

INTRODUCTION TO BOOTSTRAP V3
WEBDEV@RGU

The purpose of this tutorial is to introduce you to the Twitter Bootstrap framework. Bootstrap is a widely used framework that can be used to quickly style your website. However, before using this you should be comfortable in using vanilla css to create simple websites- bootstrap is not an alternative to this, you need to know both.

Today, we are going to be creating a few pages for the RGUx “North Lab” project. This is a website that is being created to allow simple HCI experiments to be carried out online.



First let's create a very simple Bootstrap template to get the idea of how bootstrap works. Copy the code below to VScode and run on Netlify pages. Change the window size to see how responsive the page is. Examine the code to understand which libraries are included in the code and how column widths are set. Try changing the code to get different column widths. Note: this code should be up-to-date with current versions of included libraries. You may need to update libraries versions to their current version in the rest of the lab.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/js/bootstrap.min.js"></script>
</head>
<body>

<div class="container">
  <div class="jumbotron">
    <h1>My First Bootstrap Page</h1>
  </div>
  <div class="row">
    <div class="col-sm-4">
      <h2>Section 1</h2>
    </div>
    <div class="col-sm-4">
      <h2>Section 2</h2>
    </div>
    <div class="col-sm-4">
      <h2>Section 3</h2>
    </div>
  </div>
</div>

</body>
</html>
>
```

Now let's start with how we set up our North Labs Web page so that we can use all of the features in bootstrap. Below is the template code that you will want to start out with, this takes v3 of bootstrap and all of its various needed components and puts it all in the Web page.

All of the css files are put in the <head> of the page (as usual) and the javascript files are put at the bottom just before the </body> part of the page. This is done to increase the loading times of the Web page (style first, then content, then interactive elements).

```
<head>
  <title>North Lab</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <link rel="stylesheet" href="assets/CSS/style.css">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/css/bootstrap.min.css">
</head>
```

```
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.12.9/umd/popper.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
/body>
```

OK, quick gripe that I (and a lot of others) have about bootstrap, for the most part, bootstrap sites always look like bootstrap sites. The bootstrap elements all have a very similar look and after a while you will easily be able to tell whether a site uses a vanilla implementation of bootstrap. This is partly because of the success of bootstrap and how often it is used in web design but there are ways that we can get round this.

Today, we are going to be using a bootstrap theme that changes the original design features of bootstrap and makes it look a bit different. There are many different themes that are available and these are used to change the way that different components look. We are going to be using a theme uses the Google 'material design' principles. Material design is used in the majority of Google products and has a very clean look to it, so it should suit our Web page quite well. If you are after a different bootstrap theme to use on your site then the best way to find these is just through Google - "bootstrap theme" is the best keyword to start with.



To implement this theme we first need to download it. I'm taking it straight from its github page and then including it in my site in a folder called material (from the GitHub download it is a folder called **dist** that you want to copy into your project).

You'll then want to include a reference to this in your <head>

```
<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <meta http-equiv="x-ua-compatible" content="ie=edge">

  <title>North Lab</title>

  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap-theme.min.css">
  <link rel="stylesheet" href="style.css">
  <!--<link rel="stylesheet" href="badcolors.css">-->

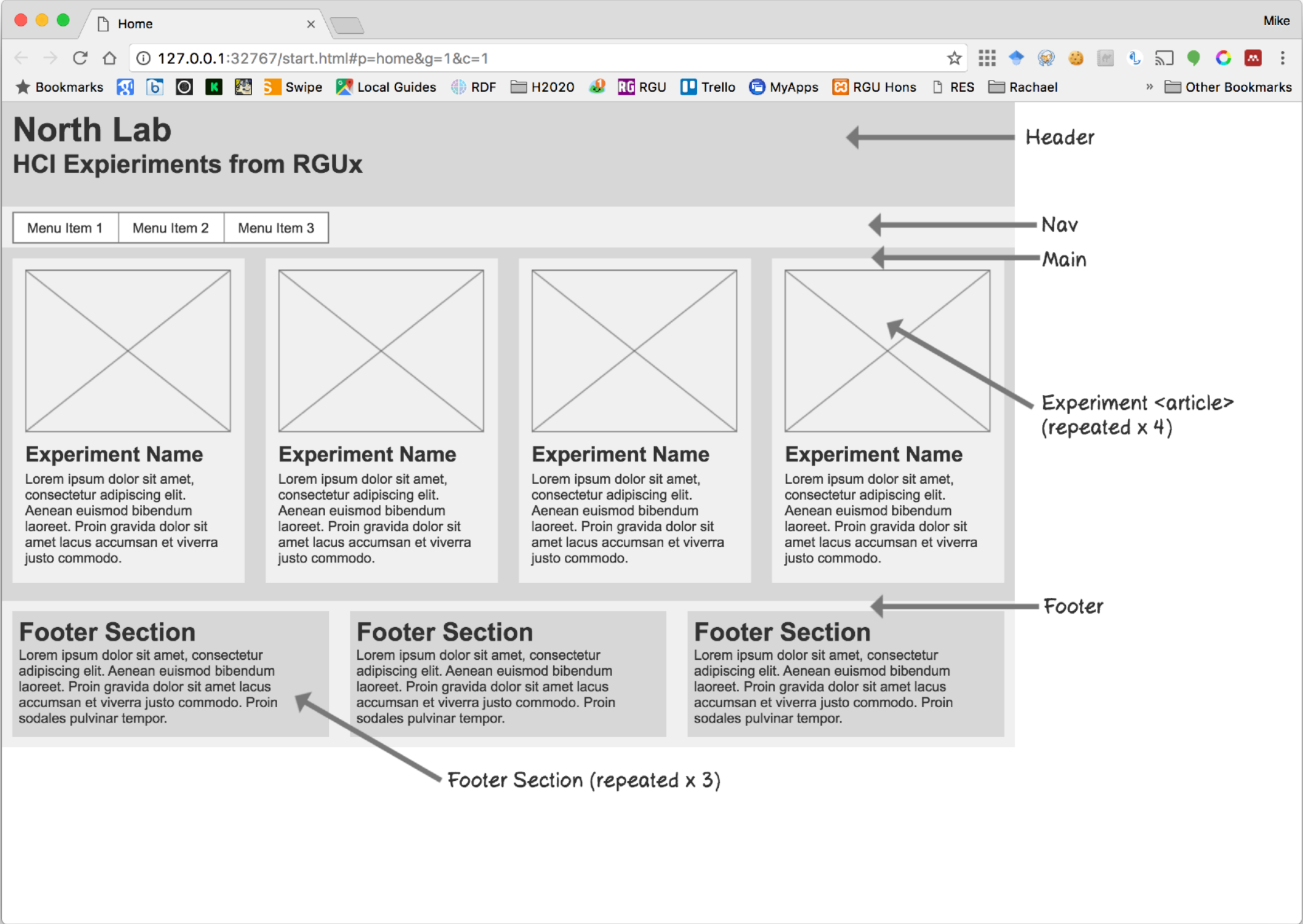
  <link href="https://cdnjs.cloudflare.com/ajax/libs/bootstrap-material-design/4.0.2/bootstrap-material-design.css"/>
  <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/bootstrap-material-design/0.5.10/css/ripples.min.css">

</head>
```

Download ripple from: <https://github.com/balintsoos/material-ripple/find/c2c203088138aebbd1a152fc080b101a35b7b246>

As an alternative you can download the .css file and include in the project path.

OK now that we have got the Web page set up we can start to get our website created. Below is a simple wireframe for how we want the main website to be structured. We will use one of the main features of bootstrap to do this, but first we need to create some boilerplate html so that we can see content.



Here is the boilerplate HTML that I've created for this. You can either copy this out yourself, or you can look at the template from the previous page and try to make it from scratch.

