

An Introduction to Web Scraping

Derived from:

- <https://gist.github.com/jonathanmorgan/1373860ed08fe8ecc319>
(<https://gist.github.com/jonathanmorgan/1373860ed08fe8ecc319>).
- <https://github.com/dssg/hitchhikers-guide/blob/master/curriculum/basic-web-scraping/Scraping.ipynb>
(<https://github.com/dssg/hitchhikers-guide/blob/master/curriculum/basic-web-scraping/Scraping.ipynb>)
- Ryan Mitchell's [Web Scraping with Python](http://shop.oreilly.com/product/0636920034391.do) (<http://shop.oreilly.com/product/0636920034391.do>)

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Introduction

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APIs are great, but lots of useful information on the Internet is not neatly packaged in an API. Useful information and information sources are embedded in HTML all over the Internet, and you can use Python to discover and collect data directly from web sites. HTML, the language of the world wide web, is much less precise and well-defined than a good API, however, and so the programs you write to do this have the potential to be significantly more complicated than API calls.

Below, we introduce you to making network requests using HTTP, then we show how to use HTTP to scrape data from web pages using Python's requests and BeautifulSoup modules.

Note: Before we begin, be advised that before you scrape a web site, you should read its terms of service and make sure that scraping is permitted. Some sites will not want you to scrape their content, and when a site makes that clear in its terms of service, you should respect their wishes. In addition, even if a site is OK with you scraping their pages, it is polite to spread your requests at least a few seconds apart, so that you don't put too much load on their servers.

Learning Objectives

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Learning objectives:

- **Become familiar with the basics of web scraping.** Understand the structure of websites that require scraping (HTML, CSS, and javascript) and the tools Python provides (requests, BeautifulSoup, selenium).
- **Learn the tools used to interact with network-based resources.** Explore the the tools for talking directly with servers over HTTP connection, and then understand how to choose a tool.
- **Become familiar with methods for different types of web scraping.** Understand some general classes of scraping one often has to do, and how to go about each.

Topics

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Outline of topics covered in this notebook:

- Brief overview of technical details of web technologies one uses when scraping (HTML, CSS, Javascript).
- Intro to Python scraping tools (requests, BeautifulSoup, Selenium, webkit etc.)
- Common scraping tasks and how you accomplish them.

Setup - Load Python packages

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```
In [4]: # interacting with websites and web-APIs
import re # regular expressions module
import requests # easy way to interact with web sites and services
import json # read/write JavaScript Object Notation (JSON)
from bs4 import BeautifulSoup
from bs4 import __version__ as bs4_version

import pandas as pd # to write out our final dataset

# from selenium import webdriver
# browser = webdriver.Firefox()
```

```
In [6]: print("Package versions")
print("requests: {}".format(requests.__version__))
print("json: {}".format(json.__version__))
print("BeautifulSoup: {}".format(bs4_version))
print("Pandas: {}".format(pd.__version__))
```

```
Package versions
requests: 2.13.0
json: 2.0.9
BeautifulSoup: 4.6.0
Pandas: 0.19.2
```

HTML

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HTML is one of the three languages in which the World Wide Web is written, and contains most of the information about the structure and organization of a webpage. This means that when we scrape websites, we are most concerned with examining the HTML, rather than the CSS (language for style and aesthetics) or the Javascript (language for interaction). HTML is made up of elements or tags (like `<table>`, `<p>`, and `<h1>`), some of which have attributes (`Link to the New York Times`).

When you scrape web pages for data, you'll be requesting and processing HTML documents. An HTML document generally has a standard structure, and a set of common tags that have specific, well-known uses. HTML has also been around a long time and used by a lot of people, however, and so it tends to only be uniform to a point. Where a good API is simple and consistent, HTML on the web can be all over the place (sometimes called 'tag soup'), from hand-coded documents from the early Internet that aren't even internally consistent to modern sites that don't have HTML at all, just javascript that builds the web page as it runs in the browser.

There is substantial variety, but most HTML shares a common structure and uses a small set of tags to hold key information.

HTML and web page structure

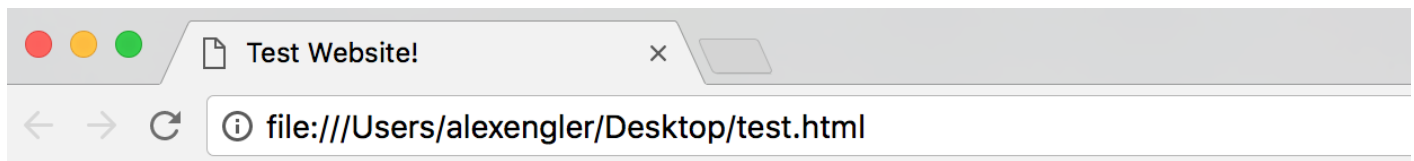
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Includes information from: Mozilla's Introduction to HTML: <https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/Introduction> (<https://developer.mozilla.org/en-US/docs/Web/Guide/HTML/Introduction>).

An HTML document has a standard structure that has been consistent since the start of the Internet:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Test Website!</title>
    <meta name="author" content="Alex Engler"/>
    <meta name="description" content="This is a simple example of an HTML website"/>
  </head>
  <body>
    <h1>Main heading in my document</h1>
    <!-- Note that it is "h" + "1", not "h" + the letters "one" -->
    <p>Look Ma, I am coding <abbr title="Hyper Text Markup Language">HTML</abbr>.</p>
  </body>
</html>
```

If you were to copy the above code and into a text file with suffix `.html`, you could open it in a web browser and you would see the image below.



Main heading in my document

Look Ma, I am coding HTML.

You might be able to see some connections between the image above and the HTML code. Here's an explanation of the tags in the code and what they do.

- The document always starts with a DOCTYPE element that tells the browser what version of HTML the document uses.
- The outer element is always `<html>`, and can contain a "lang" attribute that specifies the language of the page's text. Note that the page starts with an opening `<html>` tag and ends with a closing `</html>` tag. Many HTML tags follow this opening and closing pattern, though not all.
- There are always two elements inside `<html>`:
 - `<head>`, where meta-information about the document is stored, such as:
 - the `<title>` of a page, which you can see displayed in the image on the tab at the top of the browser.
 - `<meta>` tags which include information about the webpage, in this case the author and a description.
 - references to the Javascript (JS) and Cascading Style Sheet (CSS) files used by the page, though we have none in our simple example.
 - `<body>`, where the (generally visible) contents of the document are stored. The `<body>` element contains the actual HTML turned by a browser into the web page you see. It can contain as little or as much HTML as is needed to output a web page's data (from the above simple example to thousands of lines of code).
 - the `<h1>` opening tag and `</h1>` closing tag convert the text within it into the bolded header.
 - the `<p>` opening tag and the `</p>` closing tag convert the text within it into the paragraph text.
 - Comments start with `<!--`, end with `-->`, can span multiple lines, and can be located anywhere in a document.
 - Indentation can be helpful for understanding HTML, but it is not required, nor is it required to be consistent as in Python.

Useful HTML tags

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The following attributes and tags tend to be particularly useful when one is scraping or crawling web pages.

Note: It is a best practice to always make HTML tag names all lower case, but you often will find older pages where the case is mixed or all caps.

