meaningful variable names uh i traditionally stick to camelcase i think it's probably the easiest one to read i don't mind which one you do but be consistent and if you're working in a team make sure that you agree what your consistency is going to be at the start okay don't give things crazy names like thing one and thing two especially if you are going to be using these as global variables that are going to be used across your program although i would recommend against using too many global variables inside of javascript because it can end up with things being a little bit more difficult to use in the future different operators that we can use as well hopefully you're used to all of these already so we've got the ability to add subtract multiply divide and increment decrement and do modulus calculations we can do all of these sorts of things i'm not going to go into these in detail because they should be fairly self-explanatory by this point uh going forward we can also determine different ways that we control the flow through programs and this is based on things like if statements switch statements while loops and all of these sort of things and some very simple examples for you let's start with an if statement and i'll explain to you how that one works so what we can do with our if statement is we can set out the conditions that we want to use if we want to do an else if statement what we would do first of all is we would set our if and then we would set our else if and then if you want to have a catch all at the end then you can set that as well okay we put our conditions inside the brackets beside the the f or the else if you don't need to have a conditioned for the final else if it's going to be a catch-all statement okay what this program actually does here is we're initially setting a variable called greeting and which we're then referring to inside of our statement after that what we can do is we can get the time using the the date function that's built into javascript so we're using take hours and then we can check to see what time it is and then determine what greeting we want to give to people moving forward we've got um our for loops so what we're doing here is initially we are setting up a variable that's called cars and we are putting a number of different uh cars inside of that uh inside of that array there and so we've got four different cars and which are taking part in the f1 series this year we're then setting up a variable called text what we're then doing is we're setting up a counter and then we're using that counter to go through the number of cars and then print out each of these cars using that for loop and the last one that i want to look at is the while loop so with the while loop we're just going to be doing a countdown and so we're setting up a text variable and then we're setting up a variable called i which we're setting to zero which we can use for our counter and then we're going through and we are adding some text and then finally just doing uh an an i plus plus action to make sure that's going up that will repeat through that ten times and we see all those numbers appearing the last one is functions and so we're going to be using functions a lot inside of javascript for the stuff that we're doing in this case what we're doing to start off with that we're setting a variable called x and that x is going to actually call upon this function that space shouldn't exist and what we're then doing is we're declaring that function underneath so we're saying my function passing in two variables one called a one called b and then we're actually returning the answer for what is a times b which would then get passed back up into that variable there okay so in conclusion we can use javascript for doing a large number of things it can be exceptionally handy for us and to understand a little bit about the syntax for how this works and how that syntax compares to other things that exist in other programming languages such as python c plus plus c sharp java you name it and what we're going to be doing now is we're going to be looking at how we can actually use javascript inside of our web pages to do more interesting things and how we can get it to actually interact with our dom