```
<header>
  <h1>North Lab</h1>

  <h2>HCI Experiments from RGUx</h2>
</header>
<nav>
  <ul>
    <li><a href="#">Menu Item 1</a></li>
    <li><a href="#">Menu Item 2</a></li>
    <li><a href="#">Menu Item 3</a></li>
  </ul>
</nav>
<main>
  <article>
    

    <h3>Experiment Name</h3>

    <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt
      ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
  </article>
  <article>
    

    <h3>Experiment Name</h3>

    <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt
      ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
  </article>
  <article>
    

    <h3>Experiment Name</h3>

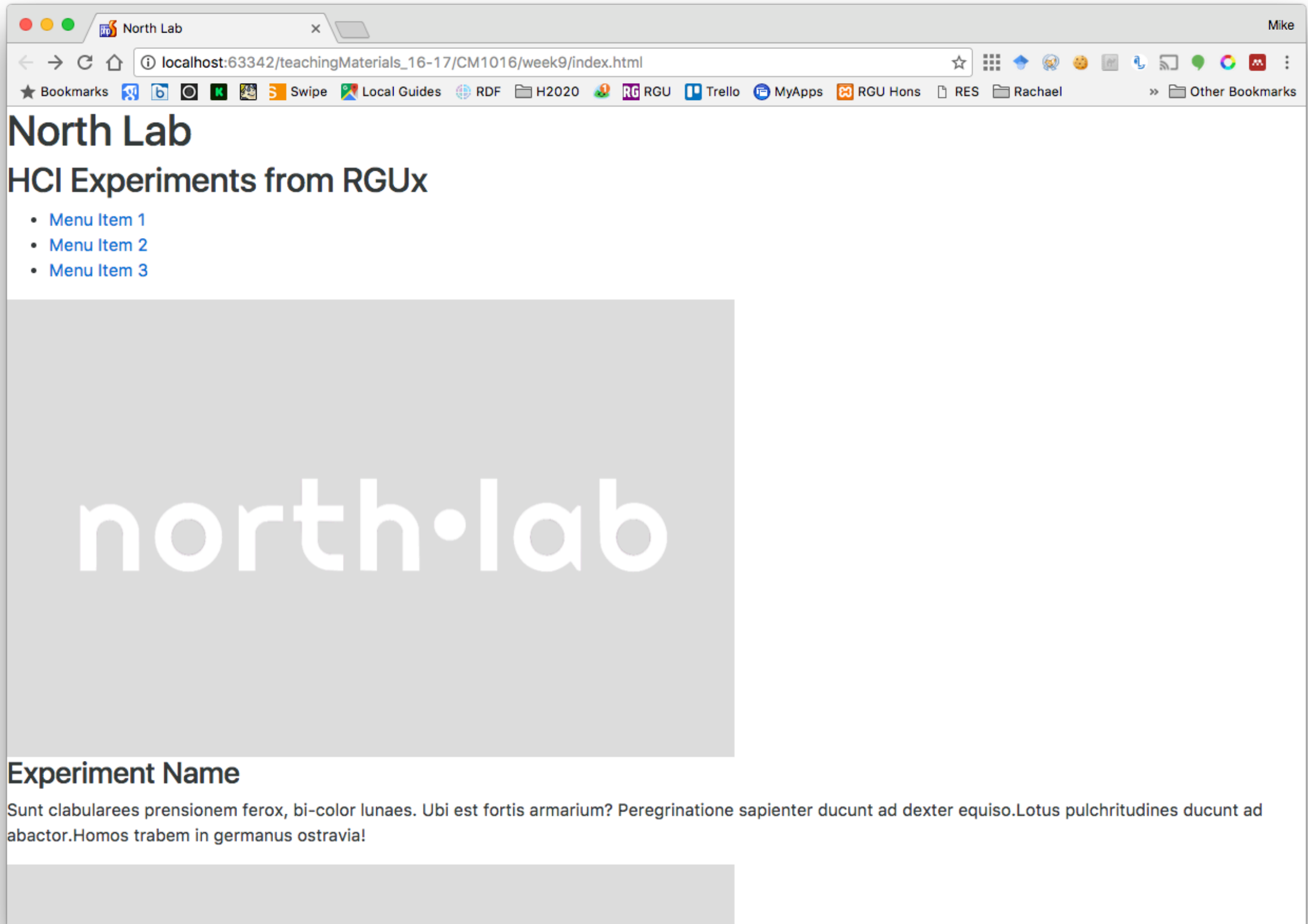
    <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt
      ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
  </article>
  <article>
    

    <h3>Experiment Name</h3>

    <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt
      ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
  </article>
</main>
<footer>
  <section>
    <h3>Footer Section</h3>
    <p>Germanus, gratis seculas virtualiter demitto de emeritis, superbus devatio.Abactuss cadunt in emeritis hamburgum!</p>
  </section>
  <section>
    <h3>Footer Section</h3>
    <p>Germanus, gratis seculas virtualiter demitto de emeritis, superbus devatio.Abactuss cadunt in emeritis hamburgum!</p>
  </section>
  <section>
    <h3>Footer Section</h3>
    <p>Germanus, gratis seculas virtualiter demitto de emeritis, superbus devatio.Abactuss cadunt in emeritis hamburgum!</p>
  </section>
</footer>
```

I haven't included any of the
<head> information in this

Here is how our HTML page looks after we have implemented all of the boilerplate code that we will be using. Note that the font is no longer Times New Roman (I think it is open sans?) and that the margin/padding on <h1><h2>etc. tags has all changed.



Now we can get on with getting the layout of our page created. Bootstrap does a lot of this work for you but to illustrate how it all happens I'm going to create a **badcolours.css** file that I can use to show the size and position of all the containers.

You'll want to:

- Create a css file called badcolours.css and include the code below in it
- Link this css file to your index.html file by using the <link rel="stylesheet" href="badcolours.css"> method

```
header{
  background-color: red;
}

main {
  background-color: orange;
}

nav{
  background-color: yellow;
}

main{
  background-color: greenyellow;
}

article{
  background-color: green;
}

section{
  background-color: blue;
}

footer{
  background-color: purple;
}
```

Your page will now look even uglier.

Next we want to create our own style sheet for the page, **style.css**. After you create this you'll want to link it to your index.html page the same way that you did before.

Inside this CSS page you'll want to have the following code to start, it is just used to resize the images in the <article> parts of the page to only be as wide as the container they are in.

