

Web Analytics

DIANE WOODBRIDGE, PH.D



UNIVERSITY OF SAN FRANCISCO
CHANGE THE WORLD FROM HERE

Contents

1. Creating a web page.
2. Hosting a web page.
3. Internet protocol stack.
4. Collect user information.



HTML (Hyper Text Markup Language)

Describe the structure and semantic of web pages.

HTML 2

- Released in 1994.

HTML 4

- Released in 1997 as a W3C Recommendation..

HTML 5

- Work in progress.
- New elements and attributes will be introduced.
- Major browser had started to incorporate many of the features.

HTML (Hyper Text Markup Language)

The screenshot shows a web browser displaying the URL <https://www.usfca.edu/arts-sciences/graduate-programs/analytics>. The page features the University of San Francisco logo and navigation links for the College of Arts and Sciences, including About the College, Undergraduate Programs, Graduate Programs, College Faculty, and Research and Creative Achievement. Below the navigation is a photograph of two students, a man and a woman, working on laptops at a desk. A whiteboard in the background displays handwritten text: "of groups being compared and the number of replicates within each", "Interest lies in testing:", and " $H_0: \mu_1 = \mu_2$ vs. $H_a: \mu_1 \neq \mu_2$ ". Overlaid on the photo is the text "MS in Analytics" and "Big data requires big skills."

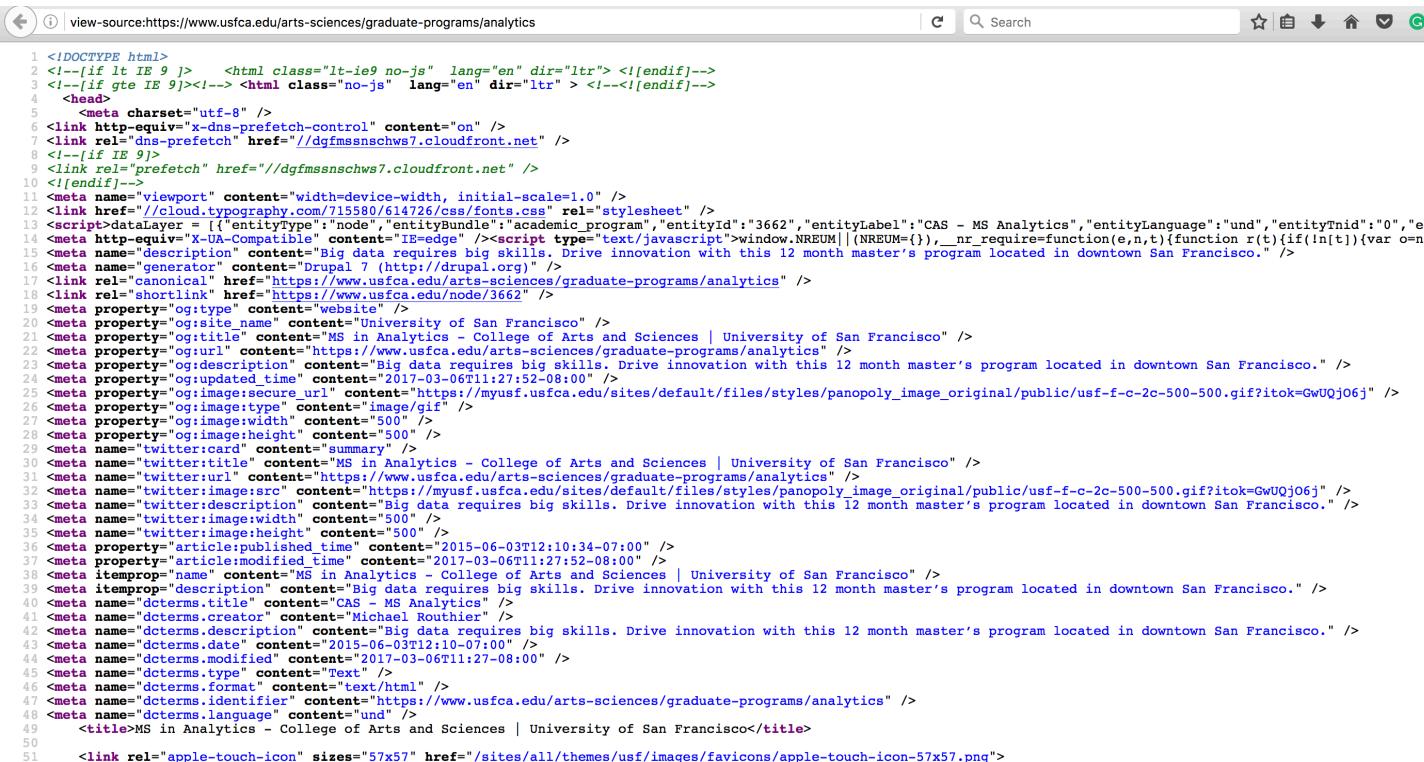
Creating a web page.

Hosting a web page.

Internet protocol stack.

Collecting user information.

HTML (Hyper Text Markup Language)



The screenshot shows a browser window with the URL <https://www.usfca.edu/arts-sciences/graduate-programs/analytics>. The page content is visible at the top, and the browser's address bar, search bar, and various icons are at the top. Below the browser window is the raw HTML source code of the page, which is quite long and contains numerous meta tags, script tags, and other HTML elements.

```
1 <!DOCTYPE html>
2 <!--if lt IE 9 -->      <html class="lt-ie9 no-js" lang="en" dir="ltr"> </!endif-->
3 <!--if gte IE 9--><!--> <html class="no-js" lang="en" dir="ltr"> <!--<!--if-->
4 <head>
5   <meta charset="utf-8" />
6   <link http-equiv="x-dns-prefetch-control" content="on" />
7   <link rel="dns-prefetch" href="//dgfmssnschws7.cloudfront.net" />
8 <!--if IE 9-->
9   <link rel="prefetch" href="//dgfmssnschws7.cloudfront.net" />
10 <!--endif-->
11 <meta name="viewport" content="width=device-width, initial-scale=1.0" />
12 <link href="//cloud.typography.com/715580/614726/css/fonts.css" rel="stylesheet" />
13 <script>dataLayer = [{"entityType": "node", "entityBundle": "academic_program", "entityId": "3662", "entityLabel": "CAS - MS Analytics", "entityLanguage": "und", "entityTnid": "0", "entityUlid": "48303"}, {"entityType": "node", "entityBundle": "program", "entityId": "141", "entityLabel": "MS in Analytics - College of Arts and Sciences | University of San Francisco", "entityLanguage": "und", "entityTnid": "0", "entityUlid": "48303"}]</script>
14 <meta http-equiv="X-UA-Compatible" content="IE=edge" /><script type="text/javascript">window.NREUM||(NREUM={}),_nr_require=function(e,n,t){function r(t){if(!n[t])var o=n[t]=function(){o._q.push([t].concat(Array.prototype.slice.call(arguments,0)))};o._q=[]},o=n[t]={push:r,once:r,off:r};e.push(o);t?n[t]=o:n[t]=o};_nr_require(["/node/3662"],function(){var o=_nr_e;if(o){var n=o._q;_nr_e=null,o._q=[];for(var t=0;t<n.length;t++)r(n[t]);}});</script>
15 <meta name="description" content="Big data requires big skills. Drive innovation with this 12 month master's program located in downtown San Francisco." />
16 <meta name="generator" content="Drupal 7 (http://drupal.org)" />
17 <link rel="canonical" href="https://www.usfca.edu/arts-sciences/graduate-programs/analytics" />
18 <link rel="shortlink" href="https://www.usfca.edu/node/3662" />
19 <meta property="og:type" content="website" />
20 <meta property="og:site_name" content="University of San Francisco" />
21 <meta property="og:title" content="MS in Analytics - College of Arts and Sciences | University of San Francisco" />
22 <meta property="og:url" content="https://www.usfca.edu/arts-sciences/graduate-programs/analytics" />
23 <meta property="og:description" content="Big data requires big skills. Drive innovation with this 12 month master's program located in downtown San Francisco." />
24 <meta property="og:updated_time" content="2017-03-06T11:27:52-08:00" />
25 <meta property="og:image:secure_url" content="https://myusf.usfca.edu/sites/default/files/styles/panopoly_image_original/public/usf-f-c-2c-500-500.gif?itok=GwUQj06j" />
26 <meta property="og:image:type" content="image/gif" />
27 <meta property="og:image:width" content="500" />
28 <meta property="og:image:height" content="500" />
29 <meta name="twitter:card" content="summary" />
30 <meta name="twitter:title" content="MS in Analytics - College of Arts and Sciences | University of San Francisco" />
31 <meta name="twitter:url" content="https://www.usfca.edu/arts-sciences/graduate-programs/analytics" />
32 <meta name="twitter:image:src" content="https://myusf.usfca.edu/sites/default/files/styles/panopoly_image_original/public/usf-f-c-500-500.gif?itok=GwUQj06j" />
33 <meta name="twitter:description" content="Big data requires big skills. Drive innovation with this 12 month master's program located in downtown San Francisco." />
34 <meta name="twitter:image:width" content="500" />
35 <meta name="twitter:image:height" content="500" />
36 <meta property="article:published_time" content="2015-06-03T12:10:34-07:00" />
37 <meta property="article:modified_time" content="2017-03-06T11:27:52-08:00" />
38 <meta itemprop="name" content="MS in Analytics - College of Arts and Sciences | University of San Francisco" />
39 <meta itemprop="description" content="Big data requires big skills. Drive innovation with this 12 month master's program located in downtown San Francisco." />
40 <meta name="dcterms:title" content="CAS - MS Analytics" />
41 <meta name="dcterms:creator" content="Michael Routhier" />
42 <meta name="dcterms:description" content="Big data requires big skills. Drive innovation with this 12 month master's program located in downtown San Francisco." />
43 <meta name="dcterms:date" content="2015-06-03T12:10:07:00" />
44 <meta name="dcterms:modified" content="2017-03-06T11:27:08:00" />
45 <meta name="dcterms:type" content="Text" />
46 <meta name="dcterms:format" content="text/html" />
47 <meta name="dcterms:identifier" content="https://www.usfca.edu/arts-sciences/graduate-programs/analytics" />
48 <meta name="dcterms:language" content="und" />
49   <title>MS in Analytics - College of Arts and Sciences | University of San Francisco</title>
50
51 <link rel="apple-touch-icon" sizes="57x57" href="/sites/all/themes/usf/images/favicons/apple-touch-icon-57x57.png">
```

