Deeper into HTML

So far we have really worked with the concepts around HTML and HTTP. Lets dig a little deeper into both the protocol HTTP and also the markup language HTML, also lets introduce some of the other parts of the HTML story, namely CSS and Javascript.

A little more about HTML

So far we have been putting webpages together so that we can see how they **Render**. This means we enter the following HTML:

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

and then we render it to see a page with Hello World as the text.   We have also been learning that there are lots of tags and that different tags do different things.

Lets go a little deeper and look at what happens when we **Render** page, well the browser loads up all the HTML text and processes it - what is actually does is turn it into a set of **objects** and put them in a **model**. Actually after the Browsers has processed the HTML text it turns it into a **Document Object Model.**

Remember that HTML isn’t a programming language - but it does use some similar concepts to programming languages.

So in terms of HTML what are Objects?

Objects

In the course of computing you will hear the term object a lot. While Objects can be quite complex they are really I way that we (people) have come up with to understand how to think of concepts in computers.

Basically programmers over time tried to think how to express things that exist in real life and then put them into a computer program. To do this they tried to simplify what we see in the world, and that resulted in the following idea:

*Real-world objects share two characteristics - they have **state** and **behavior**.*

What does that mean?

Well when we want to represent something that exists in the real world one of the approaches is called Object Oriented Programming. In this way of representing things we use an object to capture state and behavior. Therefore:

We we wanted to represent a cat, so what is a state on a cat? well the best way to think about that is to consider things we know about the cat.

Cat

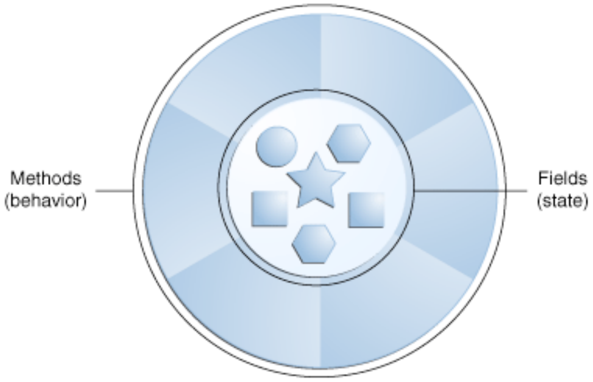
Hair Color : Tabby
Eye Color : Blue
Number of Legs : 4
Standing: Yes

All of these could as state. While behavior is things like:

Cat

Meow
Eat
Chase Mouse

These are all behaviors - really it tends to mean that these are actions that the Cat might take - or you might ask the Cat to do (if you could speak Cat).



While this might seem a little weird - this is part of how programmers see the world (well object oriented ones at least).   You see it helps when programming to be able to imagine the world you want to capture and understand - and we apply the simple rules to help us understand how things work - this is sometimes called **Modelling**.

Back to HTML

So what does all this have to do with HTML. Well when you write the HTML as text the Browser turns it into a Document Object Model. This means that each of those tags get turned into a object.

So you can imagine when we set attributes on HTML ie.

<img src=‘http://......’/>

That turns into a Object (in an HTML document it would be an *Element*) - and the state is set on it - state in this sense would be called a Property.

