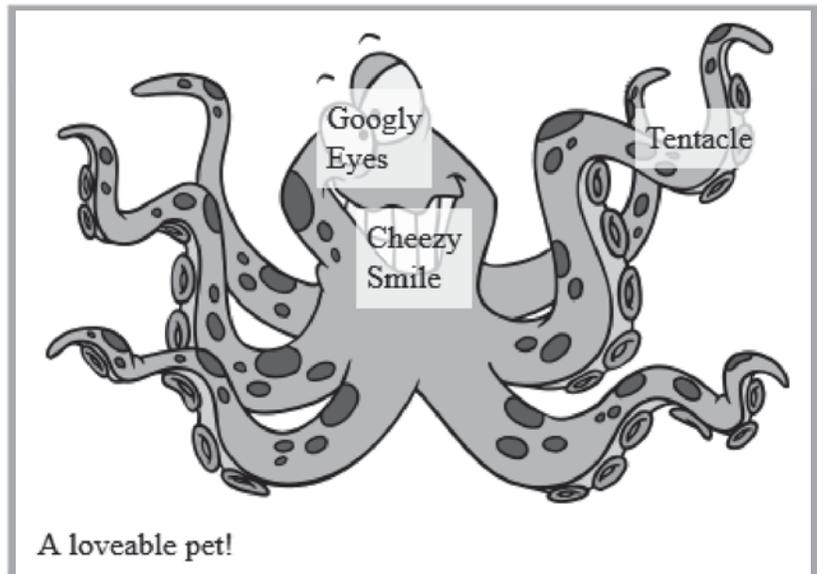


Lesson Two: Figure Annotation with Relative Positioning

An **annotation** is a small note you can add to a picture. If you've ever "tagged" someone in Facebook, you have seen annotations in the form of boxes drawn around the faces of the people in your pictures. Annotations can be made up of simple text or fancier graphics.

In this example, we have added three annotations to our octopus: "Googly Eyes", "Cheezy Smile", and "Tentacle".

These effects are pretty easy to create with HTML5 and CSS using these steps:



1. Use a special class of **<figure>** and an unordered list **** within the **<figcaption>** element. Each list item **** contains one annotation.
2. Apply inline styles to each **** with specific location information
3. Add style rules to your CSS to control the positioning and other special effects

Creating Annotations in a List

To create a nice annotation on an image, your first step is to ensure that you are using the HTML5 **<figure>** and **<figcaption>** elements. Add a **class** attribute to your **<figure>** element so we can easily create style rules applying to any annotated figure. We have chosen the class name "**annotated**", but you can use any name you like. Then within your **<figcaption>**, add an unordered list **** with some list items **** containing each annotation or piece of text you want to show in the image.