Creating a web page.

Hosting a web page.

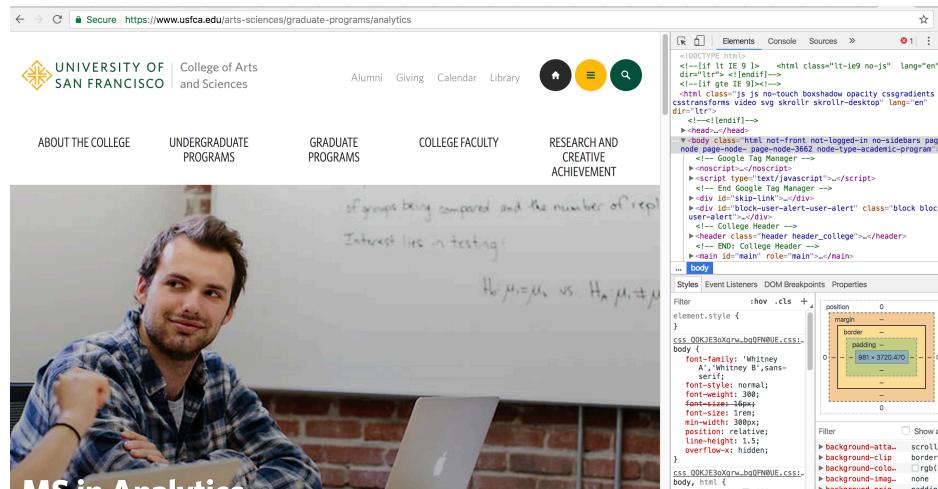
Internet protocol stack.

Collecting user information.

HTML (Hyper Text Markup Language)

Developer Tools

- Chrome : View → Developer → Developer Tools.
- Firefox : Tools → Web Developer → Inspector.



Creating a web page.

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HTML (Hyper Text Markup Language)

Describe the structure and semantic of web pages.

HTML elements are represented by tags.

- Browser uses the tags to render the elements.
- The characters in the brackets indicate its purpose.
- Optionally tags can indicate attribute name and value.
- Ex. **<p lang="en-us"> Blah! </p>**

opening tag

closing tag

HTML (Hyper Text Markup Language)

Structural markup : Describe headings, paragraphs, etc.

- Headings : <h1>, <h2>, <h3>, <h4>, <h5>, <h6>
- Paragraphs : <p>
- Bold, Italic: , <i>
- Superscript, subscript : <sup>, <sub>
- Line breaks, horizontal rules :
, <hr />

Semantic markup

HTML (Hyper Text Markup Language)

Structural markup

Semantic markup : Not intended to affect the structure, but provide extra information including emphasis, quotation, acronyms, etc.

- Other programs such as screen readers or search engines can use this information.
- : indicates it has strong importance.
- : emphasis.
- <q> : quote.
- <blockquote> : longer quotes that take up an entire paragraph.
<p> elements is used inside <blockquote>.
- <abbr>, <acronym>, <cite>, <dfn>, <address>

Example

Write a page about you using structural and semantic markups.

```
<!DOCTYPE html> <!-- Declare that it is HTML5 -->
<html> <!--Anything between <html> and </html> tag is HTML Code -->
<head> <!-- Meta information about the document -->
<title>About Me</title> <!-- Specify a title -->
</head>

<body> <!-- Elemtns in the main browser window -->
<h1>About Me</h1> <!-- Main heading -->

<h2>Contact</h2> <!-- Sub heading -->
<address>
    Email : dwoodbridge {at} usfca {dot} edu <br />
    Post Mail : 101 Howard St. #522, San Francisco, CA 94105 <br />
    Phone : 415-422-4812
</address>

<h2>Biography</h2>
<p> Diane Woodbridge is an assistant professor in the Master of Science in Analytics program at the University of San Francisco. Her research interests include database management systems, data fusion and data mining in various domains including biomedical, geoscience and geospatial remote sensing. Prior to joining USF, Professor Woodbridge was with the scalable analysis and visualization department at Sandia National Laboratories. </p> <!-- A paragraph of text -->
```

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Example

Write a page about you using structural and semantic markups.



About Me

Contact

Email : dwoodbridge {at} usfca {dot} edu
Post Mail : 101 Howard St. #522, San Francisco, CA 94105
Phone : 415-422-4812

Biography

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HTML (Hyper Text Markup Language)

List

- Ordered – a set of steps, a temporal sequence of events, etc.
 - : ordered list declaration.
 - : item in the list
- Unordered
 - : unordered list declaration.
 - : item in the list
- Nested List : You can put a second list inside an element to create a sublist.

HTML (Hyper Text Markup Language)

Link : Allow to move from one page to another

- SOMETHING
- Link from one website to another. – **absolute url**
- Link from one page to another on the same website. – **relative url**
- Link from one part of a page to another part of the same page. – assign an ***id*** and ***href="#id"***
- Link that open in a new tab / window. - ***target="_blank"***
- Link that start up your email program and address a new email to someone, etc. – ***mailto:email_address***

Example

```
<body> <!-- Elemtns in the main browser window -->
<h1>About Me</h1> <!-- Main heading -->
<a href="#contact"> Contact </a> <br />
<a href="#biography"> Biography </a> <br />
<a href="#education"> Education </a> <br />

<figure> <!-- Image elements -->
  <image src="images/diane.jpg" alt="Diane Woodbridge" title="Diane Woodbridge" height=200/>
  <figcaption> Diane Myung-kyung Woodbridge (서명경) </figcaption>
</figure>

<h2 id="contact">Contact</h2> <!-- Sub heading -->
<address>
  Email : <a href="mailto:dwoodbridge@usfca.edu">dwoodbridge {at} usfca {dot} edu </a> <br />
  Post Mail : 101 Howard St. #522, San Francisco, CA 94105 <br />
  Phone : 415-422-4812
</address>

<h2 id="biography">Biography</h2>
<p> Diane Woodbridge is an assistant professor in <a href="https://www.usfca.edu/arts-sciences/graduate-programs/analytics" target="_new">the Master of Science in Analytics program at the University of San Francisco</a>. Her research interests include database management systems, data fusion and data mining in various domains including biomedical, geoscience and geospatial remote sensing. Prior to joining USF, Professor Woodbridge was with the scalable analysis and visualization department at Sandia National Laboratories. </p> <!-- A paragraph of text -->

<h2 id="education">Education</h2>
<ul> <!-- unordered list -->
  <li> PhD, Computer Science, University of California, Los Angeles </li>
  <li> MS, Computer Science, University of California, Los Angeles </li>
  <li> BS, Computer Science and Engineering, Sogang University, South Korea </li>
</ul>
```

Example

Add links on your page.