- **<div>** and **** - `<div>` and `` tags are the most common containers in modern web pages. They often have "name", "id" and "class" attributes that allow one to easily retrieve them from an HTML document. Example:

```
<div name="portant_stuff" id="portant_stuff" class="portant_stuff">
  <!-- Place cat picture here. -->
</div>
```

- **heading elements (<h1>, <h2>, <h3>, ...)** - Heading elements are often used to hold header text at the top of sections of a web page, sometimes just inside `<div>` tags that wrap different sections of a document. This makes them useful for targeting a parser to a specific region of an HTML document.
- **<p>** - **paragraph tags** (`<p>`) generally hold body text, but in the past have also been used like a `<div>` or ``, wrapping logical sections of a page, not just discrete paragraphs.
- **<a>** - **anchor tags** are used to create links within a web page. Any time you see a clickable link on a page, in the HTML source, that link is wrapped in an anchor tag. Example:

```
<a href="http://data.jrn.cas.msu.edu/sourcenet/admin">sourcenet admin</a>
```

- **<table>, <tr>, and <td>** - HTML tables are a common way to structure data. A `<table>` is made up of rows (`<tr>`), and rows are made up of columns (`<td>`). Example:

```
<table>
  <tr>
    <td>Column 1!</td>
    <td>Column 2!</td>
  </tr>
  <tr>
    <td>Value 1!</td>
    <td>Value 2!</td>
  </tr>
</table>
```

- **, , and ** - lists, both unordered (`` - bulleted) and ordered (`` - with leading numbers), are made up of list items (``).
- **<form>, <input>, <select>, and <textarea>** elements - `<form>`, `<input>`, `<select>`, and `<textarea>` elements are used to create web forms that users can enter information into, then submit to a web page. For sites that dole out piecemeal access to information via a search or filter page, you can often figure out how to talk with the server by creating and submitting form submissions. You'll still need to parse the information you want from the HTML response, but it is often better than having to grab all the data by hand.

Jupyter Notebooks and %%HTML

Jupyter Notebooks can render HTML if you start the cell with the `%%HTML`. Thus you can test your understanding of simple HTML tags without leaving this environment. For instance, see if you can change the list below from an unordered list to an ordered list. Can you add another list item? Can you bold or italicize one item?

```
In [7]: %%HTML

<h2>Testing HTML in Jupyter</h2>
<ul>
  <li>Item One</li>
  <li>Item Two</li>
</ul>
```

Testing HTML in Jupyter

- Item One
- Item Two

Useful HTML attributes

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It is a best practice to make attribute names all lower case, and to always place quotation marks around attribute values, but it is not required by the HTML specification. In older pages you might see mixed-case or all caps attribute names, and attribute values that are not enclosed in quotation marks. Attributes that can be used to find particular elements within an HTML document:

- **id, name** - `id` and `name` attributes can be applied to any element, and a given value is often (but not always) only applied to one tag within a page, making them good for finding specific tags within a document.
- **class** - The `class` attribute is often used to group similar elements together. A web developer could then refer to this class in order to select or makes changes to all of the elements with that class attribute.

```
In [8]: %%HTML
<style>
  p.important {color: #1976d2}
</style>

<p>Here is some text.</p>
<p class="important"> Here is text we want to emphasize.</p>
<p>More text, but it is not a big deal.</p>
<p class="important">This text is important again.</p>
```

Here is some text.

Here is text we want to emphasize.

More text, but it is not a big deal.

This text is important again.

Getting, parsing and interacting with HTML

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In order to scrape or crawl a web site, you will need to do the following:

- Make an HTTP request to the server for the resource you want to work with. If you are trying to interact with a form, this will include parameters to match the inputs of the form you are trying to interact with.
- Take the body of the HTTP response (the HTML for the page you want to scrape or crawl) and use a python library to parse the HTML into a form that is easy to search, filter, and interact with.
- Interact with the parsed HTML to retrieve the information you care about, then do with it what you will.

Using Python and requests to get a webpage's HTML

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There are a number of different ways to retrieve HTML pages for scraping or crawling. For this exercise, we'll be using the `requests` Python library. `requests` is a good balance between ease of use and ability to deal with complicated HTML. It can deal with almost any HTML you throw at it and supports sessions and cookies, but it doesn't support Javascript, so extremely dynamic web pages retrieved by it will not end up giving you the HTML you'd see in a browser.

For more complicated pages, you have a couple of options that are beyond the scope of this notebook:

- **PhantomJS (webkit)** - Webkit is the browser engine that Apple's OS X and iOS Safari browsers use. PhantomJS is a headless implementation of a webkit browser that can be installed and used inside Python (More information: *PhantomJS home* - <http://phantomjs.org/> (<http://phantomjs.org/>)).
- **selenium** - Selenium lets you to Python code that control an actual browser on your computer - Firefox, Chrome, IE, or Opera. Selenium is powerful. It also can be complicated to set up and use. For complex, javascript based sites, it is often your only straightforward option, however (More information: *Selenium Home* - <http://docs.seleniumhq.org/> (<http://docs.seleniumhq.org/>)).

HTTP Methods with Requests

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Python's `requests` exposes methods for each of the HTTP request methods:

Use the HTTP GET method To read a part of a resource. Most usually returns XML or JSON data.

- `GET = requests.get('https://example.gov/to_get')`

Use the HTTP POST method To create a new resource:

- `POST = requests.post('https://example.gov/to_post', data={'key': 'value'})`

Use the HTTP PUT method To update a resource:

- `PUT = requests.put('https://example.gov/to_put', data={'key': 'value'})`

Use the HTTP DELETE method To delete a resource:

- `DELETE = requests.delete('https://example.gov/to_delete')`

And at its most basic, `requests.get` lets you submit a request by passing a string URL to the appropriate method and returns a parsed response object that makes it easy to get at response code, header variables, and the body of the request. Let's explore a practical example.

Finding Data to Scrape

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Intuitively, you are going to be able to scrape any data that has some consistent structure within an HTML page. An easy first example of this is grabbing data within an HTML table (<table> elements). However, as you'll see, the concepts that work here extend to any data stored within a recognizably consistent pattern of HTML tags. To get started, we're going to grab the below table of data from the Chicago Workforce Board.

[!Image of Workforce Board Site \(03-images/site.png\)](#)

```
In [9]: # We'll start by just copying the URL from our web browser and saving it
        # as a variable:

        ## The website:
        url = "http://www.workforceboard.org/job-seekers/"

        response = requests.get(url)

        print(type(response))

        <class 'requests.models.Response'>
```

Response Object

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This returns a [response object](http://docs.python-requests.org/en/v1.0.0/api/#requests.Response) (<http://docs.python-requests.org/en/v1.0.0/api/#requests.Response>), which has a number of attributes that tell us about the success of the HTTP request and the content of the server's response.

For instance, we can check the [status code](https://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html) (<https://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html>) of the HTTP request. Codes in the 200's generally mean a successful request, whereas codes in the 400's and 500's typically indicate an error. We can also ask about exactly what was returned and how that [data is encoded](http://kunststube.net/encoding/) (<http://kunststube.net/encoding/>).

```
In [10]: # Check the status code (we use str() since this returns an int:
        print("Status code " + str(response.status_code) )
        ## Returns a status of 200 - that's good.

        # Header - Content Type
        print("Content type " + response.headers['content-type'])
        ## We were expecting HTML, so that's good too

        Status code 200
        Content type text/html; charset=utf-8
```

```
In [11]: # We can also print out all the text from the response:  
print(response.text)
```

```

<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en">
<head><title>
    Career Resources | Chicago Cook Workforce Partnership | Career
    Resources
</title><meta charset="UTF-8" /><meta name="viewport" content="width=device-width, initial-scale=1.0" /><meta http-equiv="X-UA-Compatible" content="IE=Edge" /><link href="/css/reset.css" rel="stylesheet" media="screen" /><link href="/css/screen.css" rel="stylesheet" media="screen" /><link rel="shortcut icon" href="/images/cwic.ico" type="image/x-icon" />
<script type="text/javascript" src="//ajax.googleapis.com/ajax/libs/jquery/1.10.2/jquery.min.js"></script>

<script src="/scripts/jquery.dropdownPlain.js" type="text/javascript"></script>
<script src="/scripts/respond.min.js" type="text/javascript"></script>
<script type="text/javascript">
    $(document).ready(function () {
        var watermark = 'search';
        $('#searchboxid').blur(function () {
            if ($(this).val().length == 0)
                $(this).val(watermark).addClass('watermark');
        }).focus(function () {
            if ($(this).val() == watermark)
                $(this).val('').removeClass('watermark');
        }).val(watermark).addClass('watermark');
    });
</script>
</head>
<body class="loading">

    <div id="wrapper">
        <noscript>Please note: your browser does not support javascript therefore some features of this website may not be available.</noscript>

        <div id="header" class="xblock">
            <div id="topnav" class="page-width">
                <div id="topnavlinks">
                    <ul><li><a href="/about-us/">About Us</a></li><li><a href="/a/sitemap/">Sitemap</a></li><li><a href="/a/search/">Search</a></li><li class="lastlink"><a href="/a/contact/">Contact</a></li></ul>
                </div>
            </div> <!-- topnav -->

        </div> <!-- header -->

        <div id="body-wrapper" class="xblock xpush">

            <div id="logoblock" class="page-width">
                <a href="/" id="logo"></a>
                <div id="tagline">