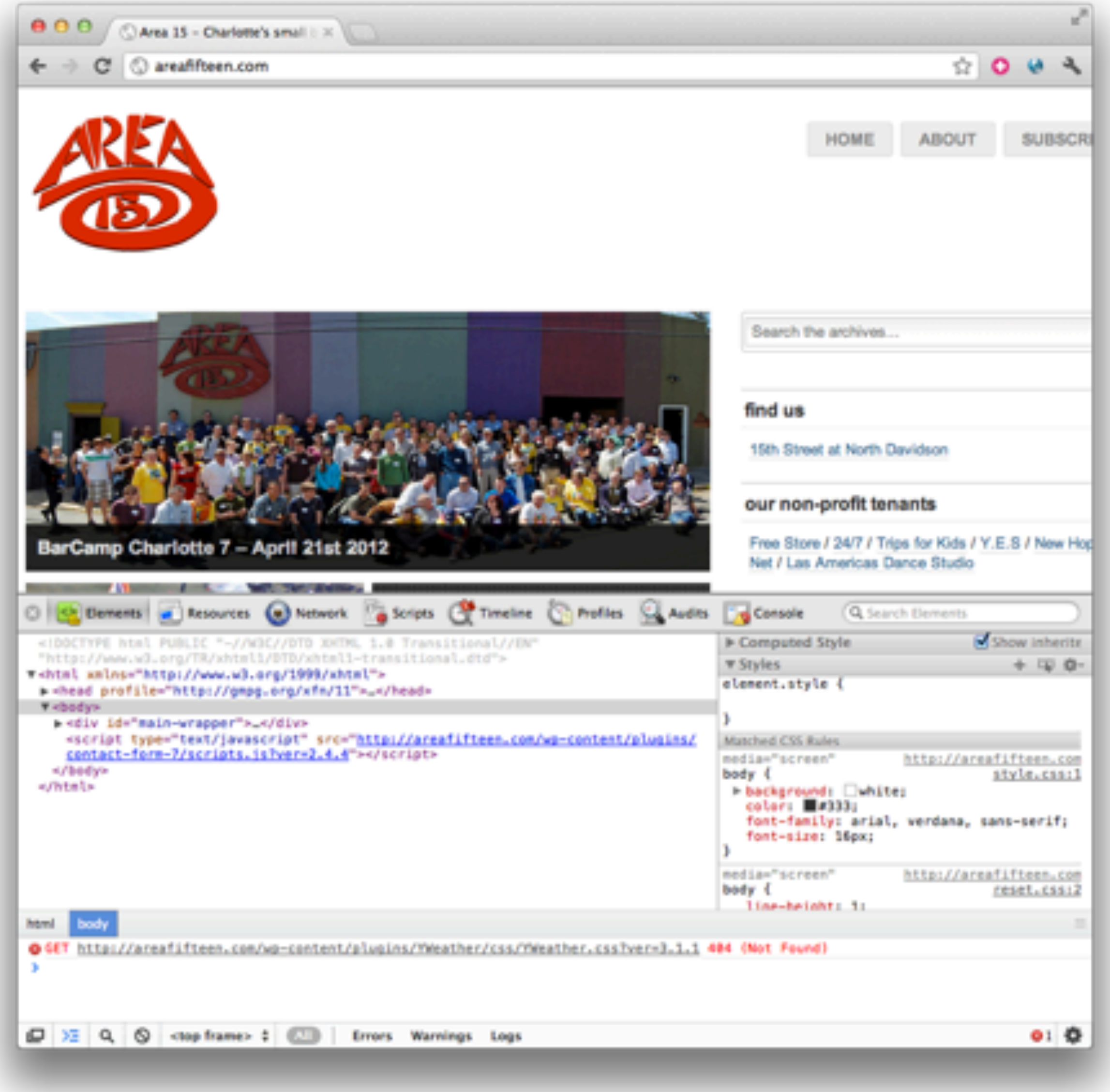
As all these tags get turned into objects we build the DOM tree:

```
|-> Document
  |-> Element (<html>)
    |-> Element (<body>)
      |-> Element (<div>)
        |-> text node
        |-> Anchor
          |-> text node
      |-> Form
           |-> Text-box
           |-> Text Area
           |-> Radio Button
           |-> Check Box
           |-> Select
           |-> Button
```

Not that some tags become common objects (called Elements) while other tags (that done more complex things than just format text) become their own type of object (for example the Anchor (a tag)).

It a lot to understand - we have set-up a lot of new concepts.

Lets try seeing them in action - we can use a browser like Chrome:



```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
▼<html xmlns="http://www.w3.org/1999/xhtml">
  ▶<head profile="http://gmpg.org/xfn/11">…</head>
  ▼<body>
    ▶<div id="main-wrapper">…</div>
     <script type="text/javascript" src="http://areafifteen.com/wp-content/plugins/
     contact-form-7/scripts.js?ver=2.4.4"></script>
   </body>
</html>
```

```
element.style {

}
media="screen"                    http://areafifteen.com
body {                                       style.css:1
  ▶ background: □white;
    color: ■#333;
    font-family: arial, verdana, sans-serif;
    font-size: 16px;
}
media="screen"                    http://areafifteen.com
body {                                       reset.css:2
    line-height: 1;
```

```
GET http://areafifteen.com/wp-content/plugins/YWeather/css/YWeather.css?ver=3.1.1 404 (Not Found)
>
```

When you see the DOM model this way you see all the properties.