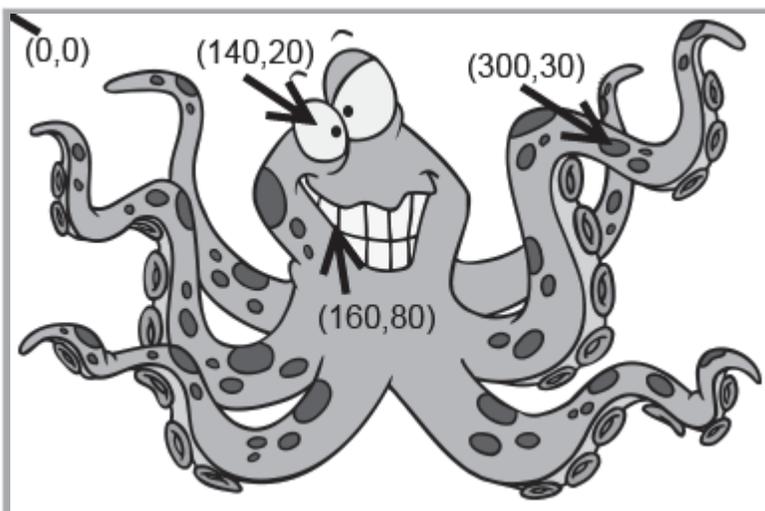
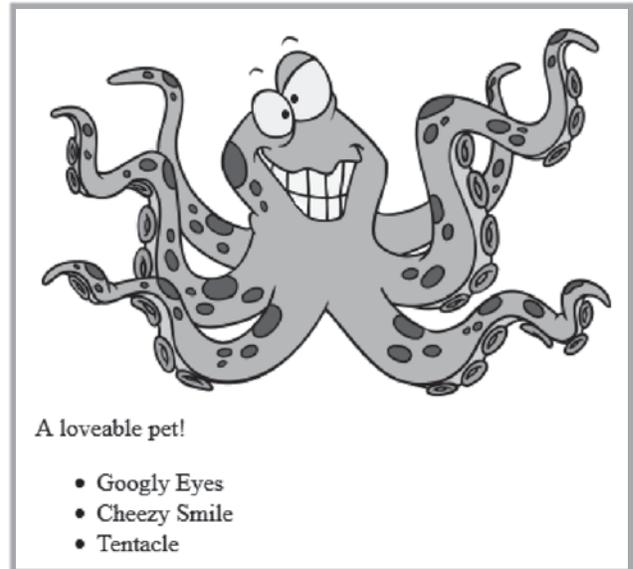
```
<figure class="annotated">
  
  <figcaption>A loveable pet!
    <ul>
      <li>Googly Eyes</li>
      <li>Cheezy Smile</li>
      <li>Tentacle</li>
    </ul>
  </figcaption>
</figure>
```

So far this extra list will just appear underneath the caption. But we really want to move each list item to a specific location on the image.

Inline Location Styles for List Items

In order to place each list item on the image in the right location, we need to know the coordinates for each spot. A **coordinate** is a pair of values that counts the number of pixels over and down from the top-left corner of the image.

The top-left corner of an image is written as coordinate (0,0). As you move pixels to the right, the first value increases, so (10,0) would be a pixel 10 places over from the left side. Similarly, as you move down the image, the second value increases. The coordinates (10,20) would point to a spot 10 pixels to the right and 20 pixels down from the top-left corner.



You can figure out coordinates for any spot on an image using an image editor. Usually just hovering your mouse over a spot will show the coordinates somewhere on the screen. Or you can just guess with some trial and error until you home in on the right spot. The image to the left shows the key locations for each annotation, plus the top-left (0,0) coordinate for reference.

Now that we know the locations for each piece of text, we want to set those locations using the CSS properties **left** and **top**. The **left** property will hold the number of pixels across from the left side, and the **top** property will hold the number of pixels down from the top edge. Because each list item will have different coordinates, we will apply these properties inline directly on each element instead of using a separate CSS file.

```
<ul>
  <li style="left: 140px; top:20px;">Googly Eyes</li>
  <li style="left: 160px; top:80px">Cheezy Smile</li>
  <li style="left: 300px; top:30px">Tentacle</li>
</ul>
```

Unfortunately just adding these top and left coordinates with styles is not enough; you won't see any visible change in our image! Location of elements on the screen can be done using *absolute* or *relative* positioning. We covered the **position** property in detail in our first-semester course, so you may want to look back on that material for a reminder.