```

```

        </div>
        <div class="clearboth"></div>
    </div> <!-- logoblock -->

    <div id="primarynav" class="page-width">
        <ul class="dropdown"><li><a href="/about-us/">About Us</a><ul class="submenu"><li><a href="/about-us/workforce-plans/">Workforce Plans</a></li><li><a href="/about-us/our-board/">Our Board</a></li><li><a href="/about-us/our-team/">Our Team</a><ul class="submenu"><li><a href="/about-us/our-team/our-staff/">Our Staff</a></li></ul></li><li><a href="/about-us/funders-and-partners/">Funders and Partners</a><ul class="submenu"><li><a href="/about-us/funders-and-partners/grants/">Grants</a></li></ul></li><li><a href="/about-us/funding/">Funding</a><ul class="submenu"><li><a href="/funding/request-for-proposals/">Request for Proposals</a><ul class="submenu"><li><a href="/funding/request-for-proposals/rfp-archives/">RFP Archives</a></li></ul></li><li><a href="/job-seekers/">Job Seekers</a><ul class="submenu"><li><a href="/job-seekers/american-job-centers/">American Job Centers</a></li></ul></li><li><a href="/businesses/">Businesses</a></li><li><a href="/reports/">Reports</a><ul class="submenu"><li><a href="/reports/labor-market-data/">Labor Market Data</a><ul class="submenu"><li><a href="/reports/labor-market-data/where-are-the-jobs/">Where Are the Jobs?</a></li><li><a href="/reports/labor-market-data/target-occupation-profiles-(tops)/">Target Occupation Profiles (TOPS)</a></li></ul></li><li><a href="/reports/archived-reports/">Archived Reports</a></li></ul></li><li><a href="/youth-programs/">Youth Programs</a><ul class="submenu"><li><a href="/youth-programs/wioa-implementation/">WIOA implementation</a></li><li><a href="/youth-programs/opportunityworks/">Opportunity Works</a></li></ul></li><li><a href="/employment/">Employment</a></li><li><a href="/contact-us/">Contact Us</a></li><li><a href="/grantees/">Grantees</a></li></ul>&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;<a href="https://twitter.com/ChiCookWorks" target="_blank"></a>

        </div> <!-- primary -->

    <div class="clearboth"></div>

    <div id="contentbody" class="page-width">

        <div id="breadcrumb"><p><strong>You are here: </strong></p><ul><li><a href="/">Home Page</a> &rsquo;</li><li>Job Seekers</li></ul></div>

        <div id="sidebarcol"><div id="submenu"><h2>Section Navigation</h2><ul><li class="lastlink"><a href="/job-seekers/american-job-centers/">American Job Centers</a></li></ul></div><div id="sbpanel"><div id="sbpaneltop"><div id="sbpanelbot"><h3>Related Services</h3><p><a href="http://www.illinoisworknet.com/vos_portal/?partner" target="_blank">Illinois Worknet</a>: For the purpose of expanding economic opportunity, the Illinois workNet® Portal and Program utilizes partnerships and technology to expand seamless and real-time access to workforce development resources aimed at individuals, businesses and workforce professionals.</p><p><a href="http://weconnectchicago.org/" target="_blank">Connect Chicago</a>: Connect Chicago is a loose network of more than 250 places in t

```

he city where internet and computer access, digital skills training, and online learning resources are available—for free.</p>

```
</div></div></div><div id="sidebareventblock"><h2>Upcoming Events</h2><p> </p><div class="eventdate"><div class="dateblock"><div class="month">Dec</div><div class="day">14</div></div><div class="eventdata"><div class="etitle"><a href="/events-calendar/the-chicago-cook-workforce-investment-board-meeting-december-2017/">The Chicago Cook Workforce Investment Board Meeting December 2017</a></div></div></div><br /></div></div>
```

```
<div id="maincontent">
```

```
<h1>Job Seekers: Career Resources</h1>
```

```
<div class="page">
```

```
<div class="section">
```

```
<p class="column">The Partnership provides funding to 48 private and community-based organizations known as delegate agencies. All agencies serve residents of Cook County and Chicago. These agencies provide comprehensive workforce development services by helping job-seekers prepare for and find jobs, connect to career services, and access a range of resources such as:</p>
```

```
<div class="column">
```

```
<ul>
```

```
<li>occupational training (based upon federal eligibility guidelines)</li>
```

```
<li>resume writing</li>
```

```
<li>interview skills</li>
```

```
<li>financial literacy</li>
```

```
<li>job placement</li>
```

```
</ul>
```

```
</div>
```

```
<p class="layoutArea">Delegate agencies and the services they provide are listed below. Please call in advance to get information on hours of operation, orientation, and workshop details. All services are free of charge.</p>
```

```
<h2>Workforce Centers (One-Stops)</h2>
```

```
<p class="layoutArea">The Partnership oversees 10 workforce centers throughout Chicagoland. These are high volume community hubs that serve more than 100,000 people per year. The centers are home to a variety of services including computer labs, workshops and career counseling. Workshops of interest to job-seekers are held on a regular basis. All services are free and open to the public.</p>
```

```
</div>
```

```
</div>
```

```
<p><strong>Visit a career center to:</strong></p>
```

```
<ul>
```

```
<li>Plan for your career and job search</li>
```

```
<li>Improve your education</li>
```

```
<li>Connect to work support services</li>
```

```
<li>Connect to career advisors for assistance</li>
```

```
<li>Get help for laid off workers</li>
```

```
<li>File for Unemployment Insurance (at some centers)</li>
```

```
</ul>
```

```
<p>(708) 709-7975 </p>
```

```
<table border="0" class="atable" summary="Table of partners">
```

```

<thead>
<tr><th style="white-space: nowrap;">
<p><strong>Name</strong></p>
</th><th>
<p><strong>Location</strong></p>
</th><th>
<p><strong>Adress</strong></p>
</th><th>Phone</th><th> </th><th> </th></tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.aerosped.org/" target="_blank"> </a></td>
<td valign="middle"><a href="http://www.aerosped.org/" target="_blank">
A.E.R.O. Special Education</a></td>
<td style="white-space: nowrap;">5957 W 87th St.<br /> Oak Lawn IL 6045
3</td>
<td style="white-space: nowrap;">(708) 499-0181</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td> </td>
<td>African American Christian Foundation</td>
<td>6707 North Ave.<br /> Oak Park IL 60302</td>
<td>(708) 848-1700</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://apcc-chgo.org/" target="_blank"> </a></td>
<td><a href="http://apcc-chgo.org/" target="_blank">Albany Park Communi
ty Center</a></td>
<td>1945 W Wilson<br /> Chicago IL 60640</td>
<td>(773) 539-3828</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://www.asnchicago.net/" target="_blank"> </a></td>
<td><a href="http://www.asnchicago.net/" target="_blank">Alternative Sc
hools Network</a></td>
<td style="white-space: nowrap;">1807 W Sunnyside<br /> Suite 1D<br />
Chicago IL 60640</td>
<td>(773) 728-4030</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://bcsillinois.org/" target="_blank"> </a></td>

