Table of Contents

[**Section 01 – CONNECTING TO THE APIS Using fetch()** 2](#_Toc112048898)

[**Section 02 – Display the Data** 6](#_Toc112048899)

[**Section 03 – using the modern async/await** 8](#_Toc112048900)

[**Section 04 – Adding a New Profile** 9](#_Toc112048901)

[**Section 05 – Posting the Data** 10](#_Toc112048902)

[**Section 6 – Installing and Configuring JWT** 12](#_Toc112048903)

[**Section 7 – Adding Authorization Middleware** 14](#_Toc112048904)

[**Section 8 – Install pug and start to build a Template** 20](#_Toc112048905)

[**Section 9 – completing the pug Layout template** 22](#_Toc112048906)

[**Section 10 – Including the Aside** 24](#_Toc112048907)

[**Appendix A – Using the Map Method to DIsplay Data** 26](#_Toc112048908)

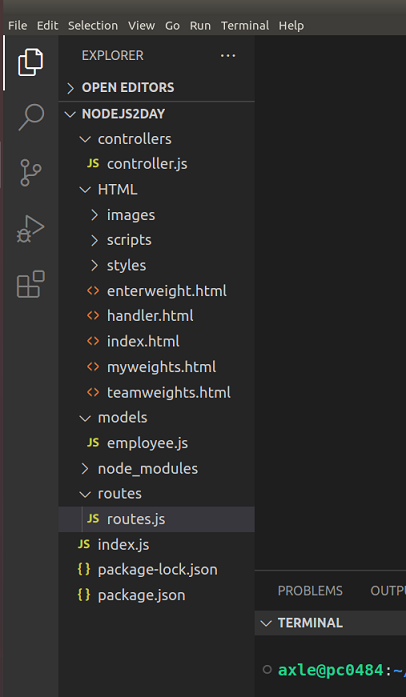
[**Appendix B – CORS Plugin** 26](#_Toc112048909)

**Enhancing the site with JavaScript**

This part of the course assumes that you understand the fundamentals of JavaScript. You are able to attach an external .js file to your HTML code and you are able to manipulate DOM elements (via their IDs or Names) using JavaScript.

You will be given starter files. They HTML files along with the .js and .css files represent a website created for a different project. We will use the HTML files here in this project.

## Section 01 – CONNECTING TO THE APIS Using fetch()

Note:

1. Your API must be running in order for your code in this section to work. If it is not running, go to the parent folder and run the nodemon command or npm start.
2. Also make sure your CORS plugin on the browser is turned on. (Not necessary anymore, but if you run into an issue, definitely turn it on).
3. Since you are working here with the scripts.js file, remember to refresh your browser if you change this file, Nodemon does not know about scripts.js. If you are using VSCode and using a local server, this is not an issue.
4. The zipped file you are given contains all the HTML files we need to interact with our API. Unzip that folder inside of the project folder you created on Day01. There should be five .html files and three folders. We won’t be using all the files.
5. We will be using mainly the teamweights.html file to connect to our back end API and display the data we have collected so far. Hook up this html file to our **.js** file just like we did for enterweight.html (if it hasn’t been already). This just means adding this line just before the <body> tag:   
   **<script src="scripts/scripts.js"></script>**
6. From the **main** div, remove all the dummy text and just include a **div** to display the data from our file, and a button to call a function to get the data

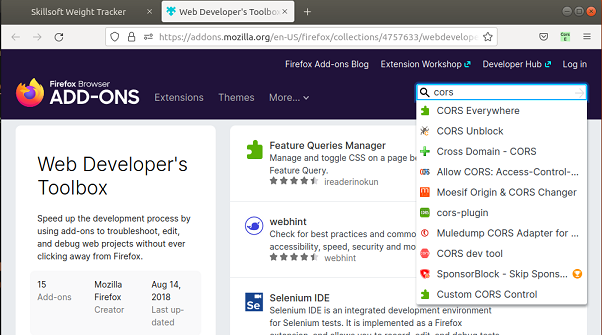
|  |
| --- |
| **<div id="container">**  **<main>**  **<h2>Team Documents</h2>**  **<div id="documents"></div>**  **<button onclick="getData();">Get Records</button>**  **</main>** |