```
main article img{  
  width: 100%;  
}
```

Now onto creating the layout of our page...

Bootstrap has a very powerful layout engine built into it that is very similar to that of other CSS frameworks. The bootstrap framework works on a principle of your page being split up into 12 equally sized columns. We can use CSS classes built into bootstrap to then layout our page.

Have a css class any time you want to use a bootstrap element

Lets bootstrap know that we want to use one of its column powers

Column is going to be 12 (out of 12) long

```
<main class="col-md-12">
<p>My text is here</p>
</main>
```

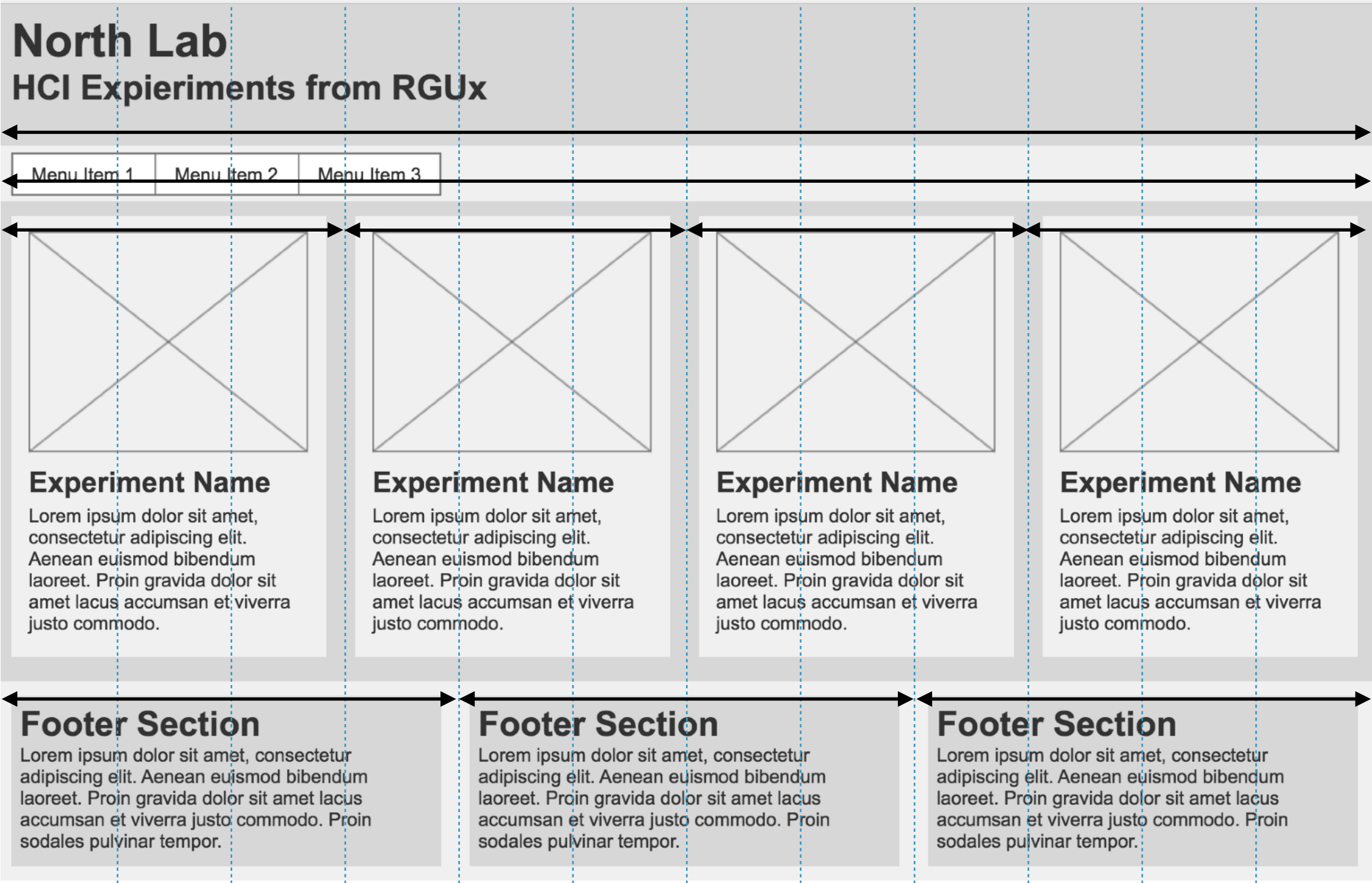
md says that this layout will apply on any medium sided device

	Extra small devices Phones (<768px)	Small devices Tablets (≥768px)	Medium devices Desktops (≥992px)	Large devices Desktops (≥1200px)
Grid behavior	Horizontal at all times	Collapsed to start, horizontal above breakpoints		
Container width	None (auto)	750px	970px	1170px
Class prefix	.col-xs-	.col-sm-	.col-md-	.col-lg-
# of columns	12			
Column width	Auto	~62px	~81px	~97px
Gutter width	30px (15px on each side of a column)			
Nestable	Yes			
Offsets	Yes			
Column ordering	Yes			

To start, we first want to enclose all of our page inside a .container class, the best way to do this is to create a <div class="container"> element that encloses all of your viewable html.

```
<div class="container">  
<p>My text is here</p>  
</div>
```

Next we need to go back to our wireframe and figure out how many columns each of the sections is going to be



We can then implement all of the class elements on our page so that the layout starts to appear. Again, you can either alter your own code to do this or copy below

```
<div class="container">
<header class="col-md-12">
  <h1>North Lab</h1>

  <h2>HCI Experiments from RGUX</h2>
</header>
<nav class="col-md-12">
  <ul>
    <li><a href="#">Menu Item 1</a></li>
    <li><a href="#">Menu Item 2</a></li>
    <li><a href="#">Menu Item 3</a></li>
  </ul>
</nav>
<main class="col-md-12">
  <div id="experimentContainer" class="row">
    <article class="col-md-3">
      

      <h3>Experiment Name</h3>

      <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
    </article>
    <article class="col-md-3">
      

      <h3>Experiment Name</h3>

      <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
    </article>
    <article class="col-md-3">
      

      <h3>Experiment Name</h3>

      <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
    </article>
    <article class="col-md-3">
      