```

```

<td>Arlington Heights Workforce Center<br />Business & Career Servi
ces, Inc. (BCS)</td>
<td>723 W Algonquin <br />Arlington Heights IL 60005</td>
<td>(847) 981-7400</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://ahschicago.org/" target="_blank"> </a></td>
<td>Asian Human Services</td>
<td>4820 N Broadway<br /> 3rd Floor<br /> Chicago IL 60640</td>
<td>(773) 293-8119</td>
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<td><a href="http://aspirail.org/" target="_blank"> </a></td>
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<td>2415 N. Milwaukee<br /> Chicago IL 60647</td>
<td>(773) 770-1940</td>
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<td><a href="http://auntmarthas.org/" target="_blank"> </a></td>
<td><a href="http://auntmarthas.org/" target="_blank">Aunt Martha's</a></td>
<td>440 Forest Blvd.<br /> Park Forest IL 60466</td>
<td>(708) 679-8126</td>
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</td>
<td>Bethel Community Facility</td>
<td>1250 Portland Ave.<br />Chicago Heights IL 60411</td>
<td>(708) 758-5585</td>
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<td><a href="http://www.bgcc.org/" target="_blank"> </a></td>
<td><a href="http://www.bgcc.org/" target="_blank">Boys & Girls Club of Chicago </a></td>
<td>3400 S Emerald St.<br /> Chicago IL 60616;<br /><br /> 2102 W Monro

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e <br /> Chicago IL 60612; <br /><br /> 9600 S Vincennes<br /> Chicago
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<td>(773) 927-7373 x4718</td>
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<td><a href="http://calumetareaindustrial.com/" target="_blank">Calumet
Area Industrial Commission</a></td>
<td>1000 E. 111th St.<br /> 10th Floor<br /> Chicago IL 60628</td>
<td>(773) 928-6000</td>
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<td><a href="http://www.centralstatesser.org" target="_blank">Central S
tates SER </a></td>
<td>3948 W. 26th St., Ste. 213<br /> Chicago IL 60623</td>
<td>(773) 542-9030 x1283</td>
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<td><a href="http://www.cflwac.org/" target="_blank"> </a></td>
<td><a href="http://www.cflwac.org/" target="_blank">Chicago Federation
of Labor - WAC</a></td>
<td>130 E. Randolph<br /> Ste. 2600<br /> Chicago IL 60601</td>
<td>(312) 565-9431</td>
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<td><a href="http://www.nationalable.org/" target="_blank"> </a></td>
<td><a href="http://www.nationalable.org/" target="_blank">Chicago Heig
hts Workforce Center<br /> National Able Network</a></td>
<td>Prairie State College<br />ATOC Building<br />202 S. Halsted, Suite
148<br />Chicago Heights, IL 60411</td>
<td>(708) 709-7975</td>
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<td><a href="http://caslservice.org/" target="_blank"> </a></td>
<td><a href="http://caslservice.org/" target="_blank">Chinese American
Service League (CASL)</a></td>

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<td>2141 S. Tan Court<br /> Chicago IL 60616</td>
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<td><a href="http://www.sercohq.com/" target="_blank"> </a></td>
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<td>2138 S. 61st Court <br /> 3rd Floor<br /> Cicero IL 60804</td>
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<td><a href="http://eriehouse.org/" target="_blank">Erie Neighborhood House</a></td>
<td>1347 W Erie<br /> Chicago IL 60642</td>
<td>(312) 666-3430</td>
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<td><a href="http://www.sercohq.com/" target="_blank">Garfield Workforce Center<br /> SERCO</a></td>
<td>10 S. Kedzie<br /> 1st Floor<br /> Chicago IL 60612</td>
<td>(773) 722-3885</td>
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<td><a href="http://www.gwtp.edu/" target="_blank"> </a></td>
<td><a href="http://www.gwtp.edu/" target="_blank">Greater West Town</a></td>
<td>500 N. Sacramento<br /> Chicago IL 60612<br /><br />790 N Milwaukee<br />Chicago IL 60642</td>
<td>(312) 563-9570<br /><br /><br />(312) 432-1300</td>
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<td><a href="http://howardarea.org/" target="_blank"> </a></td>
<td><a href="http://howardarea.org/" target="_blank">Howard Area Community Center</a></td>

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<td>1527 W Morse<br />Chicago IL 60626<br /><br />1623 W Howard<br />Ch
icago IL 60626</td>
<td>(773) 381-3652<br /><br /><br />(773) 262-3515
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on Corporation</a></td>
<td>4554 N Broadway<br /> Chicago IL 60640</td>
<td>(773) 878-0981</td>
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<td><a href="http://idpl.org/" target="_blank"> </a></td>
<td><a href="http://idpl.org/" target="_blank">Instituto del Progreso
Latino</a></td>
<td>2520 S Western Ave.<br /> Chicago IL 60608</td>
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logo"/></a></td>
<td><a href="http://www.chicagomfgworks.org/" target="_blank">Instituto
del Progreso Latino / ManufacturingWorks</a></td>
<td>2800 S Western Ave.<br /> Chicago IL 60608</td>
<td>(773) 890-8055</td>
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<td><a href="http://www.jane-addams.org/" target="_blank"> </a></td>
<td><a href="http://www.jane-addams.org/" target="_blank">Jane Addams R
esource Corporation (JARC)</a></td>
<td>4222 N Ravenswood<br /> Chicago IL 60613</td>
<td>(773) 751-7123 or <br /> (773) 751-7115</td>
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<td><a href="http://jvschicago.org/" target="_blank"> </a></td>
<td><a href="http://jvschicago.org/" target="_blank">Jewish Vocational
Services (JVS)</a></td>

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<td>216 W. Jackson<br />Chicago IL 60606<br /><br />300 Revere Dr.<br /
>Northbrook IL 60062</td>
<td>(847) 412-4300</td>
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<td><a href="http://www.ladse.org/" target="_blank">LaGrange Area Depar
tment of Special Education (LADSE)</a></td>
<td>1301 W. Cossitt Avenue<br /> LaGrange IL 60525</td>
<td>(708) 482-1170</td>
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<td><a href="http://www.maine207.org/" target="_blank"> </a></td>
<td><a href="http://www.maine207.org/" target="_blank">Maine Township D
istrict 207 JumpStart Program</a></td>
<td>2601 Dempster Street <br /> Rm. 148<br /> Park Ridge IL 60068</td>
<td>(847) 692-8341</td>
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<td> </td>
<td>Marriott Foundation</td>
<td>850 W. Jackson<br /> Suite 260<br /> Chicago IL 60607</td>
<td>(312) 432-6240<br /> x3000</td>
