

## APCO/IASC 1P01 – Lab 8

This lab is a bit longer than the others. If necessary, since next week's lab will be a bit shorter (and directly related to this week's), you can submit your work from this lab next week as well.

### Introduction:

For this lab (or these labs, depending on perspective), you'll be learning some basic HTML. We'll also introduce some additional features that largely won't seem helpful until you get to Lab 9. At first glance, the tasks will seem *very* easy. However, don't let this fool you. You'll actually be expected to follow the instructions very carefully in preparation of the final lab. Specifically, you'll be using more HTML tags than will seem necessary for the level of document that you're creating.

In HTML, several tags are largely semantic until you give them a more expressive meaning. For this lab, you'll be marking different types of text appropriately (even when it doesn't appear to have any real use), but in the final lab, you'll be applying styles to all of those elements. For that reason, even if it doesn't look terribly impressive, you're still required to fully complete this lab. It really will save you a great deal of work later on.

### Tasks:

Overall, you'll be writing a series of multiple web pages, all connected to a common theme. Refer to the screenshots to see an example, but feel free to use your own material.

The requirements for the labs are:

- Pick a topic. Something that you can write about, something you made up, or the example topic
- Write three (or more) pages altogether. Each page will cover some aspect related to your main topic
- Each page needs a different **title**
- Each page needs to contain your name, username, and student number *in commenting* at the beginning of the file
- Within at least one of the pages, you must use *more than one* 'heading' level.
  - I'd suggest actually doing this on *all* pages
  - e.g. you can use **H2** tags for that page's description, and then **H3** tags for articles/subtopics
- Each page must have a **header** tag. You may include additional elements, but a **nav** tag for navigating between the different pages is suggested
  - You will probably want to simply copy and paste the same header across all of your pages
- At least one page needs a list of some sort
  - It doesn't matter if it's an *unordered list* (bulleted list) or *ordered* (numbered)
- Include links somewhere that link to different places within the same page
- Use the **section** tag on at least one page
- Use at least one **article** somewhere
- Include a **footer** on each page. It doesn't need to be fancy
- Use at least one image (**img**) somewhere
  - It doesn't matter what the image is
  - Give it some additional attribute (e.g. *width*, *height*, or *alt/title*)
- Find somewhere to use **strong**, **em**, **i**, and **b** tags
- It's *suggested* to use a **blockquote**, **q**, or other tag not mentioned above, for experience

Ostensibly, anything you create that covers that list will qualify as “sufficient”, so feel free to get creative.

However, if you prefer a more guided exercise, then we'll build up an example after this page.

## Before we begin:

As mentioned in class, it's always nice to have a reference.  
If you're interested in “official” documentation, here's an example:  
<https://www.w3.org/TR/html5/>

Ain't that just painful to read? That's why I prefer using this as a reference:  
<https://www.w3schools.com/tags/>

However, there are myriad options online, and you can go with whatever you like.

## Step 1:

Before we can view a webpage, we first need to *create* one. That, of course, means we need to be able to *edit* it.

Assuming you're following on a lab computer, open either *notepad* or *notepad++* (the latter is fancier, but either will work). If you're following along on a mac, you'll probably want to use TextEdit (in plaintext mode).

Irrespective of what you're using, type in the following:

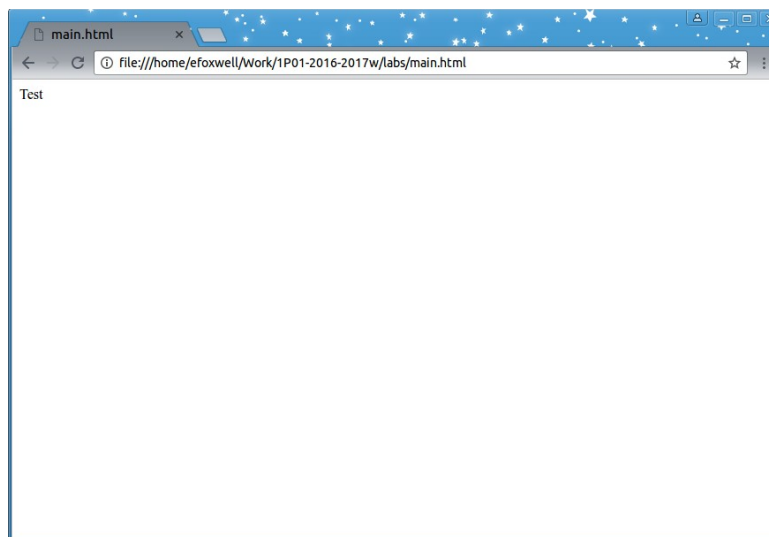
```
<html>
<head>
</head>
<body>
Test
</body>
</html>
```