About Me

[Contact](#)
[Biography](#)
[Education](#)

Contact

Email : [dwoodbridge {at} usfca {dot} edu](mailto:dwoodbridge@usfca.edu)
Post Mail : 101 Howard St. #522, San Francisco, CA 94105
Phone : 415-422-4812

Biography

Diane Woodbridge is an assistant professor in [the Master of Science in Analytics program at the University of San Francisco](#). Her research interests include database management systems, data fusion and data mining in various domains including biomedical, geoscience and geospatial remote sensing. Prior to joining USF, Professor Woodbridge was with the scalable analysis and visualization department at Sandia National Laboratories

Education

- PhD, Computer Science, University of California, Los Angeles
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HTML (Hyper Text Markup Language)

Image

<figure> : HTML 5 has introduced to contain images and an associated caption.

- : You can have more than one image inside <figure> as long as they share the same caption.
 - src – Where to find the image file. (Usually a relative URL.)
 - alt – Text description if you cannot see the image.
 - title – Additional information about the image. Most browsers will display it when the user hovers over the image.
 - height, width – height and width of the image in pixels.
- <figcaption>: Associated caption.

HTML (Hyper Text Markup Language)

Table

- <table> : Create a table.
- <th> : Heading
- <tr> : New row
- <td> : New data
- colspan, rowspan : spanning columns and rows.

HTML (Hyper Text Markup Language)

Form

- Text Input
 - Single-line input
 - Password input
 - Text area
- Choices
 - Radio buttons
 - Checkboxes
 - Drop-down boxes
- Submitting Forms
 - Submit buttons
 - Image buttons
 - Uploading files

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HTML (Hyper Text Markup Language)

Form

- <form> : Create a form.
 - action : The URL on the server that will receive the information in the form when it is submitted.
 - method
 - “get” : short forms for just retrieving data from the server.
 - “post”
 - Allows users to upload a file.
 - When the form is very long.
 - Contains sensitive data (Ex. Password).
 - Adds/deletes data to/from a database.
 - <input> : Create a form controls.
 - type : types of form. Ex. “text”, “password”, “textarea”, “radio”, “checkbox”, “file”, “submit”, “image”

https://www.w3schools.com/html/html_forms.asp

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Additional Topics

- class, id attributes.
- <div> : group a set of elements together.
- <iframe> : A windows within your page.
 - src
 - height
 - width

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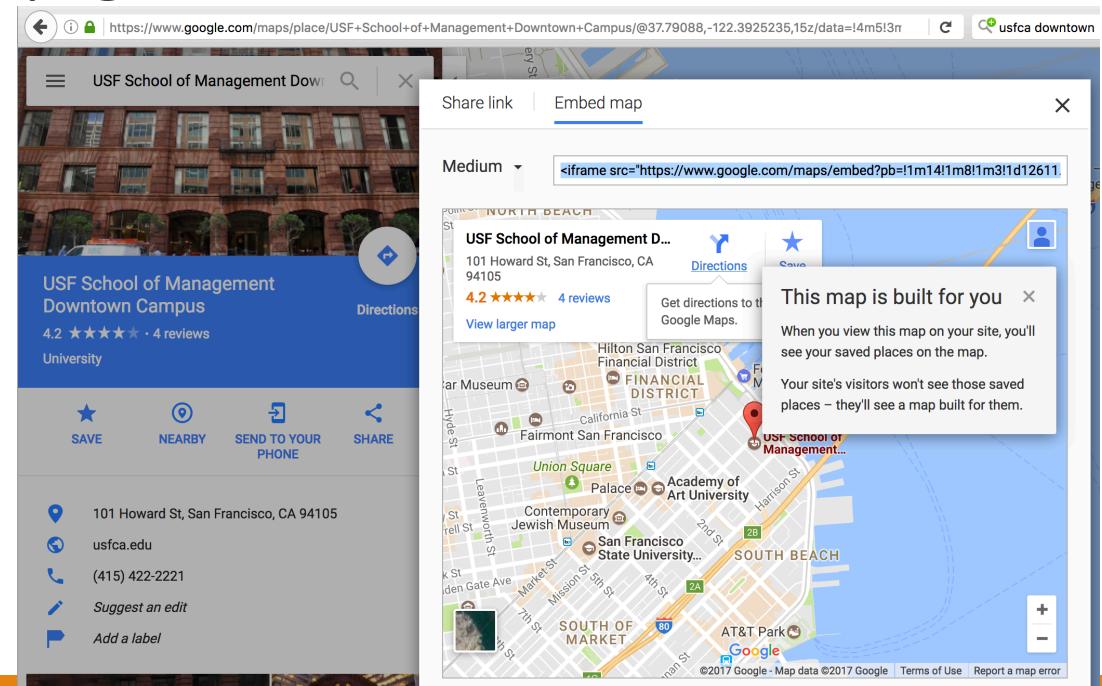
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Example

Add a google map on your page.

- Go to google map.
- Share → Embed map.
- Copy the iframe contents.



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CSS (Cascading Style Sheets)

Create rules that specify how the content of an element should appear.

Diane Woodbridge

- [About Me](#)
- [Publications](#)
- [Awards](#)

About Me



Diane Myung-kyung Woodbridge (서명경)

Biography

Diane Woodbridge is an assistant professor in the Master of Science in Analytics program at the University of San Francisco. Her research interests include database management systems, data fusion and data mining in various domains including biomedical, geoscience and geospatial remote sensing. Prior to joining USF, Professor Woodbridge was with the scalable analysis and visualization department at Sandia National Laboratories.

Education

- PhD, Computer Science, University of California, Los Angeles
- MS, Computer Science, University of California, Los Angeles
- BS, Computer Science and Engineering, Sogang University, South Korea

Contact



Diane Woodbridge

ABOUT ME PUBLICATIONS AWARDS

About Me



Diane Myung-kyung Woodbridge (서명경)

Biography

Diane Woodbridge is an assistant professor in the Master of Science in Analytics program at the University of San Francisco. Her research interests include database management systems, data fusion and data mining in various domains including biomedical, geoscience and geospatial remote sensing. Prior to joining USF, Professor Woodbridge was with the scalable analysis and visualization department at Sandia National Laboratories.

Education

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E THE W

- PhD, Computer Science, University of California, Los Angeles
- MS, Computer Science, University of California, Los Angeles
- BS, Computer Science and Engineering, Sogang University, South Korea

CSS (Cascading Style Sheets)

Understanding CSS

- Imagine that there is an invisible box around every HTML element.
- CSS allows you to control the way that each individual box is presented.
- Example styles
 - Boxes : width, height, borders (color, width and style) background color and images, position.
 - Text : typeface, size, color, Italics, bold, uppercase, lowercase.
 - List, Tables, and Forms.

Example

How many boxes are in your webpage?

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CSS (Cascading Style Sheets)

Extension : .css

Syntax : Selector and declaration pairs.

```
SELECTORS {  
    PROPERTY : VALUE ;  
    PROPERTY : VALUE ;  
}
```

CSS (Cascading Style Sheets)

Selectors

Selector	Meaning	Example
Universal	Applies to all elements	* {}
Type	Matches element names	h1,h2{}
Class	Matches an element whose class attribute has a value that matches the one specified after the period symbol	.note{} p.note{}
ID	Matches an element whose id attribute that matches the one specified after #.	#introduction{}
Others	Include Child, Descendant, Adjacent, General Sibling	See this.