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<td><a href="http://www.eesforjobs.com/" target="_blank"> </a></td>
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rce Center<br /> Employment & Employer Services</a></td>
<td>1701 South 1st Avenue Suite 10<br /> Maywood Illinois 60153</td>
<td>(708) 223-2652</td>
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<td><a href="http://metrofamily.org/" target="_blank"> </a></td>
<td><a href="http://metrofamily.org/" target="_blank">Metropolitan Fami
ly Services</a></td>
<td>235 E 103rd St.<br />Chicago IL 60628</td>
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<td><a href="https://www.microtrain.net/" target="_blank"> </a>
</td>
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<td>1010 Dixie Hwy #102<br /> Chicago Heights IL 60411<br /><br />200 W Adams<br /> Chicago IL 60606</td>
<td>(708) 323-4191<br /><br /><br />(312) 628-9232</td>
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<td><a href="http://www.eesforjobs.com/" target="_blank">Mid-South Workforce Center<br /> Employment & Employer Services</a></td>
<td>4314 S Cottage Grove<br /> Room 209<br /> Chicago IL 60653</td>
<td>(773) 538-5627</td>
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<td style="white-space: nowrap;">9000 West College Parkway<br /> Palos Hills IL 60463</td>
<td>(708) 974-5735</td>
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<td><a href="http://www.nationalable.org/" target="_blank">National Able Network, Inc.<br />(Evanston and Oakton CC)</a></td>
<td>1703 Orrington<br />3rd Floor<br />Evanston IL 60201<br /><br />Oakton Community College<br />[Skokie Campus]7701 Lincoln Ave., Rm A151<br />Skokie, IL 60077</td>
<td>(847) 448-8600<br /> Ask for WorkNet Center</td>
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<td>15900 S Cicero Ave.<br /> Building B - 2nd Floor<br /> Oak Forest IL 60452</td>
<td>(708) 633-2777</td>
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mily Services </a></td>
<td>1201 W 115th St.<br /> Chicago IL 60643</td>
<td>(773) 291-1086</td>
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<td>1700 W 18th St.<br /> Chicago IL 60608</td>
<td>(312) 994-8300</td>
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<td>3834 N. Cicero<br /> Chicago IL 60641</td>
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<td>202 S. Halsted Street <br /> (ATOC Building 148)<br /> Chicago Heig
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<td>3057 N. Lincoln Ave.<br /> Chicago IL 60657</td>
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<td>571 West Jackson Blvd.<br /> Chicago IL 60661<br /><br />15402 Center<br /> Harvey IL 60426</td>
<td>(312)341-8745<br /><br /><br />(708) 339-2148 or<br /> (708) 339-1452</td>
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<td>500 N Dearborn<br /> Chicago IL 60654</td>
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<td>Broadway/Northside Workforce Center<br /> Dynamic Educational Systems, Inc. (DESI)</td>
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<td>191 N. Wacker Drive<br /> Suite 925<br /> Chicago IL 60606</td>
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<td>(708) 596-2000 x2394</td>
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<td>7500 S Pulaski<br /> Building 100<br /> Chicago IL 60652</td>
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<td>7909 S. Racine<br /> Chicago IL 60620</td>
<td>(773) 783-3760</td>
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ning Institute</a></td>
<td>8151 Ridgeway Ave.<br /> Skokie IL 60076</td>
<td>(847) 673-6500</td>
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<td><a href="http://cabetinc.org/" target="_blank"> </a></td>
<td><a href="http://cabetinc.org/" target="_blank">The CABET Group, In
c.</a></td>
<td>228 S. Wabash Ave.<br /> Ste. 600<br /> Chicago IL 60604</td>
<td>(312) 786-0890 ask for Myisha Farris</td>
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</a></td>
<td>2121 S. Goebbert Rd.<br /> Arlington Heights IL 60005</td>
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<td><a href="http://www.triton.edu/" target="_blank">Triton College</a>
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<td>2000 Fifth Avenue<br /> River Grove IL 60171</td>
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<td>4343 W Wrightwood Ave<br /> Chicago IL 60639<br /><br />936 N Ashla
nd Ave<br /> Chicago IL 60622<br /><br />6520 S Wood St<br /> Chicago I
L 60636</td>
<td>(312) 994-8184<br /><br /><br />(312) 404-3205<br /><br /><br />(31
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</div> <!-- contentbody -->

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      </div>
      <p class="eoe"><a href="/media/1023/wia_eo_ppt_2013.pdf">Equal Opportunity Employers<br/>
        Programs Auxiliary Aids and Services
        Are Available Upon
        Request
        to Individuals with Disabilities.</a><br/>
        <a href="http://get.adobe.com/reader/"
        title="Documents in Portable Document Format (PDF) require Adobe Acrobat Reader">Get Adobe Acrobat Reader</a>
      </p>
    </div>
  </div>
  <div id="footerpanel-b" class="footpanel">
    <div class="col-content">
      <ul><li><a href="/a/sitemap/">Sitemap</a></li><li><a href="/a/contact/">Contact Us</a></li><li><a href="/media-room/">News</a></li><li><a href="/events/">Events</a></li></ul>
      <ul><li><a href="/businesses/">Businesses</a></li><li><a href="/employment/">The Partnership Jobs</a></li><li><a href="/a/privacy/">Privacy</a></li><li><a href="/a/terms-of-use/">Terms of Use</a></li></ul>
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  <div id="footerpanel-c" class="footpanel">
    <div class="col-content">
      <p><strong>Chicago Cook<br/>
        Workforce Partnership</strong><br/>
        69 W Washington, Suite 2860<br/>
        Chicago, IL 60602<br/>
        Tel: (312) 603-0200</p>
    </div>
  </div>
  <div class="clearboth"></div>
  <div id="worknetlogo">
    <a href="http://www.illinoisworknet.com" target="_blank"></a>
  </div>
  <div class="copyright">© 2017 Chicago Cook Workforce Partnership. All rights reserved.</div><br/>
</div> <!-- footer-content -->
</div> <!-- footer -->

</div> <!-- wrapper -->

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```

<script>
  (function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
    (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
    m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
  })(window,document,'script','//www.google-analytics.com/analytics.js','ga');

  ga('create','UA-46366606-1','workforceboard.org');
  ga('send','pageview');

</script>
<noscript>Google analytics</noscript>
</body>
</html>