Now, save the file somewhere you can easily find it. Technically, the filename doesn't matter, but it'll be much more intuitive if you use the `.html` extension. I'll be saving mine as `main.html`.

We already have something we can view. Let's try doing that!

1. Start your browser of choice (I'll be assuming Chrome)
2. Either press control+o to find the file to open, or simply drag the file's icon right onto your browser
3. There is no step three. You should see your minimal page now

You should see something like:



As a refresher of our lecture, let's go over those HTML *tags* again:

- Our `html` tag marks the beginning and end of the entire document
- The `head` tag is where we describe attributes *about* the document
- The `body` tag is where the actual content for the page goes
- All of these tags have both an *opening* and a *closing* tag, to mark where they begin and end

What can we add next? Before we get to the content, let's fix that “main.html” in the tab bar.

```
<html>
<head>
  <title>Bad Ideas</title>
</head>
<body>
  Test
</body>
</html>
```

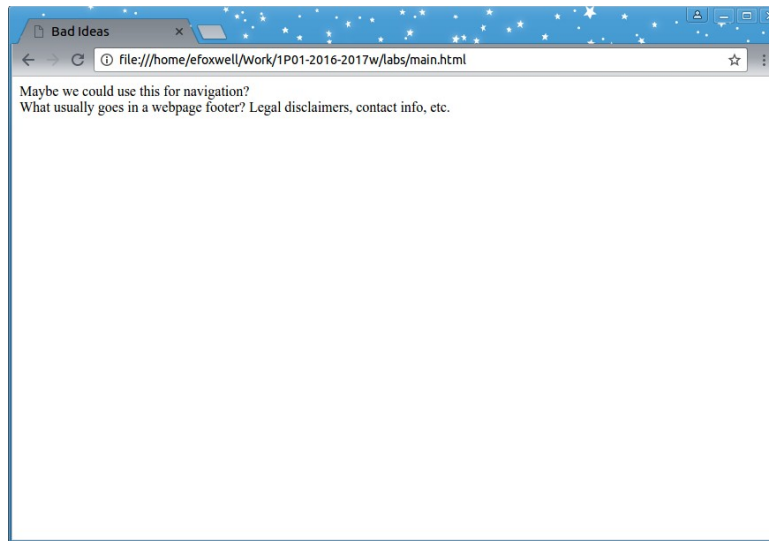
So, what's different? Well, first off, I've indented in a couple of places. That won't affect anything at all, since *additional* whitespace is just ignored. Besides that, I've added the `title` tag.

To see the change, we could drag the file back onto the browser again, but it's easier to just *refresh* the page (either via the reload button, or by pressing control+r). We now see “Bad Ideas” instead of “main.html”, which is nicer.

Before we start filling in all of our content, a bit of *organization* is probably a good idea. What will we want? I like to start files with notes to myself so I don't forget anything. We'll also have a header at the top, some content, and a footer. What will be inside them? We'll figure that out later. Let's just get this much sketched out:

```
<html>
<head>
  <title>Bad Ideas</title>
</head>
<body>
  <!-- Student A Studentson, 9999999 -->
  <!-- This is a comment. I can have it span multiple lines if I like.
    Or I can have it on one line. The browser won't render this, so it's
    all up to what's most convenient for me. -->
  <header>
    Maybe we could use this for navigation?
  </header>
  <!-- I should add some sort of block for content here. -->
  <footer>
    What usually goes in a webpage footer? Legal disclaimers, contact info, etc.
  </footer>
</body>
</html>
```

Try reloading the page, to see the difference between a header and a footer.