1. In the scripts.js file we can start writing the **getData()** function, put this code at the top of the document:

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees");**  **}** |

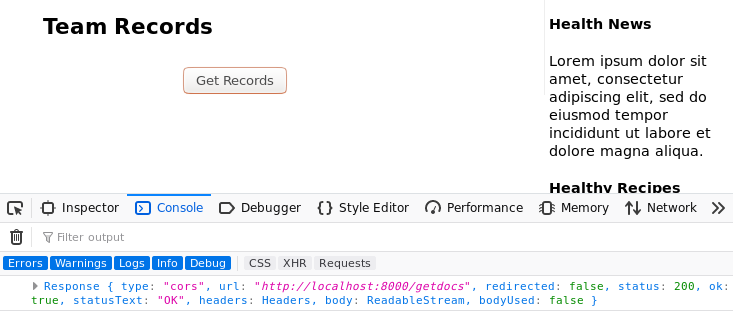
1. fetch() returns an object, a **promise** object and the only way to handle that is with a **then()** method chained to the **fetch()** method. This may also be referred to as *subscribing* to the promise.

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getdocs").then();**  **}** |

Note: It is at this point you may want to check that you have a CORS plugin. In my case with Mozilla Firefox, I am using CORS Everywhere. The image below shows how I search for it via Firefox’s search feature and it is very easy to just add it to the browser. Once added to the browser, you can just click on it to turn it on or off  
  


1. Now within that **then** method, you have to supply a function that will handle any **response** from the **fetch** call. For now we just log the response details:

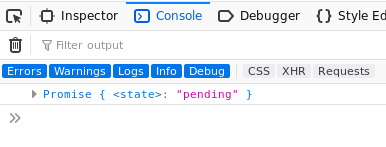
|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getdocs").then(function(response){**  **console.log(response);**  **});**  **}** |



This is a lot of text to filter through. In order to extract the JSON body content from the response, we use the **json()** method. The Request and Response objects implements several methods like **text()** and **json()**.

Lets now add the json parse method to the response and see what we get.

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getdocs").then(function(response){**  **console.log(response.json());**  **});**  **}** |



This is much better, but it is still just a Promise object. Now we have no other option but to create a promise chain. We need to pass the value we receive from the first Promise to a second then() method if we want to pull out data or perform further operations on the response.

1. So, instead of logging the response, let us return it

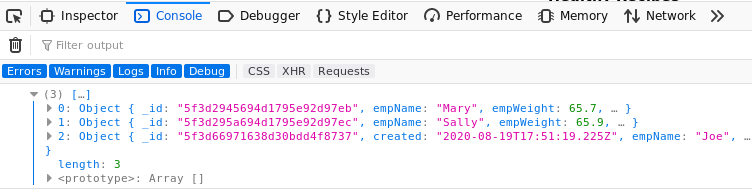
|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees").then(function(response){**  **return(response.json());**  **});**  **}** |

1. But now it means we need another then() method

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees").then(function(response){**  **return response.json()).then();**  **});**  **}** |

1. The second then method also takes a function, and it expects data, which we can log for now

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees").then(function(response){**  **return(response.json()).then(function(data){**  **console.log(data);**  **});**  **})**  **}** |

  
Finally, we have the data we were looking for.

1. Usually though it is better to write the code in a more structured way:

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees")**  **.then(function(response){**  **return(response.json())**  **.then(function(data){**  **console.log(data);**  **});**  **})**  **};** |

1. This way we can complete the **getData()** function by also inserting a **catch** method, just in case anything went wrong. In this way we say that the **catch()** method is chained to the **then()** method which is chained to the **fetch()** method.

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees")**  **.then(function(response){**  **return(response.json())**  **.then(function(data){**  **console.log(data);**  **}).catch(function(err){**  **console.log(err);**  **});**  **})**  **};** |

1. Using arrow functions

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees")**  **.then(response => response.json())**  **.then(data => console.log(data))**  **.catch(err => console.log(err))**  **};** |

## Section 02 – Display the Data

1. Remember we had a **div** tag in the teamweights.html file that we can use to display the data, this **div** has an **id** of **documents**. We will use the innerHTML of this tag to display the data.
2. In the scripts.js file add a new function just beneath the **getData()** function, called **displayData()**

|  |
| --- |
| **function displayData(arr) {**  **let outHTML = "";**    **document.getElementById("documents").innerHTML = outHTML;**  **}** |

Notice that **outHTML** is a new variable which we will use to append records as we iterate through the array containing our data lines.