Exercises -

Open up a test page

1) Explore the page - and change the title
2) Determine the height and width of the header line
3) Delete an element from the DOM

Understanding CSS

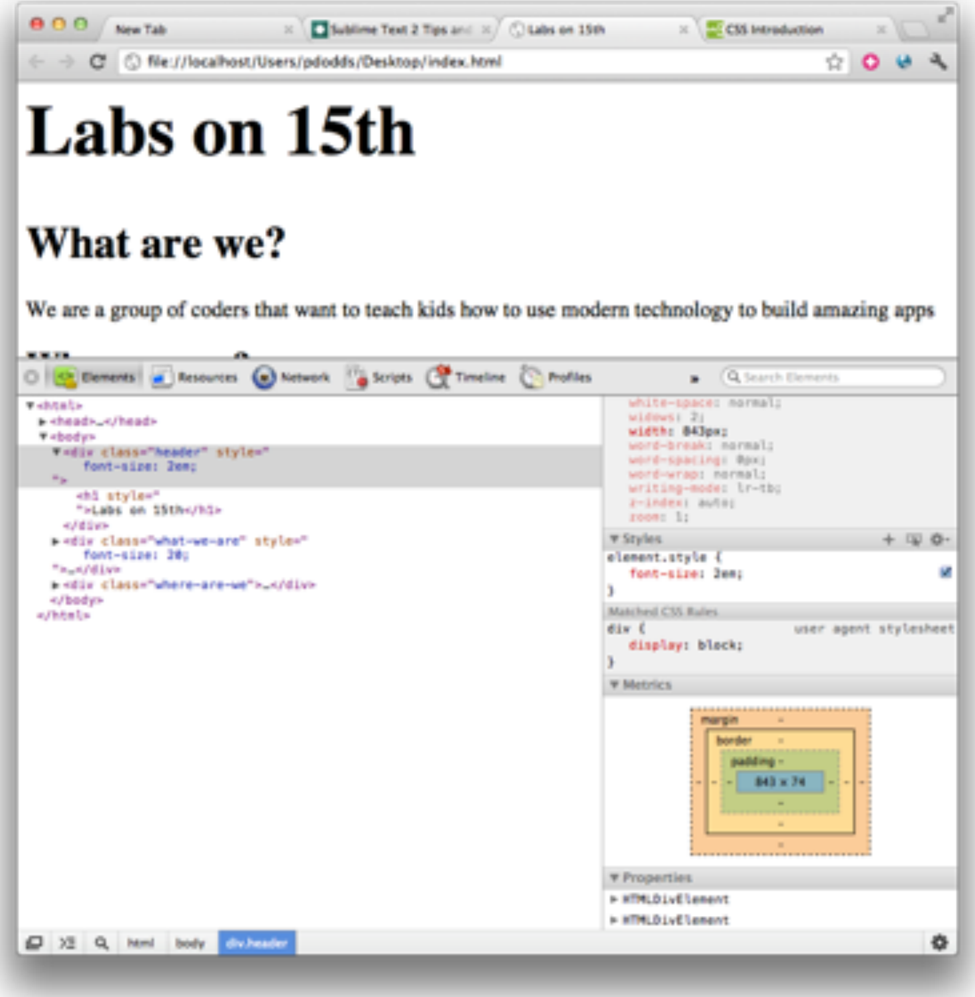
Early in HTML there was no way of determining how things were display - the tags we have describe the content - but not how it looks.

In HTML 3.x we started to see FONT tags appearing and suddenly sites with lots and lots of pages started trying to add these font tags to every page.

To get around this in HTML 4 CSS was introduced.

The idea of CSS is very simple - and since we have been learning about the DOM model and how to see it we can start trying them out.