Huh. Couple things worth noting:

- The header and footer look the same
  - This is because, before you start adding some significance to the tags (next week), these both start out as normal *block-level* tags; nothing more, nothing less. So they define new blocks of text, but aren't special. We're just setting ourselves up for later when we'll eventually want to define a connected decoration or *style* to the semantic hint of being whatever “header” or “footer” means
- The comments aren't rendered by the browser
  - e.g. that note about adding a block for content doesn't show up at all
- I mentioned a student name/number in the comments at the top. You should do that. But with yours

Let's start adding some content. Again, write whatever you like; it doesn't have to be what I wrote.

I'm going to start only commenting when there's something useful to point out. You can copy that into your own document, or not; again, it doesn't actually *do* anything.

```
<html>
<head>
  <title>Bad Ideas</title>
</head>
<body><!-- Student A Studentson, 9999999 -->
<header>
  Maybe we could use this for navigation?
</header>
<p><!--The most common block is the paragraph (p)-->
  There is no established correlation between good ideas and actually making
  money. Novelty is a reasonable selling point. So go ahead, and snap up all
  of those ideas everyone else is too smart to use, and make them your own!
</p><!--End first paragraph-->
<p><!--We want to start AND end each block-->
  Wonderful (terrible) ideas include: ejector seats for helicopters, solar
  powered flashlights, research-paper autogenerators, and monkey chauffeurs!
</p><!--End second paragraph-->
<footer>
  Disclaimer: no warranty is expressed or implied for the ideas contained herein.
  You are solely responsible for trying to find your own toes after implementing
  these ideas.
</footer>
</body>
</html>
```

Feel free to take a look at how it renders, but it should be pretty predictable by now.

Pretty plain, isn't it?

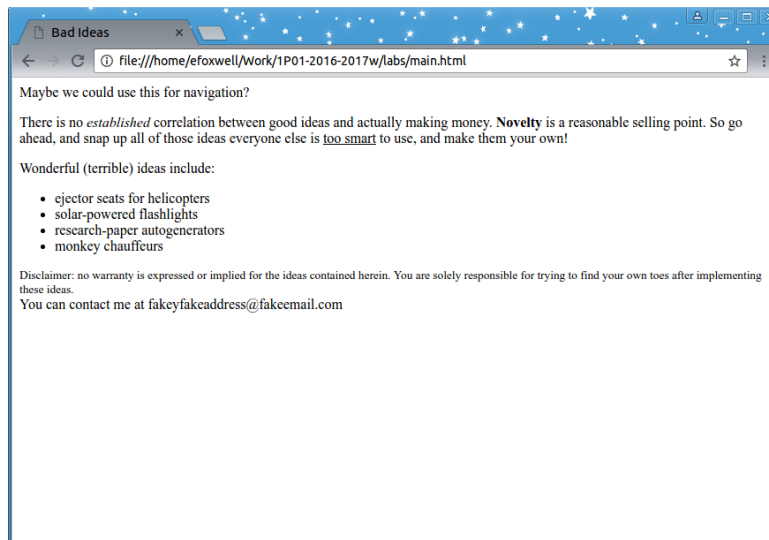
For the most part, that won't be changing until next week. However, there are still a few semantic designations (and structural organization) we can apply to improve it.

What's missing? Well, any notion of emphasis is the most obvious. Also, the second paragraph includes a list, and we have a way of presenting proper lists. Finally, that bit at the bottom is what we'd normally call “fine print”, and we actually have a tag for that!