```

Tag Soup

- Back to [Table of Contents](#)

The messy code above is HTML as it is often found in the wild, which has inspired the term 'tag soup.' Since we only want a small part of this code - that which contains the social services data - we can use Python's excellent HTML parsing package, [BeautifulSoup](https://www.crummy.com/software/BeautifulSoup/) (<https://www.crummy.com/software/BeautifulSoup/>).

You didn't write that awful page. You're just trying to get some data out of it. BeautifulSoup is here to help. Since 2004, it's been saving programmers hours or days of work on quick-turnaround screen scraping projects.

We can use `BeautifulSoup` function to transform the response object's text into a BeautifulSoup object. Note you may get a message about parsers - you can ignore this for now, but there's more information [in the appendix](#) at the end of this notebook.

```
In [12]: soup = BeautifulSoup(response.text)
print(type(soup))
```

```
<class 'bs4.BeautifulSoup'>
```

```
/Users/crh278/anaconda3/envs/geo_py36/lib/python3.6/site-packages/bs4/_
_init_.py:181: UserWarning: No parser was explicitly specified, so I'm
using the best available HTML parser for this system ("lxml"). This usu
ally isn't a problem, but if you run this code on another system, or in
a different virtual environment, it may use a different parser and beha
ve differently.
```

The code that caused this warning is on line 193 of the file /Users/crh278/anaconda3/envs/geo_py36/lib/python3.6/runpy.py. To get rid of this warning, change code that looks like this:

```
BeautifulSoup(YOUR_MARKUP})
```

to this:

```
BeautifulSoup(YOUR_MARKUP, "lxml")
```

```
markup_type=markup_type))
```

```
In [13]: ## Right off the bat, this gives us new methods, like prettify, that make our HTML a lot easier to work with.  
print(soup.prettify())
```

```

<!DOCTYPE html>
<html lang="en" xml:lang="en" xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title>
      Career Resources | Chicago Cook Workforce Partnership | Career Resou
rces
    </title>
    <meta charset="utf-8"/>
    <meta content="width=device-width, initial-scale=1.0" name="viewpor
t"/>
    <meta content="IE=Edge" http-equiv="X-UA-Compatible"/>
    <link href="/css/reset.css" media="screen" rel="stylesheet"/>
    <link href="/css/screen.css" media="screen" rel="stylesheet"/>
    <link href="/images/cwic.ico" rel="shortcut icon" type="image/x-ico
n"/>
    <script src="//ajax.googleapis.com/ajax/libs/jquery/1.10.2/jquery.mi
n.js" type="text/javascript">
    </script>
    <script src="/scripts/jquery.dropdownPlain.js" type="text/javascrip
t">
    </script>
    <script src="/scripts/respond.min.js" type="text/javascript">
    </script>
    <script type="text/javascript">
      $(document).ready(function () {
        var watermark = 'search';
        $('#searchboxid').blur(function () {
          if ($(this).val().length == 0)
            $(this).val(watermark).addClass('watermark');
        }).focus(function () {
          if ($(this).val() == watermark)
            $(this).val('').removeClass('watermark');
          $(this).val(watermark).addClass('watermark');
        });
      });
    </script>
  </head>
  <body class="loading">
    <div id="wrapper">
      <noscript>
        Please note: your browser does not support javascript therefor some
features of this website may not be available.
      </noscript>
      <div class="xblock" id="header">
        <div class="page-width" id="topnav">
          <div id="topnavlinks">
            <ul>
              <li>
                <a href="/about-us/">
                  About Us
                </a>
              </li>
              <li>
                <a href="/a/sitemap/">
                  Sitemap
                </a>
              </li>
              <li>

```

```

        <a href="/a/search/">
            Search
        </a>
    </li>
    <li class="lastlink">
        <a href="/a/contact/">
            Contact
        </a>
    </li>
</ul>
</div>
</div>
<!-- topnav -->
</div>
<!-- header -->
<div class="xblock xpush" id="body-wrapper">
    <div class="page-width" id="logoblock">
        <a href="/" id="logo">
            
        </a>
        <div id="tagline">
        </div>
        <div class="clearboth">
        </div>
    </div>
    <!-- logoblock -->
    <div class="page-width" id="primarynav">
        <ul class="dropdown">
            <li>
                <a href="/about-us/">
                    About Us
                </a>
                <ul class="submenu">
                    <li>
                        <a href="/about-us/workforce-plans/">
                            Workforce Plans
                        </a>
                    </li>
                    <li>
                        <a href="/about-us/our-board/">
                            Our Board
                        </a>
                    </li>
                    <li>
                        <a href="/about-us/our-team/">
                            Our Team
                        </a>
                        <ul class="submenu">
                            <li>
                                <a href="/about-us/our-team/our-staff/">
                                    Our Staff
                                </a>
                            </li>
                        </ul>
                    </li>
                </ul>
            </li>
            <li>

```

```
<a href="/about-us/funders-and-partners/">
  Funders and Partners
</a>
<ul class="submenu">
  <li>
    <a href="/about-us/funders-and-partners/grants/">
      Grants
    </a>
  </li>
</ul>
</li>
</ul>
<li>
  <a href="/funding/">
    Funding
  </a>
  <ul class="submenu">
    <li>
      <a href="/funding/request-for-proposals/">
        Request for Proposals
      </a>
      <ul class="submenu">
        <li>
          <a href="/funding/request-for-proposals/rfp-archives/">
            RFP Archives
          </a>
        </li>
      </ul>
    </li>
  </ul>
</li>
<li>
  <a href="/job-seekers/">
    Job Seekers
  </a>
  <ul class="submenu">
    <li>
      <a href="/job-seekers/american-job-centers/">
        American Job Centers
      </a>
    </li>
  </ul>
</li>
<li>
  <a href="/businesses/">
    Businesses
  </a>
</li>
<li>
  <a href="/reports/">
    Reports
  </a>
  <ul class="submenu">
    <li>
      <a href="/reports/labor-market-data/">
        Labor Market Data
      </a>
    </li>
  </ul>
</li>
```



```

    </a>
    <ul class="submenu">
      <li>
        <a href="/reports/labor-market-data/where-are-the-jobs/">
          Where Are the Jobs?
        </a>
      </li>
      <li>
        <a href="/reports/labor-market-data/target-occupation-profiles-(tops)/">
          Target Occupation Profiles (TOPS)
        </a>
      </li>
    </ul>
  </li>
  <li>
    <a href="/reports/archived-reports/">
      Archived Reports
    </a>
  </li>
</ul>
</li>
<li>
  <a href="/youth-programs/">
    Youth Programs
  </a>
  <ul class="submenu">
    <li>
      <a href="/youth-programs/wioa-implementation/">
        WIOA implementation
      </a>
    </li>
    <li>
      <a href="/youth-programs/opportunityworks/">
        Opportunity Works
      </a>
    </li>
  </ul>
</li>
<li>
  <a href="/employment/">
    Employment
  </a>
</li>
<li>
  <a href="/contact-us/">
    Contact Us
  </a>
</li>
<li>
  <a href="/grantees/">
    Grantees
  </a>
</li>
</ul>
<a href="https://twitter.com/ChiCookWorks" target="_blank">
  

```

```

    </a>
  </div>
  <!-- primary -->
  <div class="clearboth">
  </div>
  <div class="page-width" id="contentbody">
    <div id="breadcrumb">
      <p>
        <strong>
          You are here:
        </strong>
      </p>
      <ul>
        <li>
          <a href="/">
            Home Page
          </a>
          ,
        </li>
        <li>
          Job Seekers
        </li>
      </ul>
    </div>
    <div id="sidebarcol">
      <div id="submenu">
        <h2>
          Section Navigation
        </h2>
        <ul>
          <li class="lastlink">
            <a href="/job-seekers/american-job-centers/">
              American Job Centers
            </a>
          </li>
        </ul>
      </div>
      <div id="sbpanel">
        <div id="sbpaneltop">
          <div id="sbpanelbot">
            <h3>
              Related Services
            </h3>
            <p>
              <a href="http://www.illinoisworknet.com/vos_portal/?partner"
target="_blank">
                Illinois Worknet
              </a>
              : For the purpose of expanding economic opportunity, the Illi
nois workNet® Portal and Program utilizes partnerships and technology t
o expand seamless and real-time access to workforce development resourc
es aimed at individuals, businesses and workforce professionals.
            </p>
            <p>
              <a href="http://weconnectchicago.org/" target="_blank">
                Connect Chicago
              </a>

```

: Connect Chicago is a loose network of more than 250 places in the city where internet and computer access, digital skills training, and online learning resources are available—for free.

```

    </p>
  </div>
</div>
</div>
<div id="sidebareventblock">
  <h2>
    Upcoming Events
  </h2>
  <p>
  </p>
  <div class="eventdate">
    <div class="dateblock">
      <div class="month">
        Dec
      </div>
      <div class="day">
        14
      </div>
    </div>
    <div class="eventdata">
      <div class="etitle">
        <a href="/events-calendar/the-chicago-cook-workforce-investment-board-meeting-december-2017/">
          The Chicago Cook Workforce Investment Board Meeting December
          2017
        </a>
      </div>
    </div>
  </div>
  <br/>
</div>
<div id="maincontent">
  <h1>
    Job Seekers: Career Resources
  </h1>
  <div class="page">
    <div class="section">
      <p class="column">
        The Partnership provides funding to 48 private and community-based organizations known as delegate agencies. All agencies serve residents of Cook County and Chicago. These agencies provide comprehensive workforce development services by helping job-seekers prepare for and find jobs, connect to career services, and access a range of resources such as:
      </p>
      <div class="column">
        <ul>
          <li>
            occupational training (based upon federal eligibility guidelines)
          </li>
          <li>
            resume writing
          </li>
        </ul>
      </div>
    </div>
  </div>
</div>