1. The data in the console showed up as an array so we need an array structure to get the data out

|  |
| --- |
| **function displayData(arr) {**  **let outHTML = "";**  **for(let i=0; i < arr.length; i++){**  **outHTML+="<p>"+arr[i].empName + " using password " + arr[i].empPass + "</p>";**  **}**  **document.getElementById("documents").innerHTML = outHTML;**  **}** |

1. Now call this **displayData()** function from the **getData()** function, via its **then()** method.

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees")**  **.then(response => response.json())**  **.then(data => displayData(data))**  **.catch(err => console.log(err))**  **};** |

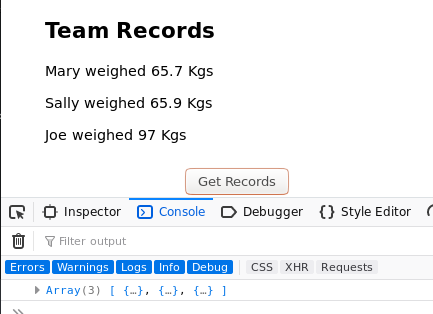
1. What if you also wanted to log the data. As it turns out we could have multiple **then()** methods in a structure. But because we already used the **response** within a function, we would have to manually pass it to the next chained event by using a **return** statement. In this case we would need {} for our second then() mehtod.

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees")**  **.then(response => response.json())**  **.then(data => {**  **displayData(data);**  **return(data);**  **})**  **.catch(err => console.log(err))**  **};** |

1. Now that we are returning data, lets now create a third then() method to process this new line of code.

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees")**  **.then(response => response.json())**  **.then(data => {**  **displayData(data);**  **return(data);**  **})**  **.then(data=>console.log(data))**  **.catch(err => console.log(err))**  **};** |

Now we have the data displayed AND we have the same returned data being displayed in the console window, so we were able to use one promise object two times



Here are the two functions so far using fetch()

|  |
| --- |
| **function getData(){**  **fetch("http://localhost:8000/getemployees")**  **.then(function(response){**  **return(response.json())**  **.then(function(data){**  **displayData(data);**  **});**  **}) ;**  **};**  **//**  **function displayData(arr) {**  **let outHTML = "";**  **for(let i=0; i < arr.length; i++){**  **outHTML+="<p>"+arr[i].empName + " using password " + arr[i].empPass + "</p>";**  **}**  **document.getElementById("documents").innerHTML = outHTML;**  **}** |

## Section 03 – using the modern async/await

In order to use the **async/await** method, we first have to make the **getData()** function an **async** function. After that we **await** the results of a **fetch()** operation which just like before returns a **response** object. We would need to apply **await** again in order to extract the json object from the response object.

|  |
| --- |
| **async function getData(){**  **const response = await fetch("http://localhost:8000/getemployees");**  **const data = await response.json();**  **displayData(data);**  **};** |

With error handling:

|  |
| --- |
| **async function getData(){**  **try{**  **const response = await fetch("http://localhost:8000/getemployees");**  **const data = await response.json();**  **displayData(data);**  **} catch(err){**  **console.log(err);**  **}**  **};** |

## Section 04 – Adding a New Profile

We will use the HTML file given in the set of starter files. Look for the adduser.html file and we will configure it to pass data from that form into the database. We will ignore several security issues for this bootcamp, such as validation and encryption.

1. Our database at the moment can handle two fields, empName and empPass, both are simple and are string fields. Change the id and name fields on the HTML for so that these fields reflect the proper naming.
2. The form at the moment just has a name, *signup* and a method, *post*. Also the HTML file itself is connected to the scripts.js file via the usual linking at the bottom of the document.

|  |
| --- |
| **</footer>**  **<script src="scripts/scripts.js"></script>**  **</body>**  **</html>** |

1. There are several ways to submit the form fields and values to the server running on localhost. In this method we will *listen* for the button click on the form, then use the **fetch()** method to post the values entered by the user. First at the top of the .js file, add a variable to represent the form itself. Then later down use the addEventListener() method that is automatically part of the form and configure it as shown:

|  |
| --- |
| **const userForm = document.getElementById("signup");  …other code here  userForm.addEventListener("submit", (e) => {**  **e.preventDefault();**  **});** |

We are listening for the submit event and when it happens, the event along with the object will be captured in the variable e. The preventDefault() is part of the HTML specification and it will prevent the form from being submitted by mistake by the user.