- We can make text stand out via any of several tags:
  - **i** will make text *italicized*
  - **em** will make text *emphasized*. By default, this will usually be the same thing (until you change it)
  - **b** **bolds**
  - **strong** mark text as important (by default, bolded)
  - **u** marks text as “stylistically different” (by default, underlined)
  - **small** marks text that should be smaller than normal (e.g. for fine print)
- An unordered (bulleted) list is achieved with **ul**; an ordered (numbered) list with **ol**
  - Either way, a list item within the list is marked with **li**
- Fine print is easy; just use **small**
  - I also felt like adding contact info to the footer, so I simply added a *line break* (**br**)

```
<html>
<head>
  <title>Bad Ideas</title>
</head>
<body><!-- Student A Studentson, 9999999 -->
<header>
  Maybe we could use this for navigation?
</header>
<p>
  There is no <em>established</em> correlation between good ideas and actually making
  money. <strong>Novelty</strong> is a reasonable selling point. So go ahead, and snap
  up all of those ideas everyone else is <u>too smart</u> to use, and make them your
  own!
</p>
<p>
  Wonderful (terrible) ideas include:
  <ul><!--ul = unordered (bulleted list)-->
    <li>ejector seats for helicopters</li><!--Each 'list item' is a bullet-->
    <li>solar-powered flashlights</li><!--Please remember the </li>-->
    <li>research-paper autogenerators</li>
    <li>monkey chauffeurs</li>
  </ul><!--If we wanted a numbered list instead: ol (ordered list)-->
</p>
<footer>
  <small>Disclaimer: no warranty is expressed or implied for the ideas contained herein.
  You are solely responsible for trying to find your own toes after implementing
  these ideas.</small><br/><!--br is for a line break. Use them sparingly-->
  You can contact me at fakefakeaddress@fakeemail.com
</footer>
</body>
</html>
```

What does this look like? Let's find out!



There's something else worth pointing out: while the **p**, **header**, and **footer** tags were all *block-level* — they actually define their own blocks — that isn't true for the **i**, **em**, **b**, **strong**, **u**, and **small** tags.

These tags (and some other similar tags) don't define their own blocks, because they aren't intended to create separations, or designate independent sections of text. Rather, they're meant to identify portions (or selections) of text that should be treated as special. These are what we call *inline* tags.

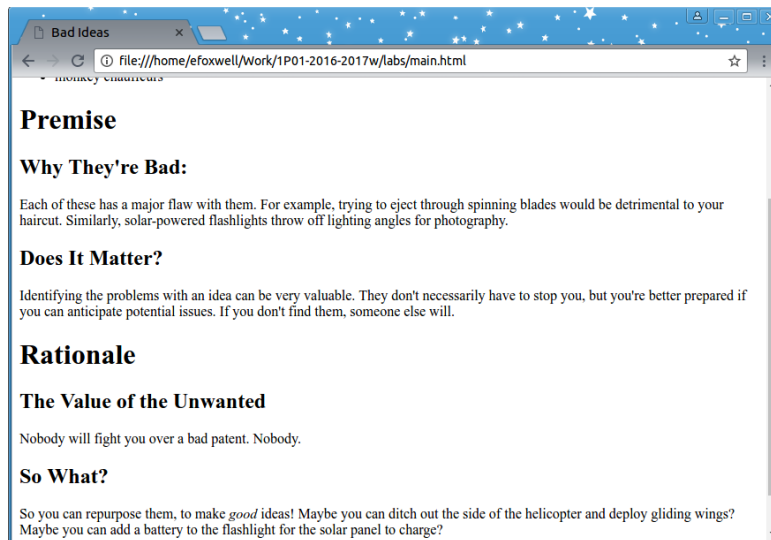
We're doing far better now. By this point, I think we can start adding a bit more detail. However, as the page gets bigger, our organization should also match.

This page is going to have two **articles** (one to address the premise, and one to explain a rationale). Each article will have a couple of **sections**. To best identify each section, I'll be putting in *headings*, very similar to the heading styles we used in Word.

Let's put this between the list and the footer:

```
<h1>Premise</h1> <!--By default, a separate block-->
<article>
  <h2>Why They're Bad:</h2>
  <section>
    Each of these has a major flaw with them. For example, trying to eject through
    spinning blades would be detrimental to your haircut.
    Similarly, solar-powered flashlights throw off lighting angles for photography.
  </section>
  <h2>Does It Matter?</h2>
  <section>
    Identifying the problems with an idea can be very valuable. They don't
    necessarily have to stop you, but you're better prepared if you can
    anticipate potential issues. If you don't find them, someone else will.
  </section>
</article>
<h1>Rationale</h1>
<article>
  <h2>The Value of the Unwanted</h2>
  <section>
    Nobody will fight you over a bad patent. Nobody.
  </section>
  <h2>So What?</h2>
  <section>
    So you can repurpose them, to make <em>good</em> ideas! Maybe you can
    ditch out the side of the helicopter and deploy gliding wings? Maybe you can
    add a battery to the flashlight for the solar panel to charge?
  </section>
</article>
```

What does this look like?