CSS (Cascading Style Sheets)

Properties and values.

- Color
 - Property : color, background-color.
 - Value: RGB, hex codes, color names.
 - Ex. rgb(100,100,100), #ee3e80, Blue.
- Text
 - Property: **font-family**, **font-size**, font-weight, font-style, text-transform, text-decoration, line-height, letter-spacing, text-align.

https://www.w3schools.com/css/css_colors.asp

https://www.w3schools.com/css/css_text.asp

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CSS (Cascading Style Sheets)

Properties and values.

- Box
 - Property: **width, height, min-width, max-width, min-height, max-height, border-width, border-style, border-radius, margin, padding**
- List, Table, and Form
 - Property: list-style-type, list-style, border-spacing, etc.

https://www.w3schools.com/css/css_boxmodel.asp
https://www.w3schools.com/css/css_list.asp

https://www.w3schools.com/css/css_table.asp
https://www.w3schools.com/css/css_form.asp

CSS (Cascading Style Sheets)

Properties and values.

- Layout



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CSS (Cascading Style Sheets)

Properties and values.

- Fixed layout
 - Uses fixed width in pixels.
 - Stay the same regardless of browser size.
- Liquid layout
 - Uses relative units so that the design will stretch to fit the size of the screen.
 - min-width and min-height properties help prevent very wide or narrow windows.

https://www.w3schools.com/cssref/css_units.asp

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CSS (Cascading Style Sheets)

Link a CSS to an HTML page.

- Inside the <head> element with the following attributes.
 - href=“path to the CSS file.”
 - type=“type of document being linked to.” (ex. text/css)
 - rel=“relationship between the HTML and the CSS file.” (ex. stylesheet)
 - Ex. <link href="css/main.css" type="text/css" rel="stylesheet" />

Hosting a Web Page

Web Server

- Host a website.
- Constantly connected to the internet.
- Optimized to send web pages out to people who request them.

Web Hosting Company

- Provide web server services.

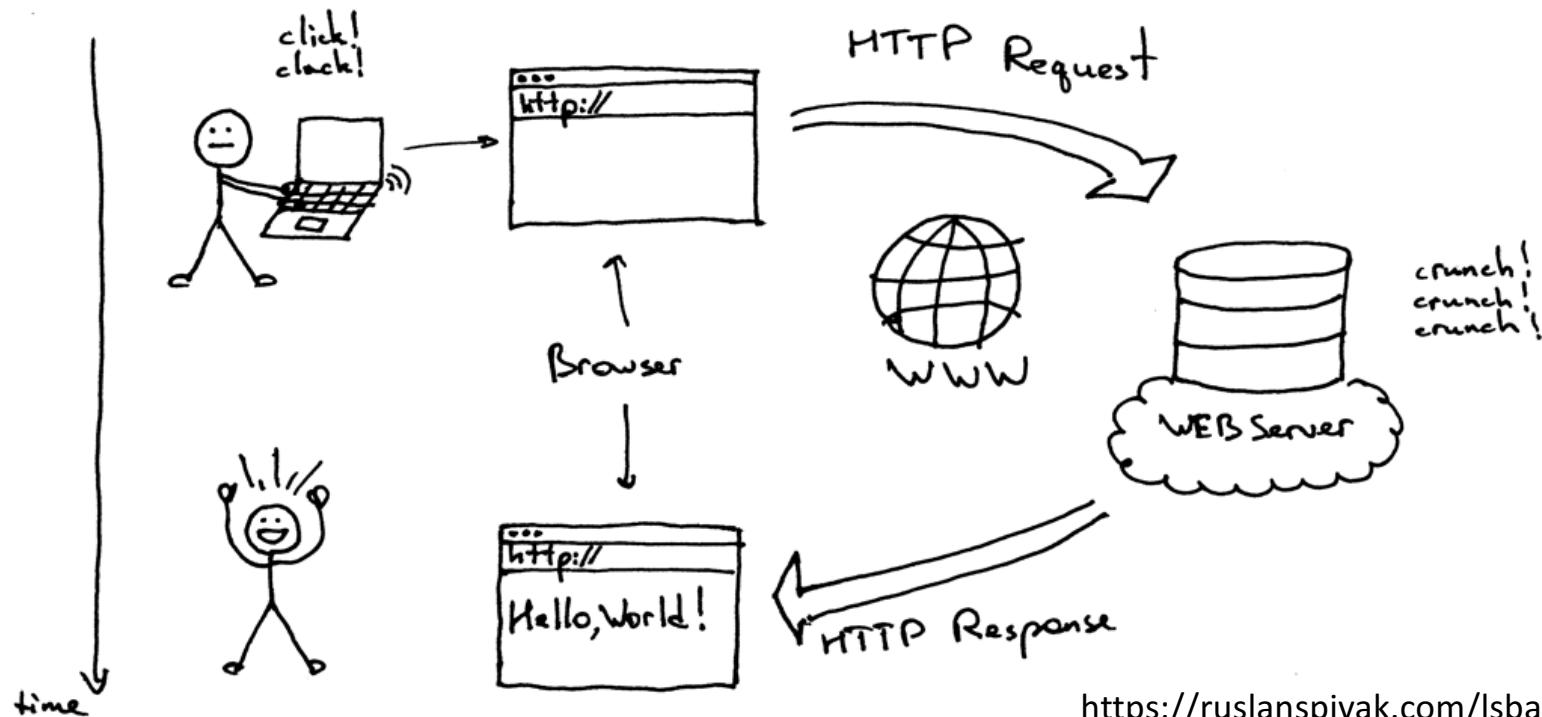
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How it works...



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Internet Protocol Stack

1. Application layer

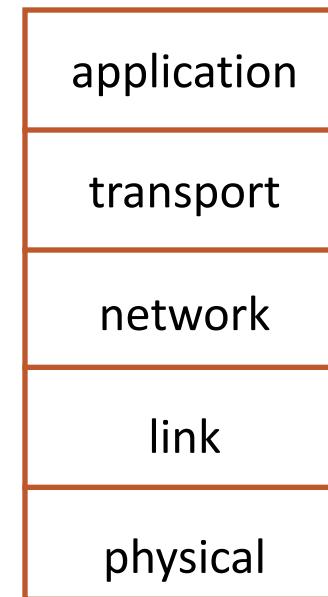
- Support network applications.
- Ex. FTP, SMTP, HTTP, RTSP