```

```

        </li>
        <li>
            interview skills
        </li>
        <li>
            financial literacy
        </li>
        <li>
            job placement
        </li>
    </ul>
</div>
<p class="layoutArea">
    Delegate agencies and the services they provide are listed below. Please call in advance to get information on hours of operation, orientation, and workshop details. All services are free of charge.
</p>
<h2>
    Workforce Centers (One-Stops)
</h2>
<p class="layoutArea">
    The Partnership oversees 10 workforce centers throughout Chicago and the surrounding area. These are high volume community hubs that serve more than 100,000 people per year. The centers are home to a variety of services including computer labs, workshops and career counseling. Workshops of interest to job-seekers are held on a regular basis. All services are free and open to the public.
</p>
</div>
</div>
<p>
    
    <strong>
        Visit a career center to:
    </strong>
</p>
<ul>
    <li>
        Plan for your career and job search
    </li>
    <li>
        Improve your education
    </li>
    <li>
        Connect to work support services
    </li>
    <li>
        Connect to career advisors for assistance
    </li>
    <li>
        Get help for laid off workers
    </li>
    <li>
        File for Unemployment Insurance (at some centers)
    </li>
</ul>

```

```

<p>
  (708) 709-7975
</p>
<table border="0" class="atable" summary="Table of partners">
  <thead>
    <tr>
      <th style="white-space: nowrap;">
        <p>
          <strong>
            Name
          </strong>
        </p>
      </th>
      <th>
        <p>
          <strong>
            Location
          </strong>
        </p>
      </th>
      <th>
        <p>
          <strong>
            Adress
          </strong>
        </p>
      </th>
      <th>
        Phone
      </th>
      <th>
      </th>
      <th>
      </th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>
        <a href="http://www.aerosped.org/" target="_blank">
          
        </a>
      </td>
      <td valign="middle">
        <a href="http://www.aerosped.org/" target="_blank">
          A.E.R.O. Special Education
        </a>
      </td>
      <td style="white-space: nowrap;">
        5957 W 87th St.
        <br/>
        Oak Lawn IL 60453
      </td>
      <td style="white-space: nowrap;">
        (708) 499-0181
      </td>
    </tr>
  </tbody>
</table>

```

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<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>
    African American Christian Foundation
</td>
<td>
    6707 North Ave.
    <br/>
    Oak Park IL 60302
</td>
<td>
    (708) 848-1700
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
    <a href="http://apcc-chgo.org/" target="_blank">
        
    </a>
</td>
<td>
    <a href="http://apcc-chgo.org/" target="_blank">
        Albany Park Community Center
    </a>
</td>
<td>
    1945 W Wilson
    <br/>
    Chicago IL 60640
</td>
<td>
    (773) 539-3828
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
    <a href="http://www.asnchicago.net/" target="_blank">
        
    </a>
</td>
<td>

```

```

    <a href="http://www.asnchicago.net/" target="_blank">
      Alternative Schools Network
    </a>
  </td>
  <td style="white-space: nowrap;">
    1807 W Sunnyside
    <br/>
    Suite 1D
    <br/>
    Chicago IL 60640
  </td>
  <td>
    (773) 728-4030
  </td>
  <td>
  </td>
  <td>
  </td>
</tr>
<tr>
  <td>
    <a href="http://bcsillinois.org/" target="_blank">
      
    </a>
  </td>
  <td>
    Arlington Heights Workforce Center
    <br/>
    Business & Career Services, Inc. (BCS)
  </td>
  <td>
    723 W Algonquin
    <br/>
    Arlington Heights IL 60005
  </td>
  <td>
    (847) 981-7400
  </td>
  <td>
  </td>
  <td>
  </td>
</tr>
<tr>
  <td>
    <a href="http://ahschicago.org/" target="_blank">
      
    </a>
  </td>
  <td>
    Asian Human Services
  </td>
  <td>
    4820 N Broadway
    <br/>

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3rd Floor
<br/>
Chicago IL 60640
</td>
<td>
(773) 293-8119
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
<a href="http://aspirail.org/" target="_blank">

</a>
</td>
<td>
<a href="http://aspirail.org/" target="_blank">
Aspira
</a>
</td>
<td>
2415 N. Milwaukee
<br/>
Chicago IL 60647
</td>
<td>
(773) 770-1940
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
<a href="http://auntmarthas.org/" target="_blank">

</a>
</td>
<td>
<a href="http://auntmarthas.org/" target="_blank">
Aunt Martha's
</a>
</td>
<td>
440 Forest Blvd.
<br/>
Park Forest IL 60466
</td>
<td>
(708) 679-8126
</td>

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<tr>
<td>
<p>
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<p>
</p>
<p>
</p>
</td>
<td>
Bethel Community Facility
</td>
<td>
1250 Portland Ave.
<br/>
Chicago Heights IL 60411
</td>
<td>
(708) 758-5585
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
<a href="http://www.bgcc.org/" target="_blank">

</a>
</td>
<td>
<a href="http://www.bgcc.org/" target="_blank">
Boys & Girls Club of Chicago
</a>
</td>
<td>
3400 S Emerald St.
<br/>
Chicago IL 60616;
<br/>
<br/>
2102 W Monroe
<br/>
Chicago IL 60612;
<br/>
<br/>
9600 S Vincennes
<br/>
Chicago IL 60643
</td>

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<td>
  (773) 927-7373 x4718
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://calumetareaaindustrial.com/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://calumetareaaindustrial.com/" target="_blank">
    Calumet Area Industrial Commission
  </a>
</td>
<td>
  1000 E. 111th St.
  <br/>
  10th Floor
  <br/>
  Chicago IL 60628
</td>
<td>
  (773) 928-6000
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://www.centralstatesser.org" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.centralstatesser.org" target="_blank">
    Central States SER
  </a>
</td>
<td>
  3948 W. 26th St., Ste. 213
  <br/>
  Chicago IL 60623
</td>
<td>
  (773) 542-9030 x1283
</td>
<td>
</td>

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<td>
</td>
</tr>
<tr>
<td>
  <a href="http://www.cflwac.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.cflwac.org/" target="_blank">
    Chicago Federation of Labor - WAC
  </a>
</td>
<td>
  130 E. Randolph
  <br/>
  Ste. 2600
  <br/>
  Chicago IL 60601
</td>
<td>
  (312) 565-9431
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://www.nationalable.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.nationalable.org/" target="_blank">
    Chicago Heights Workforce Center
    <br/>
    National Able Network
  </a>
</td>
<td>
  Prairie State College
  <br/>
  ATOC Building
  <br/>
  202 S. Halsted, Suite 148
  <br/>
  Chicago Heights, IL 60411
</td>
<td>
  (708) 709-7975
</td>
<td>

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</td>
<td>
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</tr>
<tr>
<td>
  <a href="http://caslservice.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://caslservice.org/" target="_blank">
    Chinese American Service League (CASL)
  </a>
</td>
<td>
  2141 S. Tan Court
  <br/>
  Chicago IL 60616
</td>
<td>
  (312) 791-0418
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://www.sercohq.com/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.sercohq.com/" target="_blank">
    Cicero Workforce Center
    <br/>
    SERCO
  </a>
</td>
<td>
  2138 S. 61st Court
  <br/>
  3rd Floor
  <br/>
  Cicero IL 60804
</td>
<td>
  (708) 222-3100
</td>
<td>
</td>
<td>
</td>

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</tr>
<tr>
<td>
  <a href="http://eriehouse.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://eriehouse.org/" target="_blank">
    Erie Neighborhood House
  </a>
</td>
<td>
  1347 W Erie
  <br/>
  Chicago IL 60642
</td>
<td>
  (312) 666-3430
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://www.sercohq.com/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.sercohq.com/" target="_blank">
    Garfield Workforce Center
    <br/>
    SERCO
  </a>
</td>
<td>
  10 S. Kedzie
  <br/>
  1st Floor
  <br/>
  Chicago IL 60612
</td>
<td>
  (773) 722-3885
</td>
<td>
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<tr>
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        <a href="http://www.gwtp.edu/" target="_blank">
          