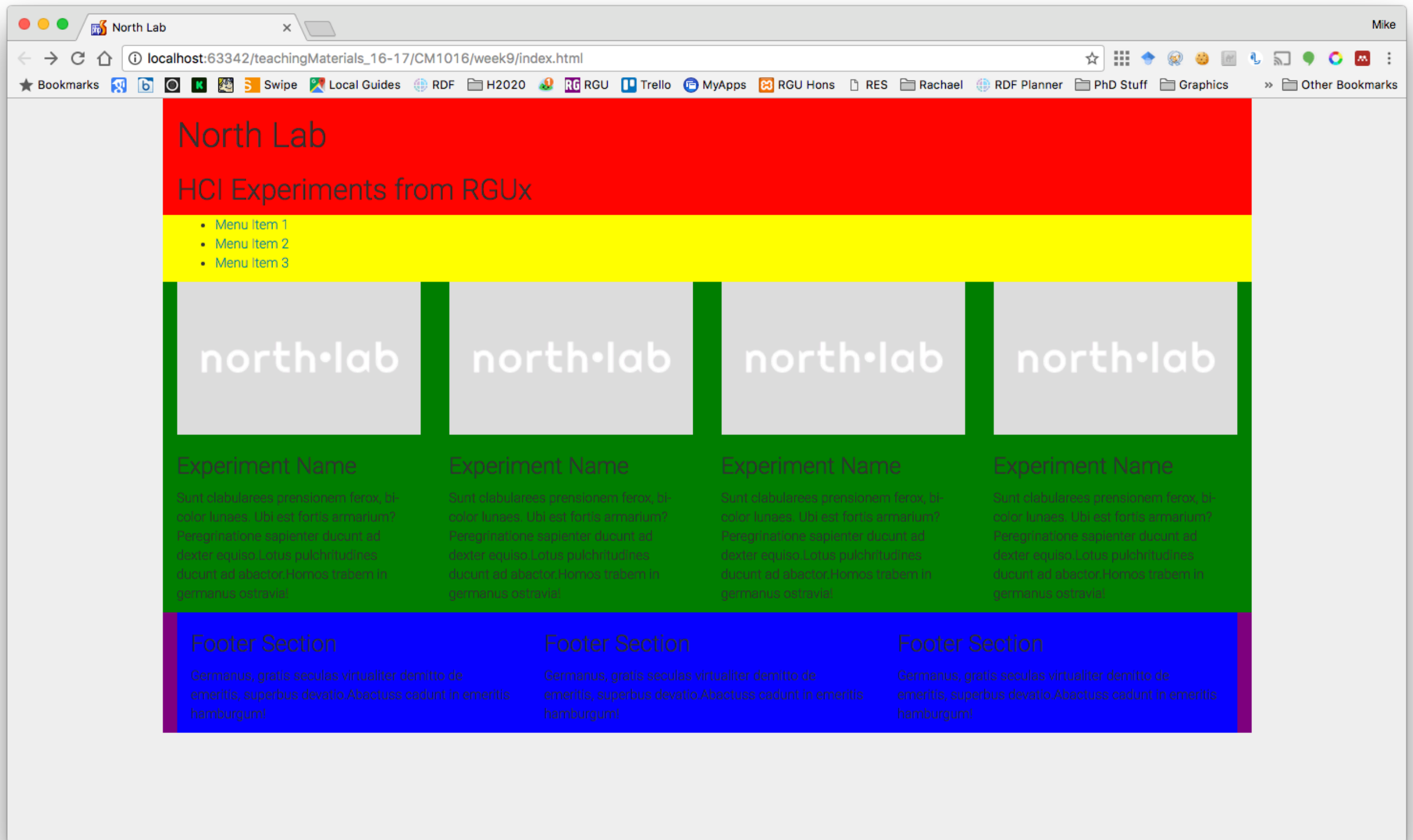
      <h3>Experiment Name</h3>

      <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducunt ad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
    </article>
  </div><!--End of Experiment Container-->
</main>