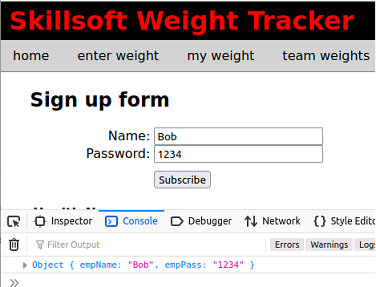
1. The next two lines will first get a handle to the form itself and then use the FormData() method to extract the two fields into an object:

|  |
| --- |
| **userForm.addEventListener("submit", (e) => {**  **e.preventDefault();**  **let form = e.currentTarget;**  **let formFields = new FormData(form);** |

1. FormData() by itself is not enough to wrap values, we will use the modern Object.formEntries to gather up all the values the user enters into those fields:

|  |
| --- |
| **let form = e.currentTarget;**  **let formFields = new FormData(form);**  **let formDataObject = Object.fromEntries(formFields.entries());** |

At this point if you log the formDataObject you will see the from already wrapped up with field/value pairs.



## Section 05 – Posting the Data

1. Now that we have a neat little object all wrapped up and ready to go we can now use the same fetch() method to post this little objecj to our back end, specifically to the *addemployee* endpoint.

|  |
| --- |
| **let formDataObject = Object.fromEntries(formFields.entries());**  **fetch('http://localhost:8000/addemployee', {}); })** |

As you can see the fetch method takes a second parameter. That parameter is an object and it can be configured to pass information to the server, it is empty at the moment.

1. That second parameter can itself accept several configuration details, for now we only need three, the method, headers and a body:

|  |
| --- |
| **fetch('http://localhost:8000/addemployee', {**  **method: ,**  **headers: {**  **},**  **body:**  **});**  **});** |

1. The form at the moment just has a name, *signup* and a method, *post*. Also the HTML file itself is connected to the scripts.js file via the usual linking at the bottom of the document.

|  |
| --- |
| **</footer>**  **<script src="scripts/scripts.js"></script>**  **</body>**  **</html>** |

1. The method in this case is POST, the headers is simply telling the server that we are sending json data and finally the body is the actual form fields and values wrapped up into a neat object for our back end API:

|  |
| --- |
| **fetch('http://localhost:8000/addemployee', {**  **method: 'POST',**  **headers: {**  **'Content-Type': 'application/json',**  **},**  **body: JSON.stringify(formDataObject),**  **});** |

Notice that the headers itself is an object on the right side and we also wrap up the form object into JSON using the stringify() method of JSON.

1. At this point we have everything we need but the form will never get submitted even if we hit the subscribe button. The reason is that the fetch() method returns a Promise object and unless you handle the Promise in the proper way, the values submitted simply will get lost and never reach the server. What we have to do is attach a .then() method to our fetch and then the form will get submitted:

|  |
| --- |
| **},**  **body: JSON.stringify(formDataObject),**  **})**  **.then();**  **});** |

1. Although this will work, it is better to add a few more details. For example, if the server responds with data, you need to be able to capture that data.

|  |
| --- |
| **body: JSON.stringify(formDataObject),**  **})**  **.then(function(response){**  **console.log(response);**  **});**  **});** |

Note: if the server responds with JSON data, this may not work, it all depends on what is being sent back by the server. Also, this is a good point to log that response using a more developed logging service such as Winston.

