TDD in JavaScript

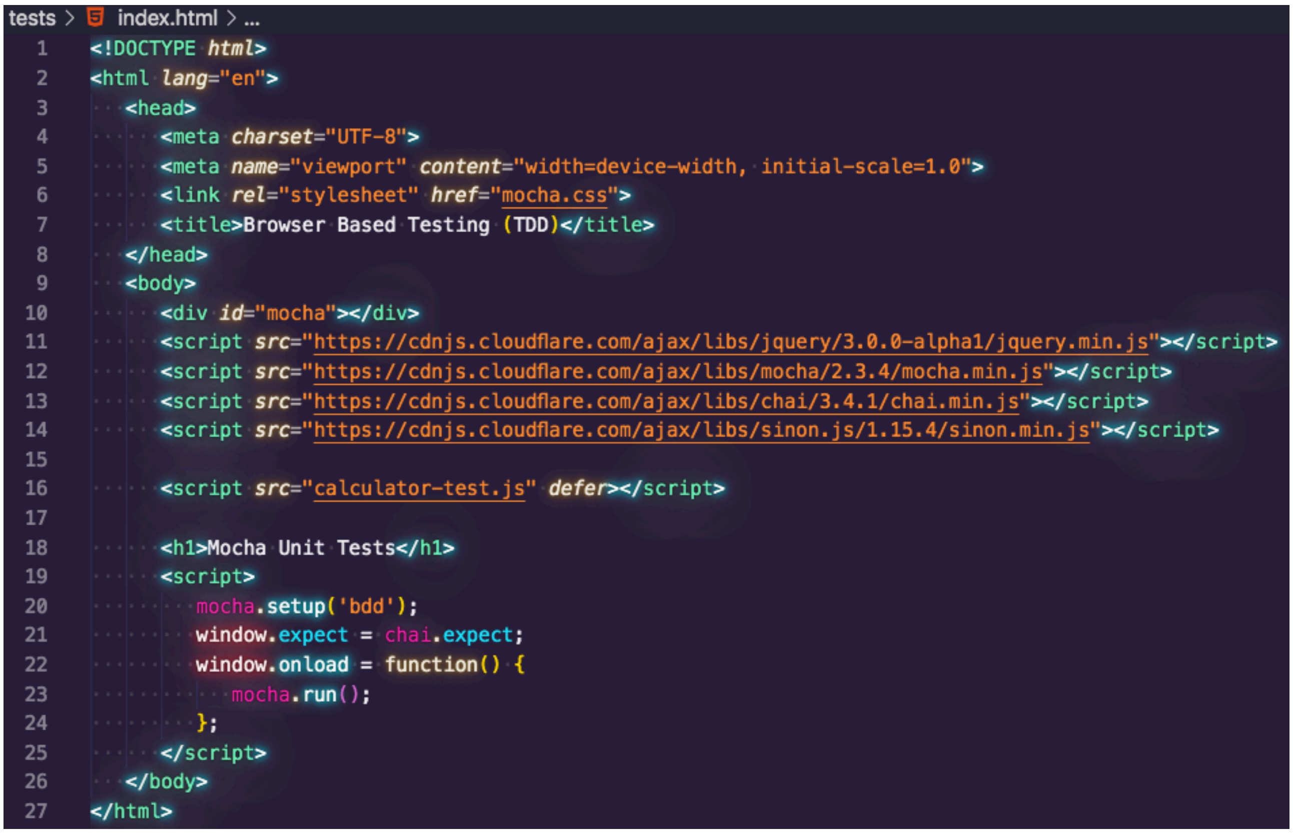
Section 3: Browser Based Testing

3.1 Creating Test UI, Enabling Browser Testing and Browserify

We can move Mocha and Chai TDD into the web browser. The benefit of this is to allow someone to visit a page and run those test right inside the browser and see what is going on without having to worry about running anything via a command line.

In our projects within the tests directory we can create a new index.html page and use a css stylesheet to style this test page. The mocha.css file can be found in the mocha module folder (node_modules/mocha/mocha.css) copied and pasted into the test directory. This will help style up the visual of the test within the browser.