2. Transport layer

- Process data transfer.
- Ex. TCP, UDP

3. Network layer

- Route datagrams from source to destination.
- Ex. IP, routing protocols



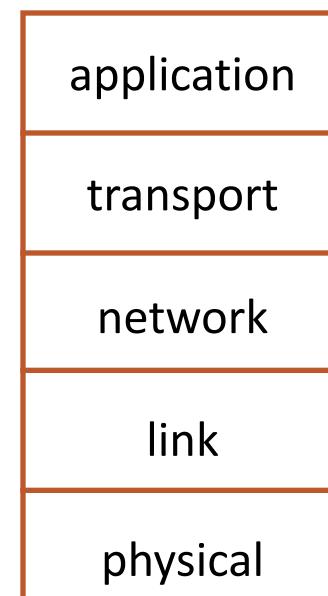
Internet Protocol Stack

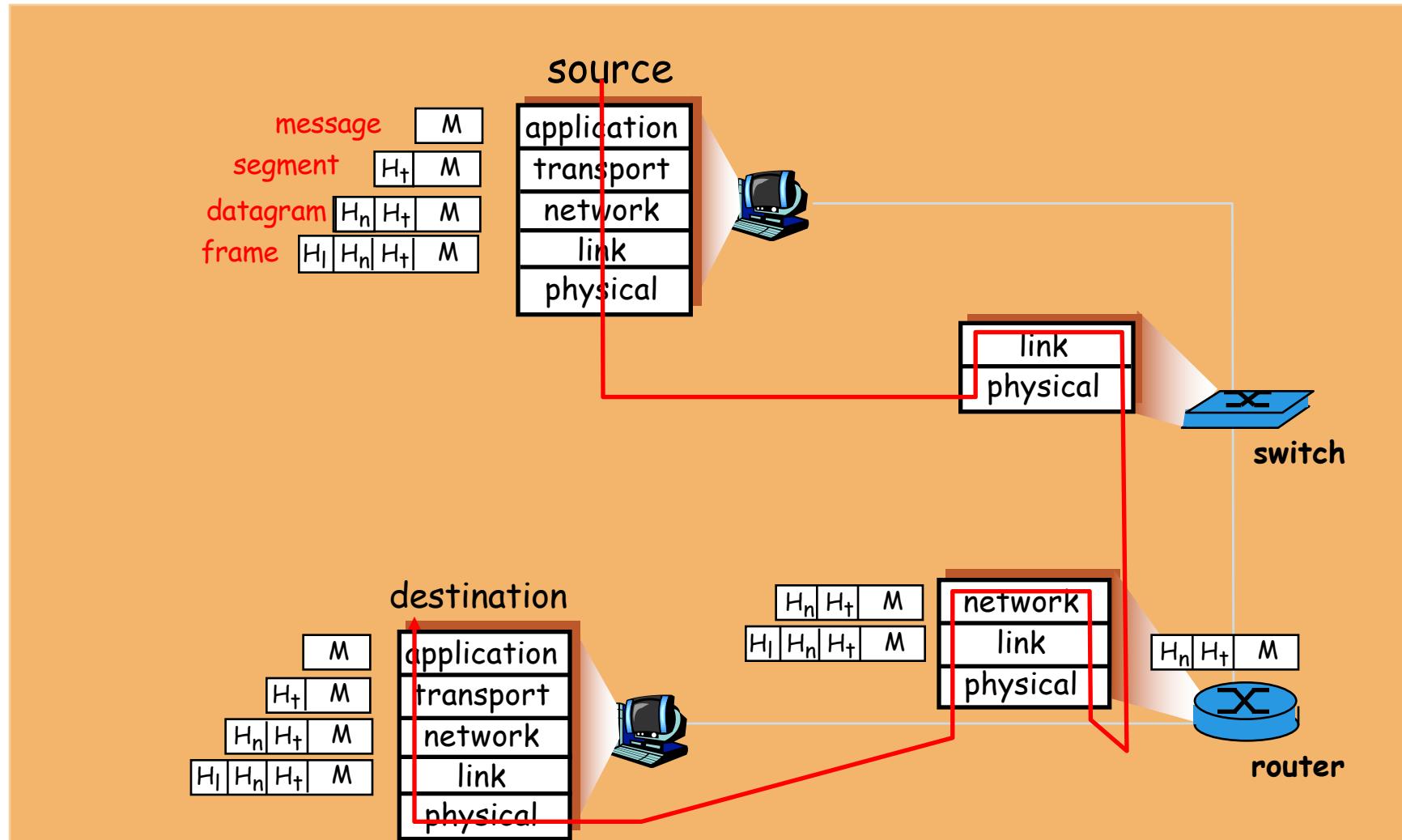
4. Link layer

- Data transfer between neighboring network elements.
- Ex. PPP, Ethernet

5. Physical layer

- Move individual bits within the frame from one node to next.
- Ex. DSL, 802.11 Wifi





Creating a web page.

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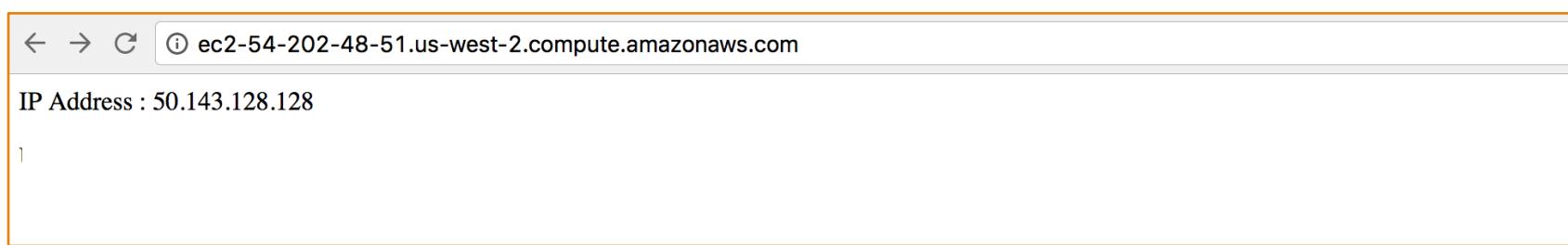
Internet protocol stack.

Collecting user information.

IP Address

32-bit number assigned to each computer and other device connected to TCP/IP network that is used to locate and identify the node in communications with other nodes on the network.

What is my client's IP address?



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Domain Name

Domain Name

- Identification string represents IP resources.

Domain Name Registrar

- Organization or commercial entity that manages the reservation of Internet domain names in a central registry database.

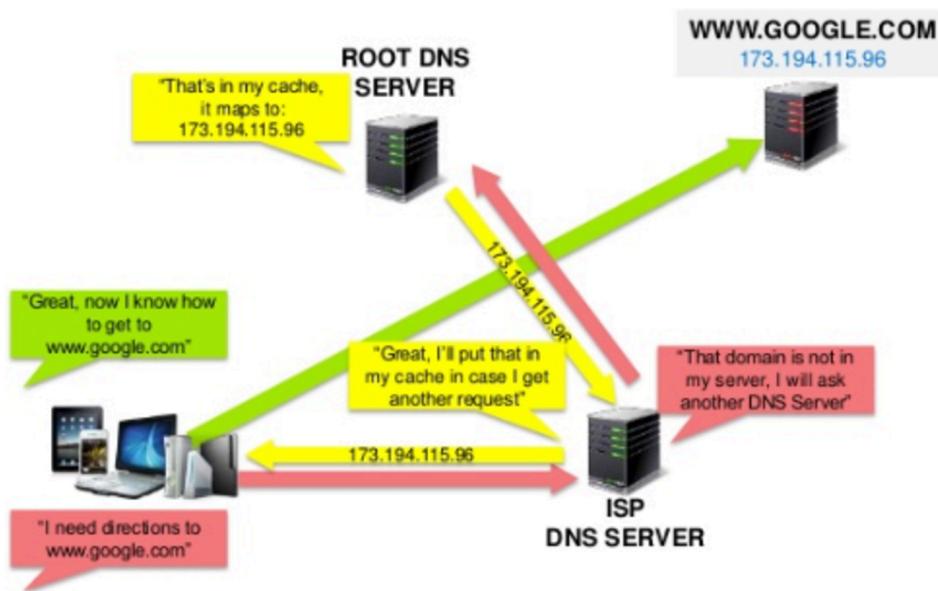
Creating a web page.

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How it works....



DNS (Domain Name System) Servers

- Tell your computer the IP address associated with the requested domain name.

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HTTP (HyperText Transfer Protocol)

Web's application-layer protocol.

Implemented in 1) client and 2) server programs.

Stateless Protocol.



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HTTP (HyperText Transfer Protocol)

HTTP Request Messages

method	Sp	URL	Sp	Version	Cr	If	Request line		
Header field name			:	value		Cr	If		
:							Header Line		
Header field name			:	value		Cr	If		
Cr	If								
Entity Body									

Get /somedir/page.html HTTP/1.1
Host: www.someschool.edu
Connection: close
User-agent:Mozilla/4.0
Accept-language:fr

HTTP (HyperText Transfer Protocol)

HTTP Request Messages

- User agent
 - Placed in the header line.
 - Software that is acting on behalf of a user.
- Format
 - **Mozilla rendering engine** (System details) **Platform** (Browser platform) **Version**

<https://developer.chrome.com/multidevice/user-agent>

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Example



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Example

Retrieve user agent information.