1. Finally, we need to add a catch() method to capture and log any errors that may occur:

|  |
| --- |
| **body: JSON.stringify(formDataObject),**  **})**  **.then(function(response){**  **console.log(response);**  **}).catch(function(err){**  **console.log(err);**  **});**  **});** |

## Section 6 – Installing and Configuring JWT

1. Kill the application with CTRL+C, then run the following command to install JWD

**npm install jsonwebtoken**

You can restart the application using **nodemon**

1. Also import the **jsonwebtoken** package at the top of controller.js

|  |
| --- |
| **const jwt = require('jsonwebtoken');**  **const Employee = require('../models/employee');** |

1. In controllers.js file, copy the **addemployee** function and rename it to **loginuser**. This function will handle logging in of users. There is no need to logout a user with a JWT solution, the token simply expires. Also remove everything except the first two lines.

|  |
| --- |
| **exports.loginuser = function(req,res){**  **let empName = req.body.empName;**  **let empPass = req.body.empPass;**  **};** |

1. Now implement the **find()** function to find the user seeking access (or a token in this case)

|  |
| --- |
| **exports.loginuser = function(req,res){**  **let empName = req.body.empName;**  **let empPass = req.body.empPass;**  **Employee.find({empName: empName }, function(err, results){**  **if(err) res.send(err);**    **})**  **};** |

1. If we find the user, the user’s details should be in results. If we do not find the user/employee we send back to the client that the login failed. Notice I am just checking the passwords here

|  |
| --- |
| **exports.loginuser = function (req, res) {**  **let empName = req.body.empName;**  **let empPass = req.body.empPass;**  **Employee.find({ empName: empName }, function (err, results) {**  **if (err) res.send(err);**  **if (results[0].empPass == empPass) {**  **//employee exists so invoke JWT**  **} else {**  **res.end("Login Failed")**  **}**  **})**  **};** |

1. If the passwords match then we have a valid user, we can use the **jwt** object to generate a token and send it back to the requesting client

|  |
| --- |
| **exports.loginuser = function (req, res) {**  **let empName = req.body.empName;**  **let empPass = req.body.empPass;**  **Employee.find({ empName: empName }, function (err, results) {**  **if (err) res.send(err);**  **if (results[0].empPass == empPass) {**  **jwt.sign({**  **empName:results[0].empName,**  **userID:results[0].\_id**  **},**  **"mysecret",**  **{expiresIn : "1h"},**  **function(err, token){**  **if(err) throw err;**  **res.end(token);**  **})**  **} else {**  **res.end("Login Failed")**  **}**  **})**  **};** |

The sign() method takes several parameters. Once find() from mongo returns, it will contain the name and password, so we extract that using the array syntax and passing that as a payload to the sign() method of jwt. We also pass a some text which will act as our key, then an expiry date and finally a function that asynchronously returns the token to the client.

Here is the entire loginuser() function:

|  |
| --- |
| **exports.loginuser = function (req, res) {**  **let empName = req.body.empName;**  **let empPass = req.body.empPass;**  **Employee.find({ empName: empName }, function (err, results) {**  **if (err) res.send(err);**  **if (results[0].empPass == empPass) {**  **jwt.sign({**  **empName:results[0].empName,**  **userID:results[0].\_id**  **},**  **"mysecret",**  **{expiresIn : "1h"},**  **function(err, token){**  **if(err) throw err;**  **res.end(token);**  **})**  **} else {**  **res.end("Login Failed")**  **}**  **})**  **};** |

1. In routes.js file, add routes to handle user login, the controller function already exist. Make sure that they are POST routes:

|  |
| --- |
| **router.post('/addemployee', controller.addemployee);**  **router.put('/updateemployee', controller.updateemployee);**  **router.post('/loginuser', controller.loginuser);**  **}** |

1. Lets sign in a user to see if a token can be generated. The first step in this process is to use the REST client with the empName and empPass fields filled out, along with the url and restful method:  
     
   Graphical user interface, text, application, email

   Description automatically generated

## Section 7 – Adding Authorization Middleware

1. We now need to add middleware to the call stack in order to verify the token being passed by a user. In the **controllers** folder add a new js file called auth.js, then start with the following boilerplate code:

|  |
| --- |
| **const jwt = require("jsonwebtoken");**  **module.exports = function (req, res, next) {**  **}** |

1. Although tokens can be sent in several ways, it is conventional to send them via the headers file of a request. Lets create a new variable to hold that token value from the authorization headers.

|  |
| --- |
| **const jwt = require("jsonwebtoken");**  **module.exports = function (req, res, next) {**  **const rawToken = req.headers.authorization;**  **}** |

1. We can now use the jwt object to verify the token we just got from the headers section of the request

|  |
| --- |
| **const jwt = require("jsonwebtoken");**  **module.exports = function (req, res, next) {**  **const rawToken = req.headers.authorization;**  **const decToken = jwt.verify(rawToken, 'mysecret');**  **}** |

Notice that we also have to pass the *key* to the verify function as the second parameter. We can now store the decToken in a response object ready for sending back to the client.