We're definitely making good progress here.

As the page gets longer, it might be nice to be able to jump between different points in the page.

Let's try something a little odd. Below all four of the **h2** tags, let's add some *empty anchor tags*, with the **id** attribute assigned:

```
<h2>Why They're Bad:</h2>
```

```
<a id="whybad"/>
```

...

```
<h2>Does It Matter?</h2>
```

```
<a id="doesmatter"/>
```

...

```
<h2>The Value of the Unwanted</h2>
```

```
<a id="value"/>
```

...

```
<h2>So What?</h2>
```

```
<a id="sowhat"/>
```

Note the quotation marks around each **id** label.

What does this do? It creates a **bookmark**; a place in the page to which you can jump. In the browser's address bar, try adding `#value` (in other words, change `main.html` to `main.html#value`).

The octothorpe is how you identify the separation between filename and bookmark name. Actually, you can assign the **id** attribute to any HTML tag you like, but this is pretty much the only use for the empty version of the anchor tag.

What about the non-empty version? That's the primary use for anchors: *linking to documents*. In this case, we can link to the *same* document.

We'll get to a more interesting example of anchors in a moment, but first let's just make a simple table of contents. We don't need any special tags for this, but feel free to if you like (e.g. bulleted list).

I'll go simple, between the header and the first paragraph:

```
<a href="#whybad">Why not to</a> <a href="#doesmatter">Is this pointless?</a>
<a href="#value">Some value</a> <a href="#sowhat">Why not?</a>
```

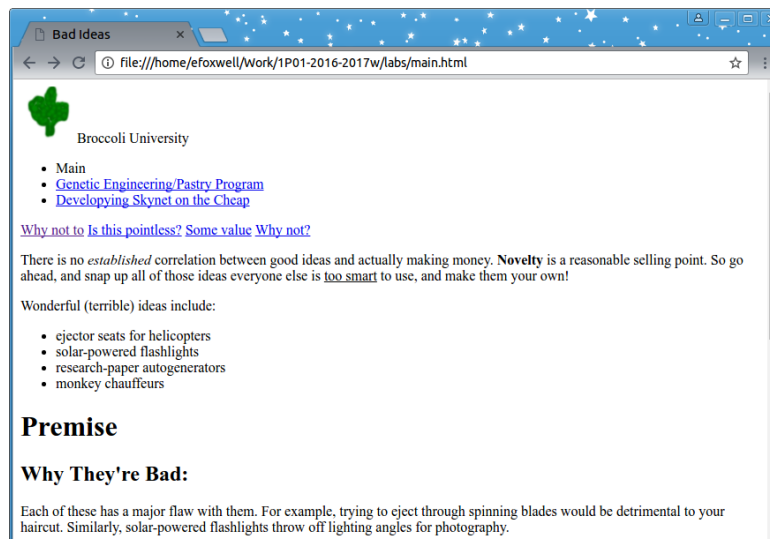
Reload the page, and we now have clickable links!

The **href** attribute is a *hypertext reference* (i.e. an identifier for the corresponding page's address). Normally, these would include a filename (possibly an entire path to another website/domain), but since we're linking to the *same page*, we can skip the filename.

Although, that brings up the issue of the other two pages we'd planned to create. Also, we haven't *really* filled in the header yet. Additionally, we don't even have any pictures yet!

Let's take care of all of this together, with a **navigation bar**:

```
<header>
    Broccoli University
    <nav>
        <ul>
            <li>Main</li>
            <li><a href="geneteclair.html"/>Genetic Engineering/Pastry Program</a></li>
            <li><a href="cyberdyne.html"/>Developing Skynet on the Cheap</a></li>
        </ul>
    </nav>
</header>
```



So many new things!