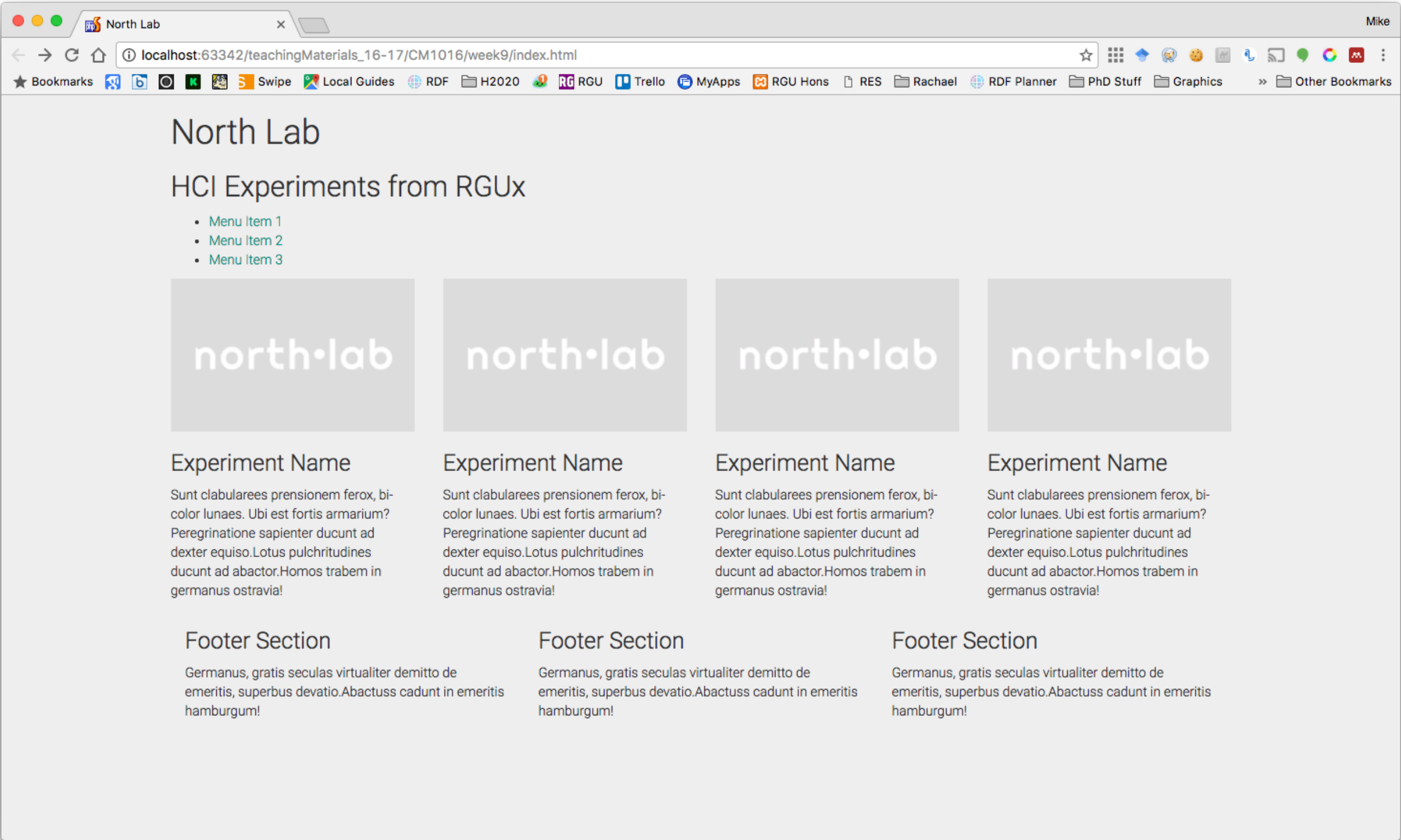
<footer class="col-md-12">
  <section class="col-md-4">
    <h3>Footer Section</h3>
    <p>Germanus, gratis seculas virtualiter demitto de emeritis, superbus devatio.Abactuss cadunt in emeritis hamburgum!</p>
  </section>
  <section class="col-md-4">
    <h3>Footer Section</h3>
    <p>Germanus, gratis seculas virtualiter demitto de emeritis, superbus devatio.Abactuss cadunt in emeritis hamburgum!</p>
  </section>
  <section class="col-md-4">
    <h3>Footer Section</h3>
    <p>Germanus, gratis seculas virtualiter demitto de emeritis, superbus devatio.Abactuss cadunt in emeritis hamburgum!</p>
  </section>
</footer>
</div> <!--End of Container-->
```

I haven't included any of the <head> information in this

Our page will now look like this. It's coming together quite quickly!



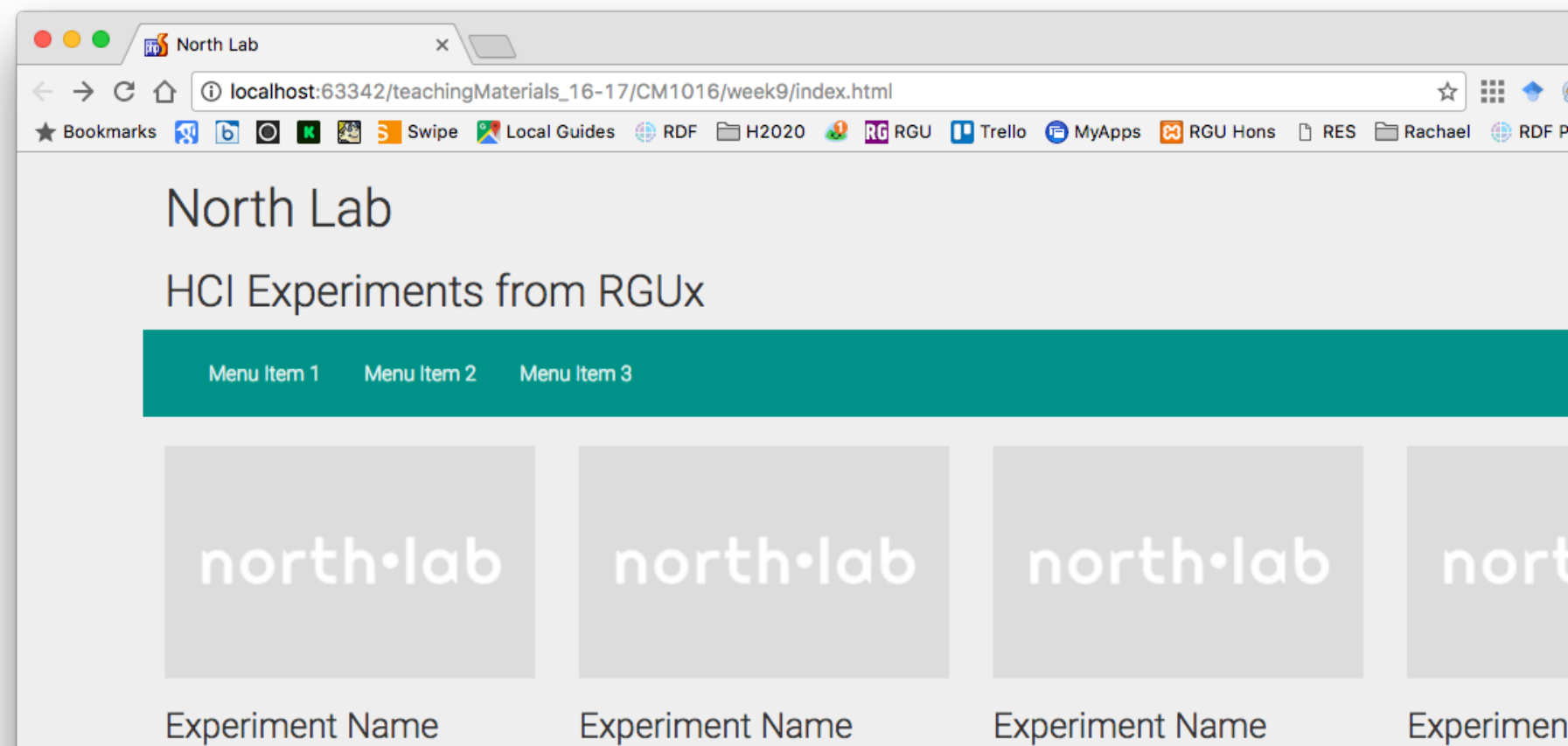
At this stage, as we have all of the layout for our site working, you can comment out the badcolours.css file. This will change your site to look a bit more like this:



First on the list of things to get looking nice is our navigation. Bootstrap follows a fairly straight forward structure for navigation, first we tell our nav that it is a `.navclass` and then open up a `.container-fluid` inside of that. We then tell our `ur` that it is part of the `.nav` and that it is the `.navbar-nav`