1. This code as it is will not work, the authorization header contains some extra information by convention, it has the word “Bearer” then a space then the actual token, we need to extract only the token, so the split function will work nicely.

|  |
| --- |
| **const jwt = require("jsonwebtoken");**  **module.exports = function (req, res, next) {**  **const rawToken = req.headers.authorization.split(" ")[1];**  **const decToken = jwt.verify(rawToken, 'mysecret');**  **}**  **}** |

1. Since this is middleware, we have access to the response and request objects, we could pass back to controller via the request object the token we just received, although it is not necessary in this case. Also call the **next()** function in the call stack.

|  |
| --- |
| **const jwt = require("jsonwebtoken");**  **module.exports = function (req, res, next) {**  **const rawToken = req.headers.authorization.split(" ")[1];**  **const decToken = jwt.verify(rawToken, 'mysecret');**  **req.userInfo = decToken;**  **next();**  **}** |

1. The JWT does not have native error handlers, so wrap up the code in try catch block for safety

|  |
| --- |
| **const jwt = require("jsonwebtoken");**  **module.exports = function (req, res, next) {**  **try{**  **const rawToken = req.headers.authorization.split(" ")[1];**  **const decToken = jwt.verify(rawToken, 'mysecret');**  **req.userInfo = decToken;**  **next();**  **}catch(error){**  **return res.status(401).json({message:"not authorized"});**  **}**  **}** |

1. All that’s left now is to protect a route, first import the auth.js file we just created into the routes.js file

|  |
| --- |
| **const controller = require('../controllers/controller');**  **let authUser = require('../controllers/auth');**  **module.exports = function(router){**  **//**  **router.get('/', controller.getdefault);** |

1. We will experiment with the aboutus route, in terms of protecting this route. Simply insert the authUser variable before the controller part

|  |
| --- |
| **router.get('/', controller.getdefault);**  **//**  **router.post('/addweight', controller.addweight);**  **//**  **router.get('/aboutus', authUser, controller.aboutus);**  **//**  **router.get('/getdocs', controller.getdocs);** |

1. Now we can test first without the token:  
   Graphical user interface, application

   Description automatically generated
2. Now lets make the same request by passing in the token we generated on a previous tab  
     
   Graphical user interface, text, application, email

   Description automatically generated
3. Choose Bearer Token and you will get a small box to enter the token from a previous tab.   
   Graphical user interface, text, application, email

   Description automatically generated  
   11. Now you can hit the send button  
   Graphical user interface, text, application, email

   Description automatically generated
4. You may try to manually change the token, for example remove the first “e” and hit send, the request will be denied

## Section 8 – Install pug and start to build a Template

1. Run the following command to install Pug (remember to stop the application first)

**npm install pug --save**

1. Let the Express app know that we will be using Pug by using the **set()** method. This is done in the index.js file

|  |
| --- |
| **const port = 8000;**  **const app = express();**  **app.use(bodyParser.urlencoded({extended:false}));**  **app.set('view engine', 'pug');**  **const router = express.Router();**  **const routes = require('./routes/routes');** |

Graphical user interface, application

Description automatically generated

1. Express expects that a **views** folder exists which will store all the templates, so create that folder now inside of the root folder, and then inside of that views folder create a text file named **layout** with a file extension of .**pug** (so the name of the file is layout.pug)
2. Start building the layout inside of layout.pug using similar syntax to HTML

|  |
| --- |
| **html**  **head**  **title**  **body**  **header**  **h1**  **nav**  **ul**  **li**  **a(href='index.html') home**  **div#container**  **block content**  **footer** |

1. Over in the controllers.js file, add a method to handle this Pug test route, just copy the **aboutus** function and comment the code that’s already there:

|  |
| --- |
| **//**  **exports.pughome=function(req, res){**  **//res.send(You are on the pug home route.');**  **};** |