We can do this by looking at the viewer again:



Labs on 15th

What are we?

We are a group of coders that want to teach kids how to use modern technology to build amazing apps

```
▼<html>
  ▶<head>…</head>
  ▼<body>
    ▼<div class="header" style="
        font-size: 2em;
    ">
        <h1 style="
        ">Labs on 15th</h1>
      </div>
    ▶<div class="what-we-are" style="
        font-size: 20;
    ">…</div>
    ▶<div class="where-are-we">…</div>
   </body>
</html>
```

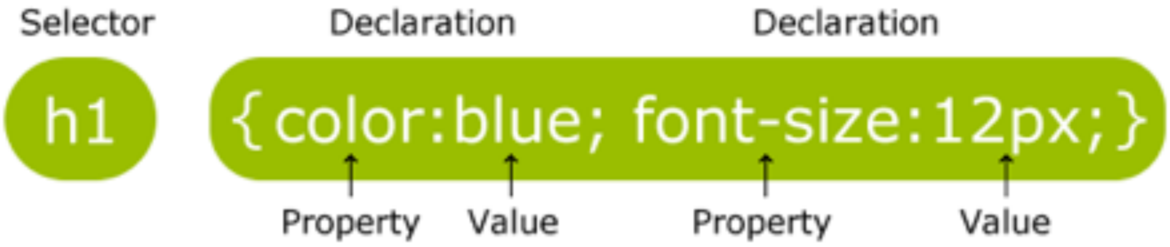
```
    white-space: normal;
    widows: 2;
    width: 843px;
    word-break: normal;
    word-spacing: 0px;
    word-wrap: normal;
    writing-mode: lr-tb;
    z-index: auto;
    zoom: 1;
```

```
element.style {
    font-size: 2em;
}
```

```
div {                    user agent stylesheet
    display: block;
}
```

On the right in the styles page you can double click to add these styles.

The way in which a CSS is represented is as follows:



The property values represent the settings for the display - there are a lot of settings (a cheat sheet has been included) - but before we get to the point of setting the properties we need to understand the selectors.

Selectors

Well a selector can be quite complex but we can start with quite simple ones.

For example:

h1

This will select all tags which are h1 - therefore if we do

```
h1 {
 font-size:2em;
}
```

We will see the size of the text to larger for all h1 tag contents.

You can also set multiple elements at the same time:

```
h1, h2, h3 {
 font-size:2em;
}
```

This works very well with simple documents - but these days HTML pages are pretty complex and the CSS that powers them is also pretty complex. However the one bit thing you will run into again and again. These are class attributes. Lets think about a paragraph (p). Lets say we have two one want one to be blue and one to be red.

Well in the HTML we might have

```
<html>
  <body>
    <p>
      I need to be blue
    </p>
    <p>
      I need to be red
    </p>
  </body>
</html>
```

With a document like this we can’t write the CSS to cleanly separate - so we use the class attribute:

```
<html>
  <body>
    <p class=‘blue’>
      I need to be blue
    </p>
    <p class=‘red’>
      I need to be red
    </p>
  </body>
</html>
```

With this in place we can use the following CSS:

```
.blue {
  color: blue;
}

.red {
  color: red;
}
```

Exercises:

```
<html>

      <head>
            <title>Labs on 15th</title>
      </head>

      <body>

            <div class="header">
                  <h1>Labs on 15th</h1>
            </div>
            <div class="what-we-are">
                  <h1>What are we?</h1>
                  <p>
                        We are a group of coders that want to teach kids how
to use modern technology to build amazing apps
                  </p>
            </div>

            <div class="where-are-we">
                  <h1>Where are we?</h1>
                  <p>
                        We are located at Area 15, 514 East 15th Street,
Charlotte, NC
                  </p>
            </div>
      </body>
</html>
```

We have provided a basic HTML page and we are going to use jsfiddle.net to define new CSS.

1) Make the title of the page font size 4em
2) Change the font family of the headers to Helvetica
3) Change the color of the What are we header to blue
4) Change the color of the Where are we to red
5) Can you indent the text 100 pixels
6) Center the title