The index.html will actually run the test in the web browser. Below is the example index.html code for our test web page.



tests > index.html > ...

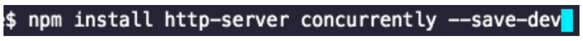
```html
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" href="mocha.css">
    <title>Browser Based Testing (TDD)</title>
  </head>
  <body>
    <div id="mocha"></div>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/jquery/3.0.0-alpha1/jquery.min.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/mocha/2.3.4/mocha.min.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/chai/3.4.1/chai.min.js"></script>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/sinon.js/1.15.4/sinon.min.js"></script>

    <script src="calculator-test.js" defer></script>

    <h1>Mocha Unit Tests</h1>
    <script>
      mocha.setup('bdd');
      window.expect = chai.expect;
      window.onload = function() {
        mocha.run();
      };
    </script>
  </body>
</html>
```

This imports a few script libraries such as jquery, mocha, chai and sinon minified js files from the web as well as our calculator-test.js file. The defer attribute will only load this JavaScript file once everything else has loaded on the page before it can execute.

At the bottom of the index.html file we would have a script tag to run a JavaScript code. This script will define the setup of the test runners/ The mocha.setup('bdd') will setup the mocha behavioural driven development environment which will give us reference to some things we were already using such as describe( ), it( ), before( ), after( ), etc. in order to be available in the browser. Using the windows object we can go into expect and setup chai.expect (i.e. chai assertion library). Finally, on the windows object we would use the onload method to run an anonymous function which ill call the mocha test runner using the mocha.run( ) method.

This will complete the index.html test page which we can view in the browser. We now need to setup a web server to run this page on a web server. One thing to note is that we would also see an error loading the calculator-test.js because JavaScript does not understand the require keyword which is a Node.js keyword and not part of the JavaScript engine inside the browser. We would have to use something else to get around that error.

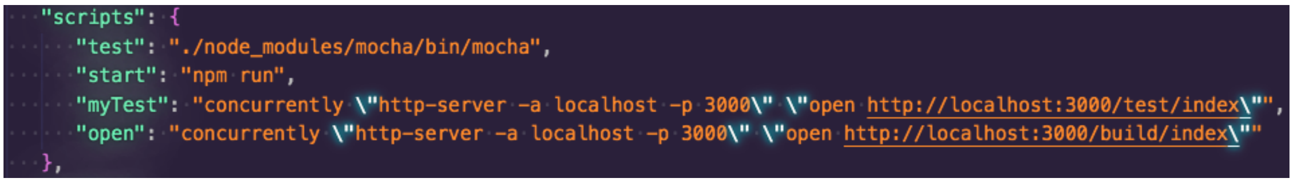
To create a http server we would need to install two npm packages which are http-server and concurrently using the following commands within our project directory path in the terminal:



```
$ npm install http-server concurrently --save-dev
```

Concurrently will allow us to run different terminal commands concurrently as the package name suggests.

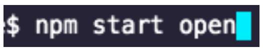
Once both packages have installed we would need to make some changes to our package.json file which should have the two installed modules added to the devDependencies property. The changes would need to be applied to the script property to add a new script using commands from the newly installed packages.



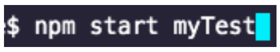
```
  "scripts": {
    "test": "./node_modules/mocha/bin/mocha",
    "start": "npm run",
    "myTest": "concurrently \"http-server -a localhost -p 3000\" \"open http://localhost:3000/test/index\"",
    "open": "concurrently \"http-server -a localhost -p 3000\" \"open http://localhost:3000/build/index\""
  },
```

The start script will allow us to run node.js server while the myTest and open scripts will use the concurrently to run two commands concurrently i.e. the first is to setup a web server on localhost and the port specified while the second will open URL path in the default browser.

We can now run the following terminal command to startup our web server on http://localhost:3000 serving up our index.html file depending on the script that is run:



```
$ npm start open
```



```
$ npm start myTest
```