1. Then create a new route in routes.js to point to a pug test page

|  |
| --- |
| **router.put('/updateemployee', controller.updateemployee);**  **router.post('/loginuser', controller.loginuser);**  **router.get('/pughome', controller.pughome);**  **};** |

1. Now back in the new controller function, simply call the **render()** method from *res*, instead of the **send()** method and pass in the name of the pug file (without the .pug extension)

|  |
| --- |
| **exports.pughome=function(req, res){**  **//res.send('You are on the about us route.');**  **res.render(**  **'layout'**  **)**  **};** |

You should see somehting like this  
Graphical user interface, text, application

Description automatically generated

1. Add some content so that we can test this layout.pug file

|  |
| --- |
| **doctype html**  **html**  **head**  **title Skillsoft Weight Tracker**  **body**  **header**  **h1**  **a(href='index.html') Skillsoft Weight Tracker**  **nav**  **ul**  **li**  **a(href='index.html') home**    **div#container**  **block content**  **footer**  **hr**  **| Copyright 2022. All rights reserved** |

Graphical user interface, text, application, email

Description automatically generated

## Section 9 – completing the pug Layout template

1. Complete the layout template to include the entire navigation, css and script tags

|  |
| --- |
| **doctype html**  **html**  **head**  **title Skillsoft Weight Tracker**  **link(rel='stylesheet', type='text/css', href='styles/styles.css')**  **body**  **header**  **h1**  **a(href='index.html') Skillsoft Weight Tracker**  **nav**  **ul**  **li**  **a(href='index.html') home**  **li**  **a(href='enterweight.html') enter weight**  **li**  **a(href='myweights.html') my weight**  **li**  **a(href='teamweights.html') team weights**  **div#container**  **block content**  **footer**  **hr**  **| Copyright 2022. All rights reserved**  **script(src='scripts/scripts.js')** |

Test the layout route again.

1. In order to demonstrate how this layout will be helpful, we would now simulate the creation of a new web page for our website. We will create a new .pug file in the views folder and call it pughome.pug for now. When we create new pages from now on, we simply include the wrapper or layout template by extending it.

|  |
| --- |
| **extends layout** |

After doing this, change the **pughome()** function in controller.js to render *pughome* instead of *layout*

1. Remember the template had a **block content** area, this is where we insert new content for our new page. For example take a look at this next bit of code in the browser

|  |
| --- |
| **extends layout**  **block content**  **p Hello from Skillsoft** |

This would produce the following image  
Graphical user interface, text, email

Description automatically generated

1. Now all we have to do is build our page, but for this example we will simply borrow a page we already have, the teamweights.html page content. Since this page depends heavily on our API, include it in the appropriate places, both in the layout.pug file as well as any new pages we build.
2. First start building up the content of teamweights, copy the HTML between the <main> tags in teamweights.html.

|  |
| --- |
| **extends layout**  **block content**  **main**  **h2 Team Records**  **div#documents**  **button(onClick="getData()") Get Records** |

Graphical user interface, text

Description automatically generated

## Section 10 – Including the Aside

1. Graphical user interface, application

   Description automatically generatedJust like we built the layout and other web pages with templates we can also put the **aside** area of the page into a template, call it aside.pug. Usually though, it is better to create a folder called **includes**, then insert into that folder any file you wish to include at some point in time:

|  |
| --- |
| **aside**  **section**  **h4 Health News**  **p**  **| Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.**  **section**  **h4 Healthy Recipes**  **a(href='') grilled chicken**  **a(href='') minced beef patties**  **a(href='') potato pancakes**  **a(href='') fish stew** |

1. Now we can simply include the aside into our pug test page

|  |
| --- |
| **extends layout**  **block content**  **main**  **h2 Showing records for team**  **div#records**  **button#getData Get Records**  **include includes/aside** |

Graphical user interface, text, application

Description automatically generated

## Appendix A – Using the Map Method to DIsplay Data

|  |
| --- |
| **function displayData(arr) {**  **document.getElementById("records").innerHTML = arr.map(mapOutput).join("");**  **}**  **function mapOutput(emp){**  **outHTML = emp.empName + " weighed " + emp.empWeight + "<br />";**  **return outHTML;**  **}** |

## Appendix B – CORS Plugin

|  |
| --- |
| **Y**ou will need a plugin for your browser, if you are using Firefox, then CORS Everywhere is what I will be using: |