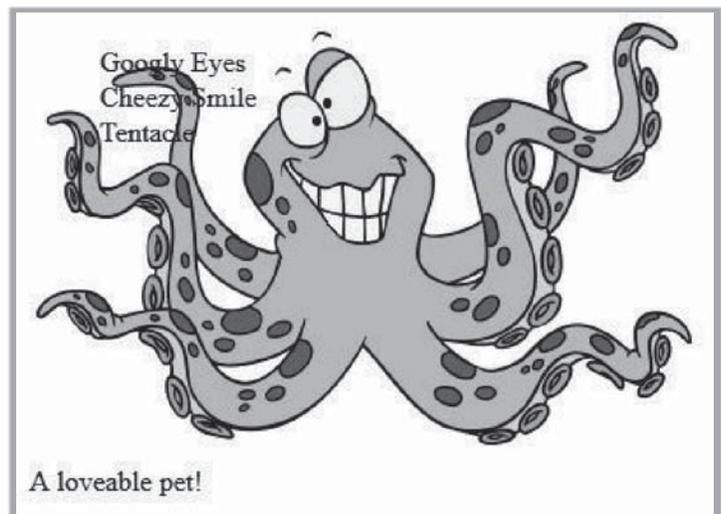
In order to place the annotations in the right spots, we need to add three CSS rules. First, we want to add a rule for the “annotated” class that changes the **position** to *relative*. This style tells the browser that elements inside may be positioned somewhere other than their default positions.

```
.annotated
{
    position:relative;
}
```

Next we need to add a style rule for the unordered list `` inside the annotated figure. These properties should all be familiar to you from earlier work. We are removing the bullet icons from the list and setting the font size. The absolute position is very important, because it tells the browser to place the `` element exactly at the top and left positions shown (0,0) relative to the parent `<figure>`.

```
.annotated ul{
    list-style:none;
    position:absolute;
    top:0;
    left:0;
    font-size:16px;
}
```

Now we can start seeing some results in our browser! The list items appear near the top-left corner of the figure. We have successfully positioned the entire list element ``, but the individual locations for each `` are still being ignored. We will need to add a third style rule to make those take effect.



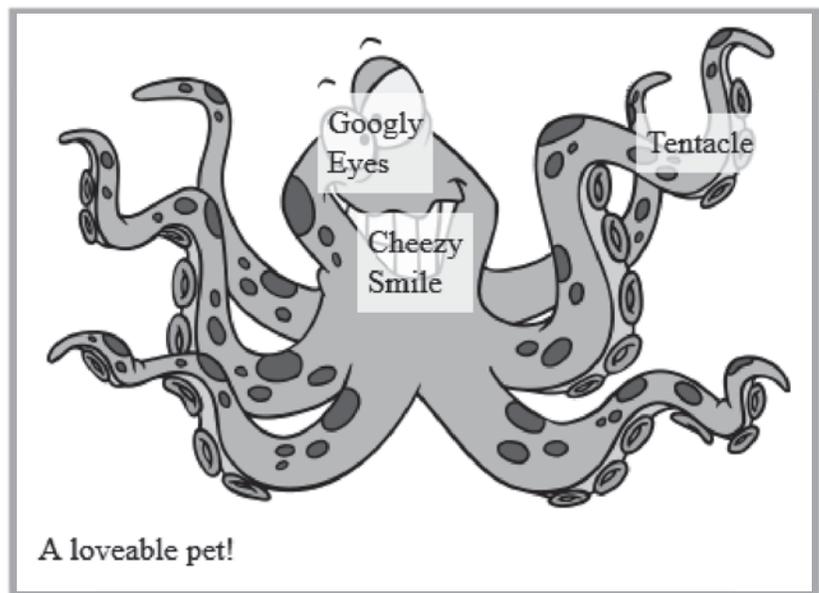
The style rule below will change the behavior of the individual list items `` in our annotated figure. Most importantly, we change the positioning to absolute, which will allow the top and left properties we set on each element to take effect. Those elements will now be positioned according to the pixel coordinates from the top-left corner of the parent figure. In addition, we add a **width**, **height**, some **padding** and a **background-color** to make the annotations stand out from the image.

```
.annotated li{
  position:absolute;
  width: 50px;
  height: 40px;
  padding: 5px;
  background-color:rgba(255,255,255,0.8);
}
```

The format of the **background-color** property one you have not seen before. You know that colors can be set using Red, Green, and Blue components (RGB), and each component is a value between 0 and 255. You can set those values using normal decimal numbers or hexadecimal numbers #00 - #FF. So why do we have a fourth value “0.8” at the end?