← → ⌂ ⓘ ec2-54-202-48-51.us-west-2.compute.amazonaws.com

User Agent : Mozilla/5.0 (Macintosh; Intel Mac OS X 10_11_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/58.0.3029.96 Safari/537.36

HTTP (HyperText Transfer Protocol)

HTTP Response Messages

Version	Sp	Status Code	Sp	Phrase	Cr	If	Status Line
Header field name	:	value	Cr	If			Header Line
	:						
Header field name	:	value	Cr	If			
Cr	If						
Entity Body							

HTTP/1.1 200 OK
Connection : close
Date : Thu, 25 May 2017
12:00:15 PST
Server: Apache/2.4 (Unix)
Last-Modified : Mon, 8 May
2017 08:00:00 PST
Content-Length : 6821
Content-Type: text/html

HTTP (HyperText Transfer Protocol)

User –Server Interaction : Authorization and Cookies

- While HTTP Server is stateless, often it is desirable for a web site to identify users.
- Authorization - Only authorized user can see the contents.
 - A response HTTP message includes “401 Authorization Required” status code.
 - The client resends the request message with “Authorization : Value”.
- Cookies

HTTP (HyperText Transfer Protocol)

User –Server Interaction : Authorization and Cookies

- While HTTP Server is stateless, often it is desirable for a web site to identify users.
- Authorization
- **Cookies* - Used to gather information about a particular user's behavior.**
 - When the request comes, the web server will create a unique identification number and create an entry in its database and send "Set-Cookie: ID" header.
 - The browser appends the cookie ID and the host name to its cookie file and add "Cookie : ID " on the HTTP request.
 - Privacy issues....

HTTP (HyperText Transfer Protocol)

HTTP Messages

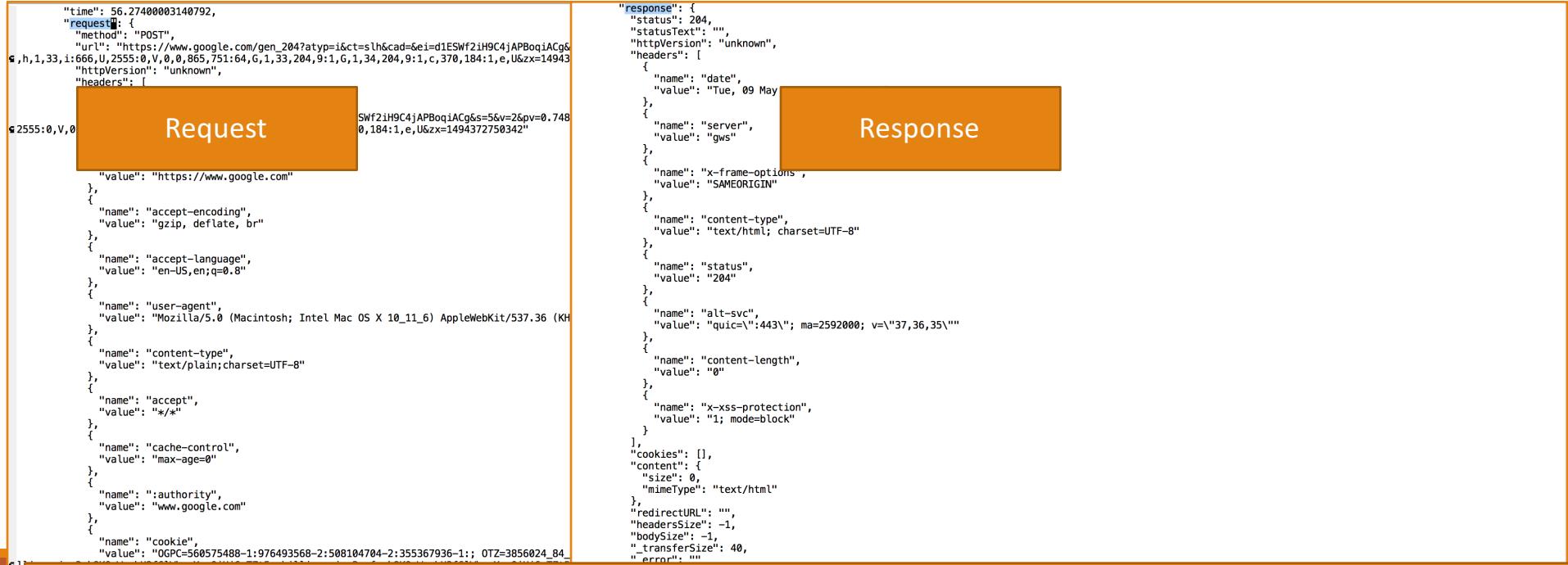
The screenshot shows a web browser window with the URL <https://www.usfca.edu/arts-sciences/graduate-programs/analytics>. The page content features a large image of two people smiling, with text overlay: "MS in Analytics" and "Big data requires big skills.". Below the image is a "MENU" button. The developer tools Network tab is open, showing a waterfall chart and a detailed list of network requests. The requests include various files like CSS, JS, and images, all initiated by "analytics". The total load time is 1.55s.

Name	Status	Type	Initiator	Size	Time
uri?sa=t&ct=j&q=...	200	text/...	Other	48 B	59 ...
gen_204?atyp=...	204	text/...	rs=ACT9...	40 B	56 ...
analytics	200	doc...	Other	11.9...	429...
gen_204?atyp=...	(pen...	text/...	www.goo...	0 B	Pen...
fonts.css	302	text/...	analytics	464...	160 ...
modernizr.custom...	200	script	analytics	(fro...	28 ...
jquery.min.js	200	script	analytics	(fro...	49 ...
js_3TykeRwpejhD...	200	script	analytics	(fro...	29 ...
js_itak592gvygNq..._...	200	script	analytics	9.5...	173 ...
js_dluvi2afS4auk...	200	script	analytics	7.2...	170 ...
js_tD2jEVBs6WY...	200	script	analytics	(fro...	51 m...
css_ikuzOnNgmD...	200	style...	analytics	(fro...	25 ...
css_FBO72jP1KcjO...	200	style...	analytics	(fro...	25 ...
css_QML_zWpxfj...	200	style...	analytics	17 K...	164 ...
css_QQKjE3oXgr...	200	style...	analytics	(fro...	52 ...
js_ResPu7rmWMj...	200	script	analytics	(fro...	29 ...
js_MLVgtzZ1ORq9...	200	script	analytics	(fro...	46 ...
D67E19FB7FC10C...	200	style...	fonts.css	(fro...	12 m...
gtm.js?id=GTM-N...	200	script	analytics	27.8...	84 ...
data-application/x-...	200	font	analytics	0 B	98 ...
data-application/x-...	200	font	analytics	0 B	101 ...
cas-large.svg	200	svg+...	analytics	6.0...	104 ...
icons.svg	200	svg+...	analytics	28.8...	100 ...
data-application/x-...	200	font	analytics	0 B	102 ...
data-application/x-...	200	font	analytics	2.5...	114 ...

Creating a web page. Hosting a web page. Internet protocol stack. Collecting user information.

HTTP (HyperText Transfer Protocol)

HTTP Messages



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Creating a web page.

Hosting a web page.

