

Web Development

How web sites work

Programming – Game Development Foundations

Last modified 19/8/16 by Sam Cartwright

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- HTML and CSS

Why is this important?

- A good online presence helps you:
 - Promote your skills and your games
 - Provide a point of contact
- You will likely have to work with domain names or web servers at some point
 - Eg: setting up an online leaderboard
- Broader understanding of computers and computer languages

Domain Name System

- “Internet Protocol” (IP) is a set of rules computers use to identify each other on a network, like the Internet.
- An “IP Address” is a number that uniquely identifies a computer on its network.

Domain Name System

- IP Addresses come in two types:
 - An IPv4 (32bit) address looks like this:
192.168.1.2
 - An IPv6 (128bit) address looks like this:
2001:0DB8:AC10:FE01:0000:0000:0000:0000
- Why do we need IPv6?
 - IPv4 only provides $\sim 4 \times 10^6$ (4 billion) addresses.
 - IPv6 provides $\sim 3.5 \times 10^{38}$ addresses.

Domain Name System

- IP Addresses look cryptic and they're hard to remember!
- This is where “domain names” come into the picture.
- “google.com” is far easier to remember than “216.58.220.110”
- Domain names must still be unique

Domain Name System

- The “Domain Name System” tracks which domain names go with which IP addresses.
 - Commonly referred to as “the phone book for the Internet”

Domain Name System

- To get a domain name, you use a “Domain Hosting” service.
 - These reserve your domain name for you, and can point it at your website.
 - Domain names are typically around \$10 to \$20 per year. Some web hosting services (covered soon) include these.

Web servers

- A web server is simply a computer which is set up to host web pages.
- They are generally connected to a very fast network.
- They run “web server” software which listens for “HTTP Requests” and send files back in response.
 - “HTTP” stands for “Hypertext Transfer Protocol”

Web servers

- There are many businesses which provide cheap or free web hosting.
- Once you have a web hosting plan you will need to “point” your DNS at it.
 - Your domain host and/or web host will provide instructions.
 - This is usually done for you if you use a domain name provided by your web host.
 - There can be a wait of a few hours before this makes its way through the Domain Name System.
- Then you put files on your host, and you have a web site!

Web servers

- So, what do those files look like?
- They are HTML and CSS.
 - They are often accompanied by images, videos, and other media to be used in the site.

HTML

- “Hypertext Markup Language”
- Written in a text file with “.html” extension.
- Describes the *content* of a web page.

HTML

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Tutorial</title>
    <link rel="stylesheet" href="style.css">
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph!</p>

    <h2>This is a smaller heading</h2>
    <p>And this is another paragraph.</p>

    <a href="otherpage.html">More info</a>
  </body>
</html>
```

CSS

- “Cascading Style Sheet”
- Written in a text file with “.css” extention.
- Describes the *style* of a web page.

CSS

```
body {  
  background-color: #d0e4fe;  
}  
  
h1 {  
  color: orange;  
  text-align: center;  
}  
  
h2 {  
  color: #b23e22;  
  text-align: left;  
  font-style: italic;  
}  
  
p {  
  font-family: "Times New Roman";  
  font-size: 20px;  
}
```

HTML + CSS

- Combined together...

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Tutorial</title>
    <link rel="stylesheet" href="style.css">
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph!</p>

    <h2>This is a smaller heading</h2>
    <p>And this is another paragraph.</p>

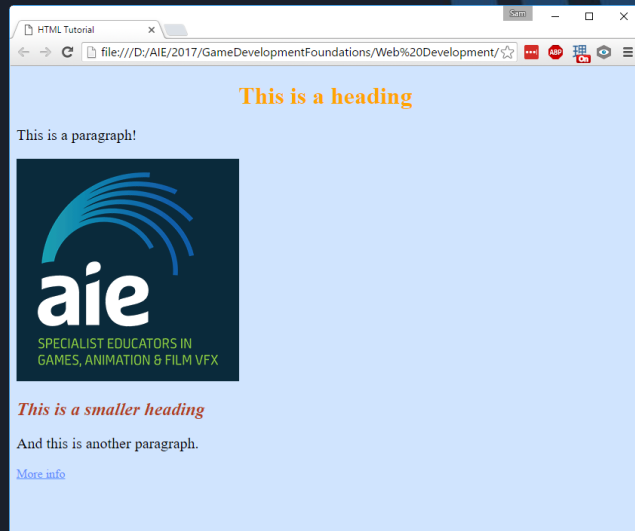
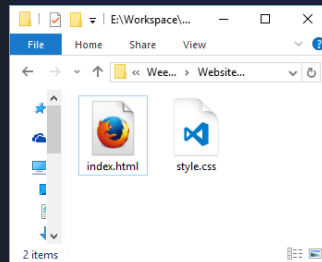
    <a href="otherpage.html">More info</a>
  </body>
</html>
```

```
body {
  background-color: #d0e4fe;
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  color: orange;
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  color: #b23e22;
  text-align: left;
  font-style: italic;
}

p {
  font-family: "Times New Roman";
  font-size: 20px;
}
```



HTML + CSS

- We're just introducing you to HTML and CSS
- To learn more, visit <http://www.w3schools.com>

Summary

- A Domain Name Server (DNS) maps the numeric address of a computer to a friendly 'human- readable' name like 'www.google.com'
- Web pages are hosted on web servers that deliver the pages via HTTP requests
- Web pages are written in HTML and CSS
 - This tells your browser how to display the web page

References

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- Brain, M and Crawford, S. 2016. *How Domain Name Servers Work / HowStuffWorks*. [ONLINE] Available at: <http://computer.howstuffworks.com/dns.htm>. [Accessed 19 August 2016].