This fourth value is called the **alpha** or **transparency** value. The alpha value should be between 0.0 and 1.0. A value of 0.0 means the color is completely transparent and won't be seen at all. A value of 1.0 means the color is completely solid and won't let anything underneath show through. Any value in between such as 0.2, 0.5, or 0.8 will block 20%, 50%, or 80% of the underlying image.

Now we can see good results from our hard work. Each list item is positioned on top of the image with correct locations, and the text has a nice background that makes it readable but still shows some of the underlying image.



In the next lesson you will learn how to make annotations appear only when the user hovers a mouse on top of them. But first, it's time to put your new knowledge to work on the Aquamaniacs website.



Work with Me: Aquarium Annotations

In this activity you are going to add a new “Aquarium” page to your Aquamaniacs website. The aquarium will have an annotated image of fish swimming in the fish tank.

1. To begin, use Windows Explorer or Mac OS Finder to copy the “aquarium.html” file from your “Activity Starters/Chapter04” folder to your “MyProjects/Aquamaniacs” directory. Also copy the “aquarium.jpg” file from “Activity Starters/Chapter04/PagePhotos” to your “MyProjects/Aquamaniacs/PagePhotos” directory.
2. Load the “aquarium.html” file from your Aquamaniacs folder into your web browser and make sure you can see the picture and list of annotations underneath the caption.

You will not have to make any changes to “aquarium.html” for this activity. All of your work will be inside the “global.css” file.

Aquarium Tank

Spotting Seven Fish



A group of fish swimming in an aquarium.

- Fish 1
- Fish 2
- Fish 3
- Fish 4
- Fish 5
- Fish 6
- Fish 7

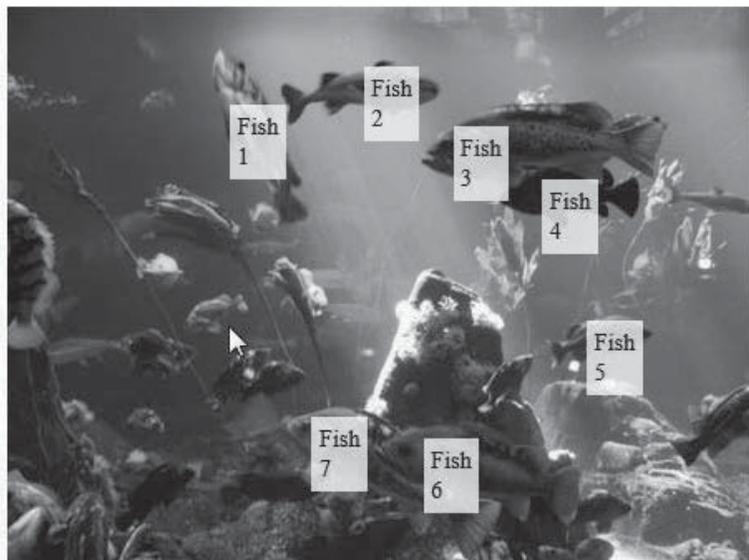
- Now, load your “Aquamaniacs/SiteStyle/global.css” file in your Komodo Edit software. Scroll down to the bottom of the page, and add the three styles for “annotated” figures, lists, and list items exactly as described in the lesson.

```
.annotated {  
    position:relative;  
}  
.annotated ul{  
    list-style:none;  
    position:absolute;  
    top:0;  
    left:0;  
    font-size:16px;  
}  
.annotated li{  
    position:absolute;  
    width: 50px;  
    height: 40px;  
    padding: 5px;  
    background-color:rgba(255,255,255,0.8);  
}
```

- Save your changes and reload “aquarium.html” in your web browser. You should now see the “Fish1” through “Fish7” annotations appear in different places on the image.

In the next lesson you’ll learn how to apply some other special effects to your figure annotations.

Spotting Seven Fish



A group of fish swimming in an aquarium.