```
<nav class="col-md-12 navbar navbar-primary">
  <div class="container-fluid">
    <ul class="nav navbar-nav">
      <li><a href="#">Menu Item 1</a></li>
      <li><a href="#">Menu Item 2</a></li>
      <li><a href="#">Menu Item 3</a></li>
    </ul>
  </div>
</nav>
```

Reload your page and your navigation bar should now look very google-ified. You'll notice that we have set one of the class elements of this to `navbar-primary`. This bootstrap theme has a number of different colours that it has baked into it. For the most part you can use these to colour different parts of your site. These are...

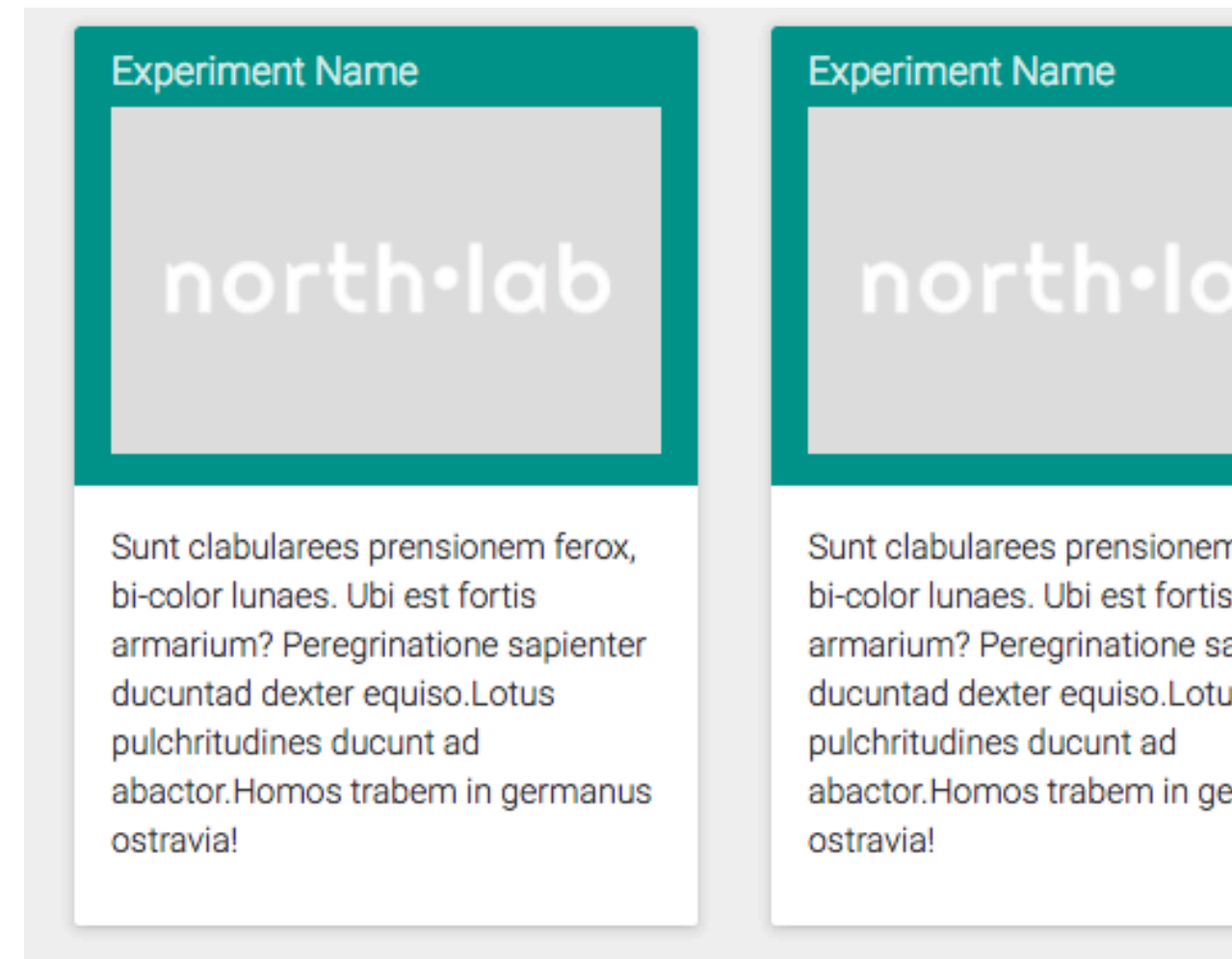


Now onto our containers for each of our experiments that is being shown on the home page. This time we are using the bootstrap 'panel' feature in order to style these.

```
<div class="col-md-3">
  <div class="panel panel-primary">
    <div class="panel-heading">
      <h3 class="panel-title">Experiment Name</h3>
      
    </div>
    <div class="panel-body">
      <p>Sunt clabularees prensionem ferox, bi-color lunaes. Ubi est fortis armarium? Peregrinatione sapienter ducuntad dexter equiso.Lotus pulchritudines ducunt ad abactor.Homos trabem in germanus ostravia!</p>
    </div>
  </div>
</div>
```

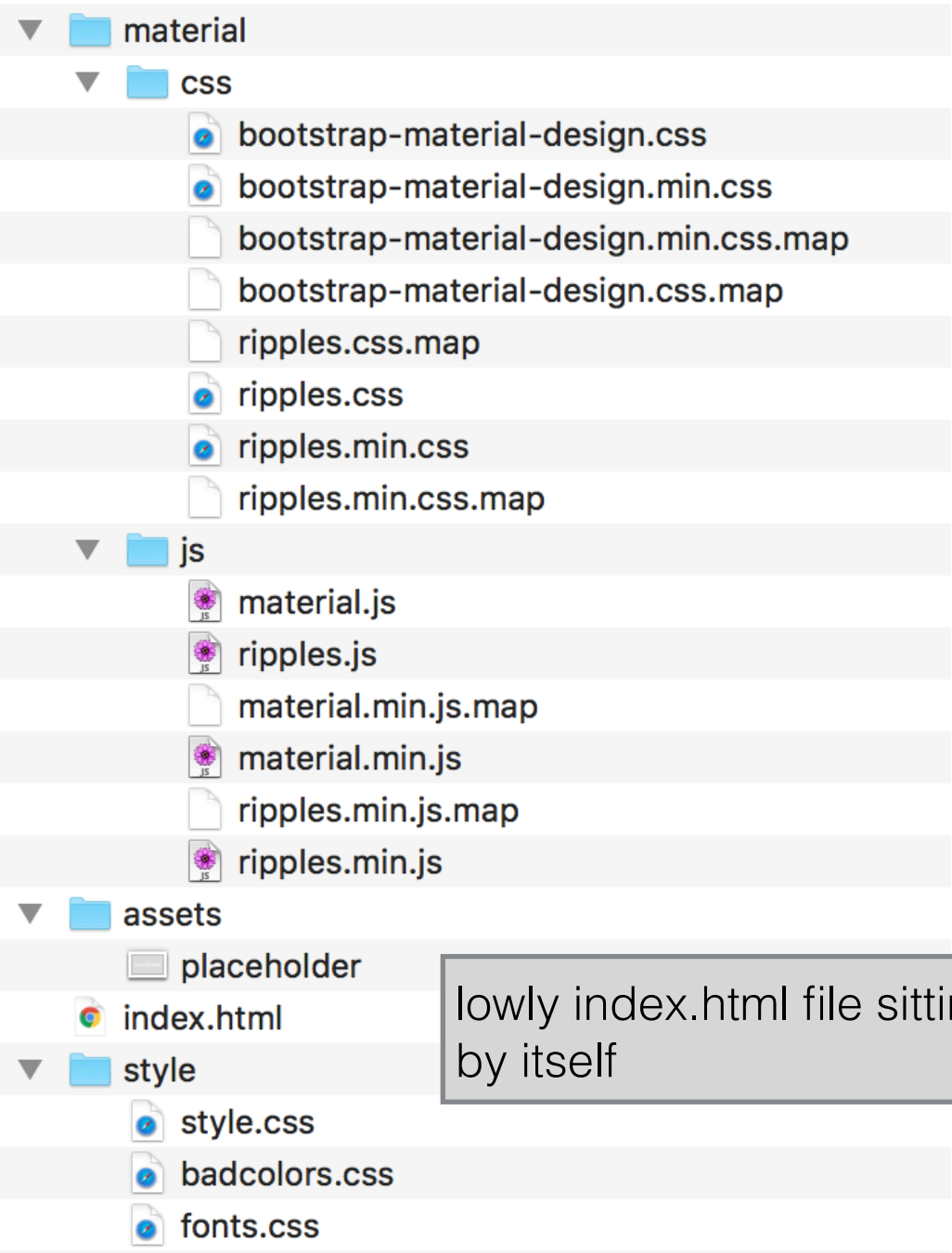
In this instance, we've split the panel into two different parts, the header and the body. The header contains our `<h1>` information and our image, and the description of each experiment is put in the body. We'll also have to make a slight change to our style.css page in order to get this to look exactly how we want