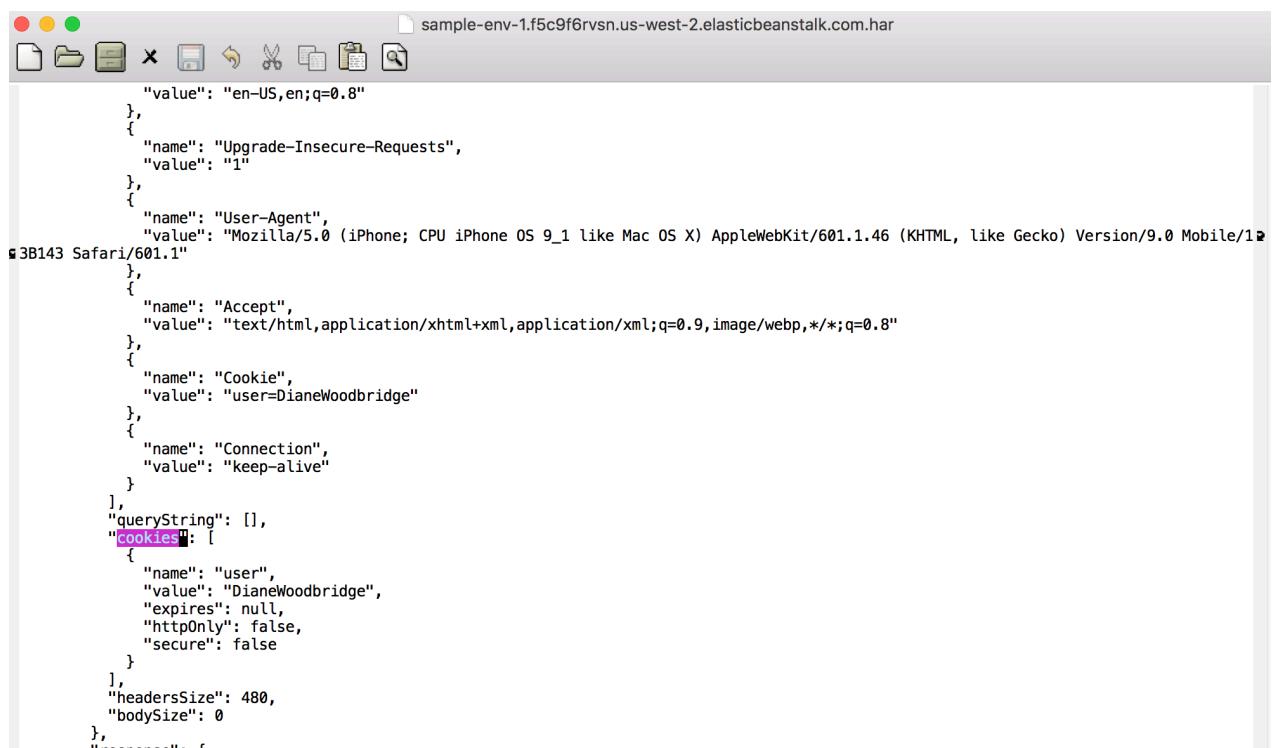
Internet protocol stack.

Collecting user information.

HTTP (HyperText Transfer Protocol)

Cookies

- [Set Cookie](#)
- [Get Cookie](#)



A screenshot of a browser developer tools Network tab. The tab title is "sample-env-1.f5c9f6rvsn.us-west-2.elasticbeanstalk.com.har". The request details show a POST method with a URL of "https://sample-env-1.f5c9f6rvsn.us-west-2.elasticbeanstalk.com/". The headers section includes "User-Agent: Mozilla/5.0 (iPhone; CPU iPhone OS 9_1 like Mac OS X) AppleWebKit/601.1.46 (KHTML, like Gecko) Version/9.0 Mobile/13B143 Safari/601.1", "Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8", and a "Cookie" header with the value "user=DianeWoodbridge". The "cookies" section of the JSON response shows a single cookie object with the name "user", value "DianeWoodbridge", and other properties like "expires" and "httpOnly".

```
        "value": "en-US,en;q=0.8"
    },
    {
        "name": "Upgrade-Insecure-Requests",
        "value": "1"
    },
    {
        "name": "User-Agent",
        "value": "Mozilla/5.0 (iPhone; CPU iPhone OS 9_1 like Mac OS X) AppleWebKit/601.1.46 (KHTML, like Gecko) Version/9.0 Mobile/13B143 Safari/601.1"
    },
    {
        "name": "Accept",
        "value": "text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8"
    },
    {
        "name": "Cookie",
        "value": "user=DianeWoodbridge"
    },
    {
        "name": "Connection",
        "value": "keep-alive"
    }
],
"queryString": [],
"cookies": [
{
        "name": "user",
        "value": "DianeWoodbridge",
        "expires": null,
        "httpOnly": false,
        "secure": false
    }
],
"headersSize": 480,
"bodySize": 0
},
"response": {

```



HTTPS

(HyperText Transfer Protocol Secure)

Communication over Hypertext Transfer Protocol (HTTP) within a connection encrypted by Transport Layer Security or Secure Sockets Layer.

Creating a web page.

Hosting a web page.

Internet protocol stack.

Collecting user information.

What else others collect?

Google

Facebook

Creating a web page.

Hosting a web page.

Internet protocol stack.

Collecting user information.

References

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Duckett, Jon. *HTML and CSS: design and build websites.* John Wiley & Sons, 2011.

Kurose, James F. *Computer networking: A top-down approach featuring the internet, 3/E.* Pearson Education India, 2005.



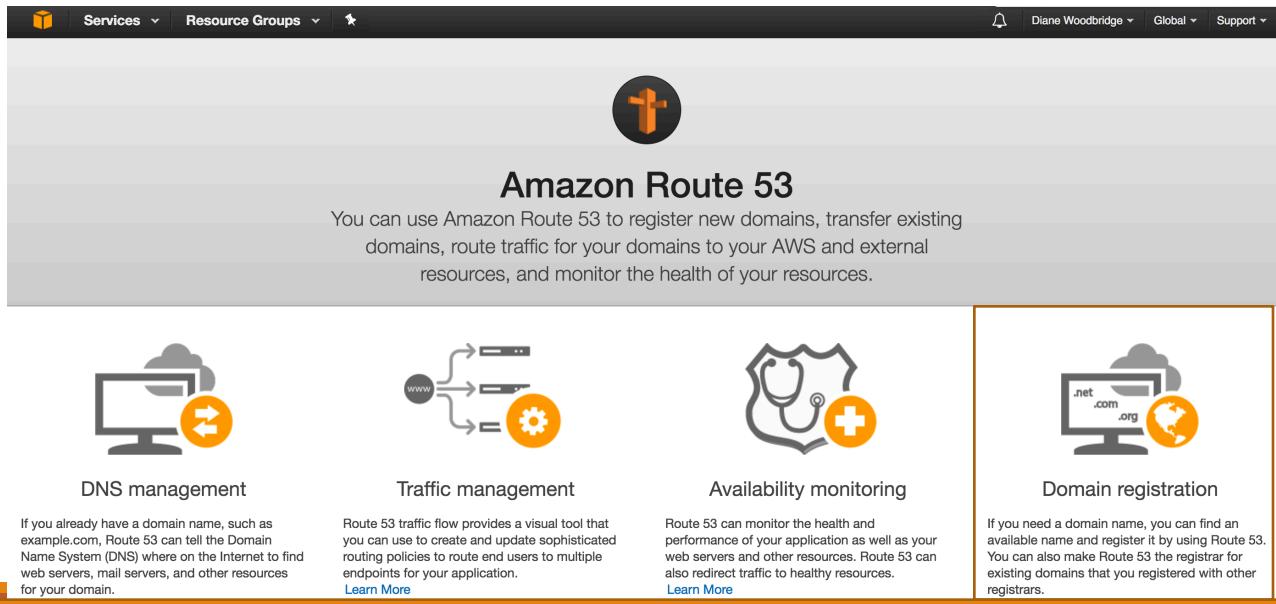
Appendix



AWS Route53

Route53

- Highly available and scalable domain name service (DNS).



The screenshot shows the Amazon Route 53 console. At the top, there's a navigation bar with 'Services', 'Resource Groups', a star icon, and user information for Diane Woodbridge. Below the header is the Amazon logo. The main title 'Amazon Route 53' is centered. A descriptive text block explains that Route 53 can be used to register new domains, transfer existing ones, route traffic for domains to AWS and external resources, and monitor the health of resources. Below this, there are four main service sections: 'DNS management' (icon: monitor with cloud), 'Traffic management' (icon: network diagram with gear), 'Availability monitoring' (icon: shield with stethoscope), and 'Domain registration' (icon: monitor with globe). Each section has a brief description and a 'Learn More' link.

DNS management	Traffic management	Availability monitoring	Domain registration
If you already have a domain name, such as example.com, Route 53 can tell the Domain Name System (DNS) where on the Internet to find web servers, mail servers, and other resources for your domain. Learn More	Route 53 traffic flow provides a visual tool that you can use to create and update sophisticated routing policies to route end users to multiple endpoints for your application. Learn More	Route 53 can monitor the health and performance of your application as well as your web servers and other resources. Route 53 can also redirect traffic to healthy resources. Learn More	If you need a domain name, you can find an available name and register it by using Route 53. You can also make Route 53 the registrar for existing domains that you registered with other registrars. Learn More

Creating a web page.

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AWS Route53

Route53

- Highly available and scalable domain name service (DNS).