- First, notice that we're using **anchor** tags to link to other documents now
  - I didn't bother including a link to the same page, but there wouldn't have been any harm in it
- We've used the **img** tag (another empty element!) to include an image (draw one, or download one)
  - The **src** attribute lists the image's source (filename). Unless you specify a path, it assumes the image is in the same folder as the .html file
  - We *could* have also included **width** or **height** attributes, but they didn't seem necessary here
- The **nav** tag is for a navigational bar



Again, we've introduced new tags that are identical in result to what we've already seen (e.g. a navigational bar is apparently identical to a section?). We'll be adding significance next week.

Naturally, the `geneteclair.html` and `cyberdyne.html` documents don't really exist (yet). Create whatever two pages you like, and link to those. Just make sure that they include links to each other, and back to this document (for easier navigation).

There are only three major tags remaining to cover. All of them will be more interesting next week, so let's just briefly discuss them here.

You can create a *table* via the **table** tag. The *table* is just the outer box. Within that you'd include several *table rows* (**tr**). Inside each row, you'd have one or more *table header* cells (**th**) or *table data* cells (**td**).

There's also a block-level **div** tag and an inline **span** tag, which have no innate semantic meaning. They're considered *generic tags*, that only have unique roles when given them by the developer (as we'll see next week).

So, what did we end up with altogether?

```
<html>
<head>
  <title>Bad Ideas</title>
</head>
<body><!-- Student A Studentson, 9999999 -->
<header>
  Broccoli University
  <nav>
    <ul>
      <li>Main</li>
      <li><a href="geneteclair.html">Genetic Engineering/Pastry Program</a></li>
      <li><a href="cyberdyne.html">Developing Skynet on the Cheap</a></li>
    </ul>
  </nav>
</header>
<a href="#whybad">Why not to</a> <a href="#doesmatter">Is this pointless?</a>
<a href="#value">Some value</a> <a href="#sowhat">Why not?</a>
<p>
  There is no <em>established</em> correlation between good ideas and actually making
  money. <strong>Novelty</strong> is a reasonable selling point. So go ahead, and snap
  up all of those ideas everyone else is <u>too smart</u> to use, and make them your own!
</p>
<p>
  Wonderful (terrible) ideas include:
  <ul><!--ul = unordered (bulleted list)-->
    <li>ejector seats for helicopters</li><!--Each 'list item' is a bullet-->
    <li>solar-powered flashlights</li><!--Please remember the </li>-->
    <li>research-paper autogenerators</li>
    <li>monkey chauffeurs</li>
  </ul><!--If we wanted a numbered list instead: ol (ordered list)-->
</p>
<h1>Premise</h1> <!--By default, a separate block-->
<article>
  <h2>Why They're Bad:</h2>
  <a id="whybad"/>
  <section>
    Each of these has a major flaw with them. For example, trying to eject through
    spinning blades would be detrimental to your haircut.
    Similarly, solar-powered flashlights throw off lighting angles for photography.
  </section>
  <h2>Does It Matter?</h2>
  <a id="doesmatter"/>
  <section>
    Identifying the problems with an idea can be very valuable. They don't
    necessarily have to stop you, but you're better prepared if you can
    anticipate potential issues. If you don't find them, someone else will.
  </section>
</article>
```

```
<h1>Rationale</h1>
<article>
  <h2>The Value of the Unwanted</h2>
  <a id="value"/>
  <section>
    Nobody will fight you over a bad patent. Nobody.
  </section>
  <h2>So What?</h2>
  <a id="sowhat"/>
  <section>
    So you can repurpose them, to make <em>good</em> ideas! Maybe you can
    ditch out the side of the helicopter and deploy gliding wings? Maybe you can
    add a battery to the flashlight for the solar panel to charge?
  </section>
</article>
<footer>
  <small>Disclaimer: no warranty is expressed or implied for the ideas contained herein.
  You are solely responsible for trying to find your own toes after implementing
  these ideas.</small><br/><!--br is for a line break. Use them sparingly-->
  You can contact me at fakeyfakeaddress@fakeemail.com
</footer>
</body>
</html>
```