```
#experimentImage{
  margin: 6px 0 3px 0;
  width: 100%;
}
```



Next is to start working on making our header and footer look like they are meant to, but first, we should really tidy up our own CSS files to make it a bit easier to see where everything is. Here is the directory structure that I have created for this...

This is all of the stuff from the material bootstrap download, we don't need to worry about it



assets folder for storing all my images

lowly index.html file sitting by itself

style folder for storing my CSS

Once you have created this directory structure you'll need to update a few things so that everything is pointing to the right place.

First update the locations for your images (assets/placeholder.png).

Next, update the link to your style.css that is in the head of your html file.

Next is updating the style.css file itself. We are going to be clever with this and start including CSS files inside each other so that we can more easily see where things are. Change your style.css to the following:

```
/*@import "badcolors.css";*/
@import "fonts.css";

/*Home Page - Experiment Styles*/
#experimentImage{
    margin: 6px 0 3px 0;
    width: 100%;
}
/*End of Home Page - Experiment Styles*/
```

and create a new fonts.css file that contains this:

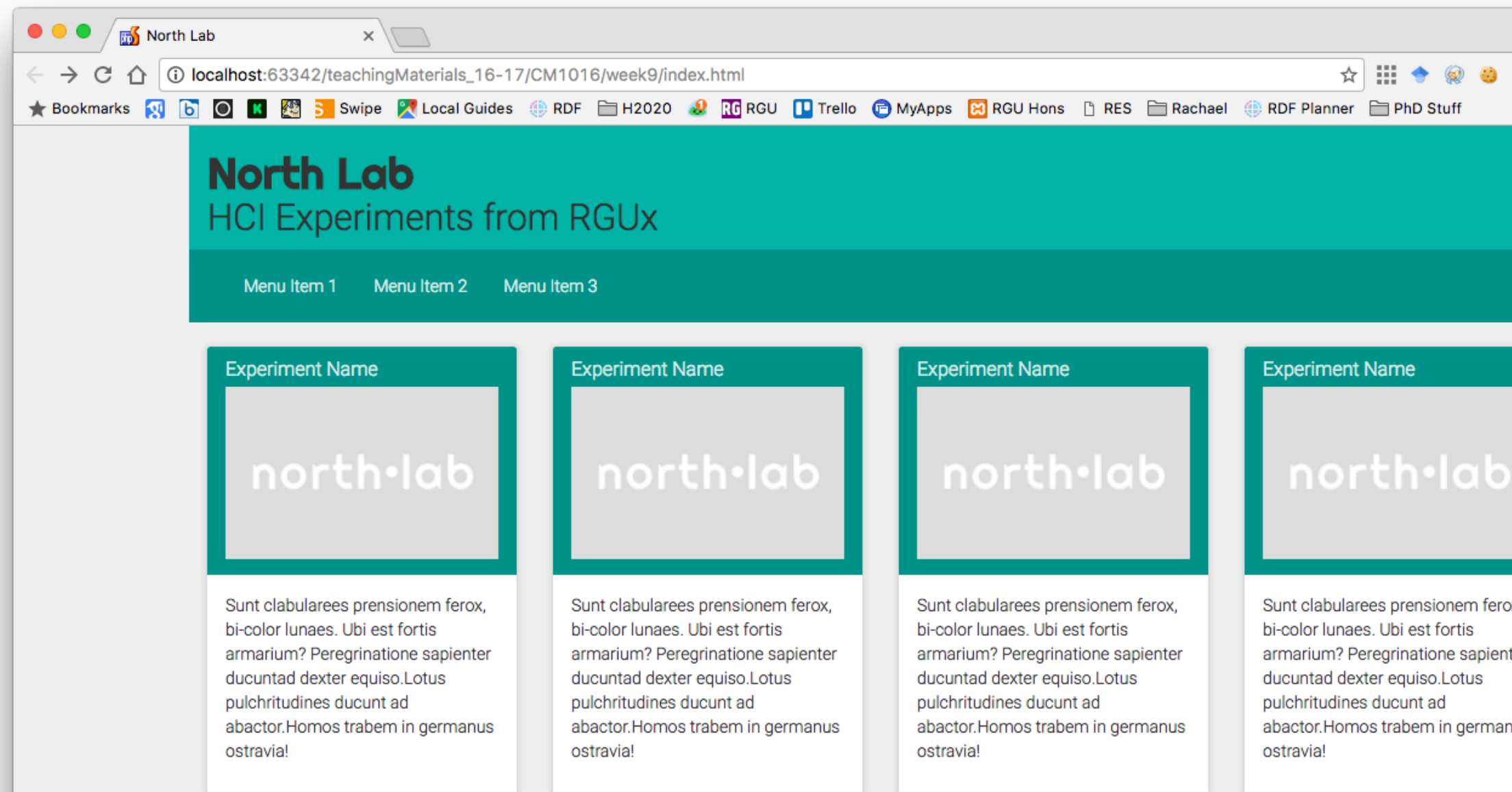
```
@import url('https://fonts.googleapis.com/css?family=Righteous');
```

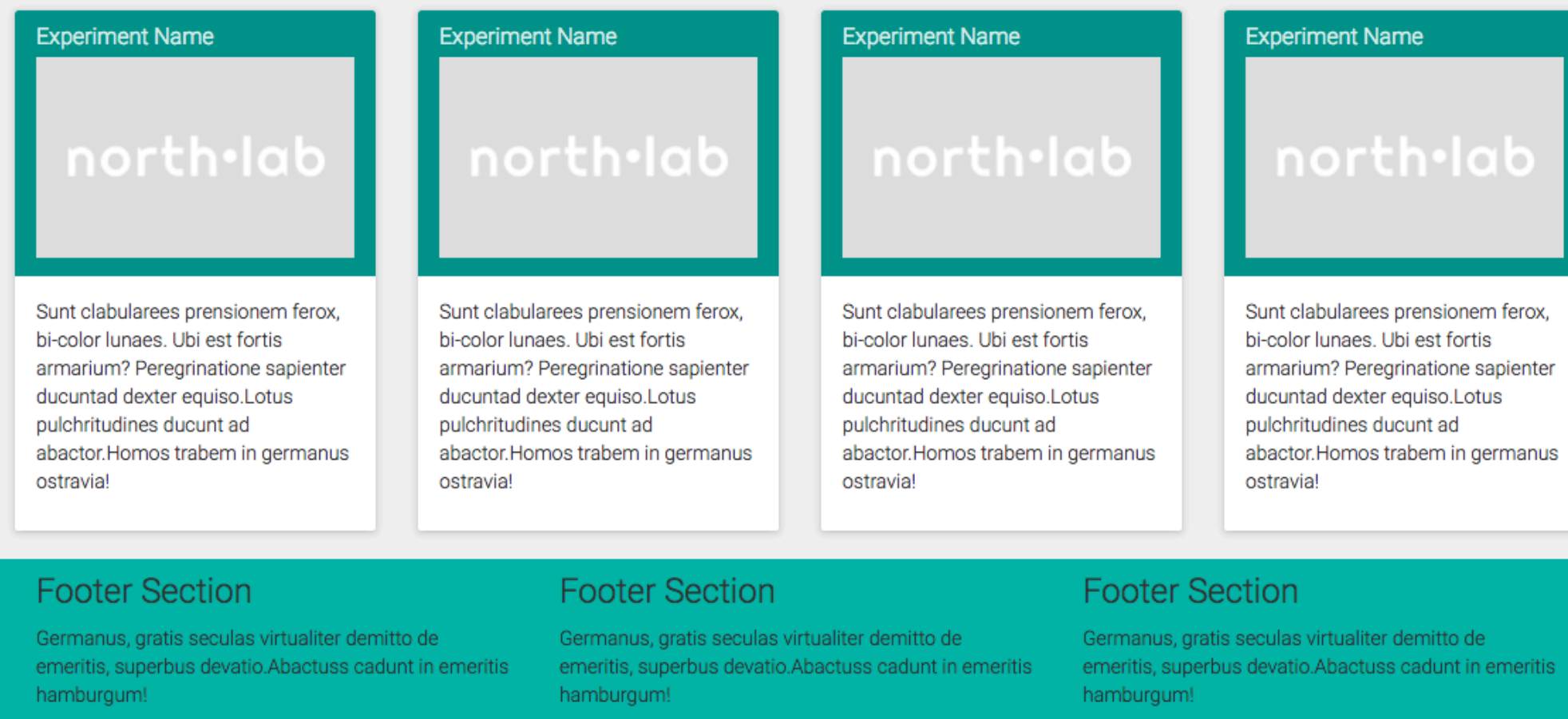
Now we can start playing about with more of the styling. Lets get the header of the website looking better. Update your style.css to include the following:

```
/*Header Information */
header {
  background-color: #00b6a8;
}

header h1{
  font-weight: 700;
  font-family: 'Righteous', cursive;
  margin-bottom: 0;
}

header h2{
  margin-top: 0;
}
/*End of Header*/
```





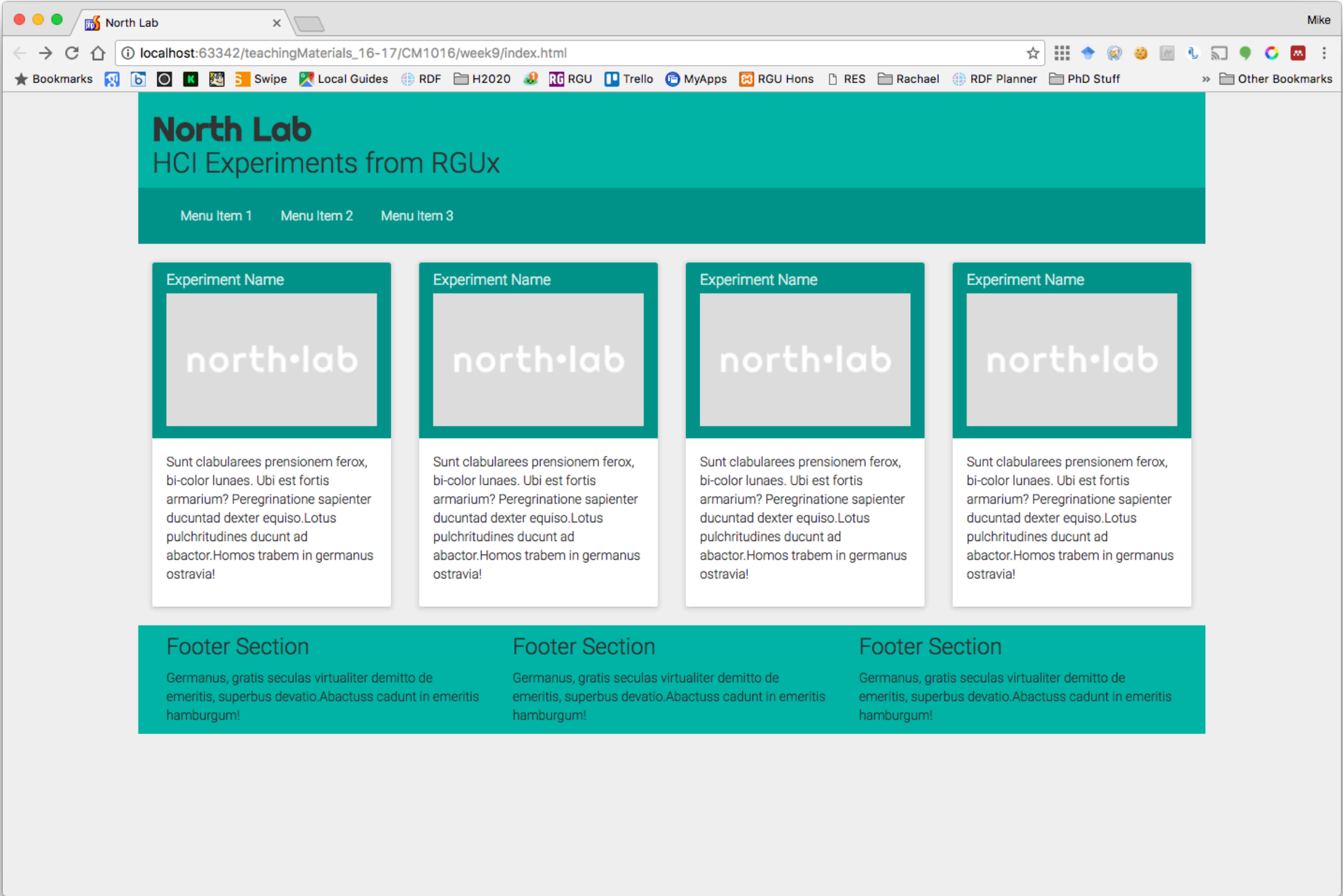
And lets also update our footer

```
/*Start of Footer*/
footer{
  background-color: #00b6a8;
}

footer section h3{
  margin-top: 10px;
}
/*End of Footer*/
```

This is our basic Page completed! It's very green...but don't worry about that, all of the colour elements can be changed about in the CSS settings. In this, we've used bootstrap to do a lot of the design work for us, we didn't really have to do anything overly complicated by ourselves, all of the hard work was taken care of by bootstrap.

There is lots of other elements that you can use bootstrap to help with, and resources for this can be found at www.getbootstrap.com. If you are interested in the material implementation of this then check out [_https://mdbootstrap.github.io/bootstrap-material-design/](https://mdbootstrap.github.io/bootstrap-material-design/) for more information.



Now that you have completed the main page, you should attempt to create the following page. You won't be able to get the colours to be purple so just stick with green. You can find an image to go in the left hand side bar using google (or just take a screenshot of something).