The screenshot shows the AWS Domain Search interface. At the top, there's a navigation bar with icons for Services, Resource Groups, and a bell notification. Below the navigation, a sidebar on the left lists three steps: 1: Domain Search, 2: Contact Details, and 3: Review & Purchase. The main content area is titled "Choose a domain name". A search bar contains "woodbridge" and a dropdown menu shows ".com - \$12.00". A blue "Check" button is next to the dropdown. Below this, a section titled "Availability for 'woodbridge.com'" shows a table with one row: "Domain Name" (woodbridge.com), "Status" (Unavailable, indicated by a red X), and "Price /1 Year" (\$12.00). Under "Related domain suggestions", another table lists three available domains: brentwoodbridge.com, oakwoodbridge.com, and wildwoodbridge.com, each with an "Add to cart" button.

Domain Name	Status	Price /1 Year	Action
woodbridge.com	Unavailable	\$12.00	

Domain Name	Status	Price /1 Year	Action
brentwoodbridge.com	Available	\$12.00	Add to cart
oakwoodbridge.com	Available	\$12.00	Add to cart
wildwoodbridge.com	Available	\$12.00	Add to cart

CHANGE THE WORLD FROM HERE

AWS Route53

Route53

- Highly available and scalable domain name service (DNS).

The screenshot shows the AWS Route53 console interface. The top navigation bar includes 'Services' (with a dropdown arrow), 'Resource Groups' (with a dropdown arrow), and other global navigation links like 'Diane Woodbridge', 'Global', and 'Support'. On the left, a sidebar menu lists various options: Dashboard, Hosted zones, Health checks, Traffic flow, Traffic policies, Policy records, Domains, Registered domains, and Pending requests (which is currently selected). The main content area has a title 'Status of new domain registrations and domain transfers'. It displays a table with one row of data:

Domain Name	Status	Timestamp
dianewoodbridge.com	Domain registration in progress	May 15, 2017 10:01 UTC-7

Below the table, a note says: 'Domains that we're registering or transferring for you are listed below. When the registration or transfer is complete, the domain appears on the [Registered domains](#) page.' There are also refresh and help icons at the bottom right of the main content area.

Creating a web page.

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AWS Route53

Route53

- Highly available and scalable domain name service (DNS).

The screenshot shows the AWS Route 53 console. At the top, there's a navigation bar with 'Services', 'Resource Groups', a star icon, and user information for Diane Woodbridge. Below the header is the Amazon Route 53 logo and the title 'Amazon Route 53'. A descriptive text block explains that Route 53 can be used to register new domains, transfer existing ones, route traffic for domains to AWS and external resources, and monitor the health of resources. Below this, there are four main service cards:

- DNS management**: Shows a computer monitor with a cloud icon. Description: If you already have a domain name, such as example.com, Route 53 can tell the Domain Name System (DNS) where on the Internet to find web servers, mail servers, and other resources for your domain. [Learn More](#)
- Traffic management**: Shows a network diagram with a central node labeled 'www' connected to multiple paths leading to a gear icon. Description: Route 53 traffic flow provides a visual tool that you can use to create and update sophisticated routing policies to route end users to multiple endpoints for your application. [Learn More](#)
- Availability monitoring**: Shows a shield with a stethoscope and a plus sign. Description: Route 53 can monitor the health and performance of your application as well as your web servers and other resources. Route 53 can also redirect traffic to healthy resources. [Learn More](#)
- Domain registration**: Shows a computer monitor with a cloud icon and a globe. Description: If you need a domain name, you can find an available name and register it by using Route 53. You can also make Route 53 the registrar for existing domains that you registered with other registrars.

At the bottom, there are four orange buttons with white text:

- Creating a web page.
- Hosting a web page.
- Internet protocol stack.
- Collecting user information.

AWS Route53

Route53

- Highly available and scalable domain name service (DNS).

The screenshot shows the AWS Route 53 dashboard. At the top, there's a navigation bar with 'Services', 'Resource Groups', and user information ('Diane Woodbridge', 'Global', 'Support'). Below the navigation is a sidebar with links like 'Dashboard', 'Hosted zones' (which is selected and highlighted in orange), 'Health checks', 'Traffic flow', 'Traffic policies', 'Policy records', 'Domains', 'Registered domains', and 'Pending requests'. The main content area features a large icon of a computer monitor with a cloud above it, symbolizing DNS translation. Below the icon, a paragraph explains what Route 53 is: 'Amazon Route 53 is an authoritative Domain Name System (DNS) service. DNS is the system that translates human-readable domain names (example.com) into IP addresses (192.0.2.0). With authoritative name servers in data centers all over the world, Route 53 is reliable, scalable, and fast.' It also mentions that if you have a domain name, Route 53 can tell the DNS where to find web servers, mail servers, and other resources. A 'Create Hosted Zone' button is located at the bottom of this section. At the very bottom of the page, there's a footer with the text 'Route 53 documentation and support' and the Amazon logo with the tagline 'CHANGE THE WORLD FROM HERE'.

AWS Route53

Route53

- Highly available and scalable domain name service (DNS).

The screenshot shows the AWS Route53 console interface. On the left, a sidebar lists navigation options: Dashboard, Hosted zones (which is selected and highlighted in orange), Health checks, Traffic flow, Traffic policies, Policy records, Domains, Registered domains, and Pending requests. The main content area has a header with buttons for 'Back to Hosted Zones', 'Create Record Set' (which is blue and bold), 'Import Zone File', 'Delete Record Set', and 'Test Record Set'. Below this is a search bar labeled 'Record Set Name' with a placeholder 'Any Type' and two checkboxes for 'Aliases Only' and 'Weighted Only'. A message on the right says 'To get existing...'. The main table displays four record sets:

Name	Type	Value	Evaluate Target Health	Health
dianewoodbridge.com.	A	ALIAS sample-env-3.ggp9ry9c.us-west-2.elasticbeanstalk.com	No	-
dianewoodbridge.com.	NS	ns-1360.awsdns-42.org. ns-278.awsdns-34.com. ns-756.awsdns-30.net. ns-1809.awsdns-34.co.uk.	-	-
dianewoodbridge.com.	SOA	ns-278.awsdns-34.com. awsdns-hostmaster.amazon.com.	-	-
www.dianewoodbridge.com.	A	ALIAS dianewoodbridge.com. (z2tsxjh45btxl5)	No	-

An orange callout box on the right contains the following bullet points:

- Link your webpage URL, Elastic IP on it.
- Copy the DNS server info and use it to your registrar.

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AWS Route53

Route53

- Highly available and scalable domain name service (DNS).

The screenshot shows the AWS Route53 interface for managing registered domains. The top navigation bar includes 'Services' (dropdown), 'Resource Groups' (dropdown), a search bar, and links for 'Diane Woodbridge', 'Global', and 'Support'. The left sidebar has a 'Domains' section with 'Registered domains' selected (highlighted in orange). Other options include 'Dashboard', 'Hosted zones', 'Health checks', 'Traffic flow', 'Traffic policies', 'Policy records', and 'Pending requests'. The main content area shows details for the domain 'dianewoodbridge.com'. Key information includes:

- Domain:** dianewoodbridge.com
- Transfer lock:** Disabled (enable)
- Registered on:** 2017-05-15
- Authorization code:** [Generate](#)
- Expires on:** 2018-05-15 ([extend](#))
- Domain name status code:** ok
- Auto renew:** Enabled ([disable](#))
- Tags:** View and manage tags for your domains using [Tag editor](#)

On the right, there's a 'Copy from Hosted Zones' section with a 'Name servers' table:

Name servers	ns-278.awsdns-34.com ns-1360.awsdns-42.org ns-756.awsdns-30.net ns-1809.awsdns-34.co.uk Add or edit name servers
--------------	----------------------------------------------------------------------------------------------------------------------------------------------

Other sections shown include 'Registrant contact' (Diane Woodbridge, dwoodbridge@usfca.edu, +1.3109242952, 101 Howard St. Suite 522, San Francisco CA 94105, US) and 'Administrative contact' (Diane Woodbridge, dwoodbridge@usfca.edu, +1.3109242952, 101 Howard St. Suite 522, San Francisco CA 94105, US). A 'Technical contact' section is also present.