        </a>
      </td>
      <td>
        <a href="http://www.gwtp.edu/" target="_blank">
          Greater West Town
        </a>
      </td>
      <td>
        500 N. Sacramento
        <br/>
        Chicago IL 60612
        <br/>
        <br/>
        790 N Milwaukee
        <br/>
        Chicago IL 60642
      </td>
      <td>
        (312) 563-9570
        <br/>
        <br/>
        <br/>
        (312) 432-1300
      </td>
      <td>
      </td>
      <td>
      </td>
    </tr>
    <tr>
      <td>
        <a href="http://howardarea.org/" target="_blank">
          
        </a>
      </td>
      <td>
        <a href="http://howardarea.org/" target="_blank">
          Howard Area Community Center
        </a>
      </td>
      <td>
        1527 W Morse
        <br/>
        Chicago IL 60626
        <br/>
        <br/>
        1623 W Howard
        <br/>
        Chicago IL 60626
      </td>
      <td>
        (773) 381-3652

```

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        <br/>
        <br/>
        <br/>
        (773) 262-3515
    <p>
    </p>
</td>
<td>
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</tr>
<tr>
<td>
    <a href="http://www.inspirationcorp.org/" target="_blank">
        
    </a>
</td>
<td>
    <a href="http://www.inspirationcorp.org/" target="_blank">
        Inspiration Corporation
    </a>
</td>
<td>
    4554 N Broadway
    <br/>
    Chicago IL 60640
</td>
<td>
    (773) 878-0981
</td>
<td>
</td>
</td>
</td>
</tr>
<tr>
<td>
    <a href="http://idpl.org/" target="_blank">
        
    </a>
</td>
<td>
    <a href="http://idpl.org/" target="_blank">
        Instituto del Progreso Latino
    </a>
</td>
<td>
    2520 S Western Ave.
    <br/>
    Chicago IL 60608
</td>
<td>
    (773) 890-0055

```

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</td>
<td>
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<td>
</td>
</tr>
<tr>
<td>
<a href="http://www.chicagomfgworks.org/" target="_blank">
  
</a>
</td>
<td>
<a href="http://www.chicagomfgworks.org/" target="_blank">
  Instituto del Progreso Latino / ManufacturingWorks
</a>
</td>
<td>
  2800 S Western Ave.
  <br/>
  Chicago IL 60608
</td>
<td>
  (773) 890-8055
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
<a href="http://www.jane-addams.org/" target="_blank">
  
</a>
</td>
<td>
<a href="http://www.jane-addams.org/" target="_blank">
  Jane Addams Resource Corporation (JARC)
</a>
</td>
<td>
  4222 N Ravenswood
  <br/>
  Chicago IL 60613
</td>
<td>
  (773) 751-7123 or
  <br/>
  (773) 751-7115
</td>
<td>
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<td>
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</tr>
<tr>
<td>
  <a href="http://jvschicago.org/" target="_blank">
    
    </a>
  </td>
<td>
  <a href="http://jvschicago.org/" target="_blank">
    Jewish Vocational Services (JVS)
  </a>
</td>
<td>
  216 W. Jackson
  <br/>
  Chicago IL 60606
  <br/>
  <br/>
  300 Revere Dr.
  <br/>
  Northbrook IL 60062
</td>
<td>
  (847) 412-4300
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://www.ladse.org/" target="_blank">
    
    </a>
  </td>
<td>
  <a href="http://www.ladse.org/" target="_blank">
    LaGrange Area Department of Special Education (LADSE)
  </a>
</td>
<td>
  1301 W. Cossitt Avenue
  <br/>
  LaGrange IL 60525
</td>
<td>
  (708) 482-1170
</td>
<td>
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<td>
  <a href="http://www.maine207.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.maine207.org/" target="_blank">
    Maine Township District 207 JumpStart Program
  </a>
</td>
<td>
  2601 Dempster Street
  <br/>
  Rm. 148
  <br/>
  Park Ridge IL 60068
</td>
<td>
  (847) 692-8341
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>
  Marriott Foundation
</td>
<td>
  850 W. Jackson
  <br/>
  Suite 260
  <br/>
  Chicago IL 60607
</td>
<td>
  (312) 432-6240
  <br/>
  x3000
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://www.eesforjobs.com/" target="_blank">
    
  </a>
</td>
<td>
</td>

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```

<a href="http://www.eesforjobs.com/" target="_blank">
  Maywood Workforce Center
<br/>
  Employment & Employer Services
</a>
</td>
<td>
  1701 South 1st Avenue Suite 10
<br/>
  Maywood Illinois 60153
</td>
<td>
  (708) 223-2652
</td>
<td>
</td>
<td>
</td>
</tr>
<tr>
<td>
  <a href="http://metrofamily.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://metrofamily.org/" target="_blank">
    Metropolitan Family Services
  </a>
</td>
<td>
  235 E 103rd St.
<br/>
  Chicago IL 60628
</td>
<td>
  (773) 371-3625
</td>
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</td>
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<td>
  <a href="https://www.microtrain.net/" target="_blank">
    
  </a>
</td>
<td>
  <a href="https://www.microtrain.net/" target="_blank">
    Microtrain Technologies
  </a>
</td>
<td>

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```

1010 Dixie Hwy #102
<br/>
Chicago Heights IL 60411
<br/>
<br/>
200 W Adams
<br/>
Chicago IL 60606
</td>
<td>
  (708) 323-4191
  <br/>
  <br/>
  <br/>
  (312) 628-9232
</td>
<td>
</td>
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<td>
  <a href="http://www.eesforjobs.com/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.eesforjobs.com/" target="_blank">
    Mid-South Workforce Center
    <br/>
    Employment & Employer Services
  </a>
</td>
<td>
  4314 S Cottage Grove
  <br/>
  Room 209
  <br/>
  Chicago IL 60653
</td>
<td>
  (773) 538-5627
</td>
<td>
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</tr>
<tr>
<td>
  <a href="http://morainevalley.edu/" target="_blank">
    
  </a>
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```

<td>
  <a href="http://morainevalley.edu/" target="_blank">
    Moraine Valley Community College
  </a>
</td>
<td style="white-space: nowrap;">
  9000 West College Parkway
  <br/>
  Palos Hills IL 60463
</td>
<td>
  (708) 974-5735
</td>
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</td>
</tr>
<tr>
<td>
  <a href="http://www.nationalable.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.nationalable.org/" target="_blank">
    National Able Network, Inc.
    <br/>
    (Evanston and Oakton CC)
  </a>
</td>
<td>
  1703 Orrington
  <br/>
  3rd Floor
  <br/>
  Evanston IL 60201
  <br/>
  <br/>
  Oakton Community College
  <br/>
  [Skokie Campus]7701 Lincoln Ave., Rm A151
  <br/>
  Skokie, IL 60077
</td>
<td>
  (847) 448-8600
  <br/>
  Ask for WorkNet Center
</td>
<td>
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<td>
  <a href="http://www.eesforjobs.com/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://www.eesforjobs.com/" target="_blank">
    Oak Forest Workforce Center
    <br/>
    Employment & Employer Services
  </a>
</td>
<td>
  15900 S Cicero Ave.
  <br/>
  Building B - 2nd Floor
  <br/>
  Oak Forest IL 60452
</td>
<td>
  (708) 633-2777
</td>
<td>
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</tr>
<tr>
<td>
  <a href="http://phalanxgrpserives.org/" target="_blank">
    
  </a>
</td>
<td>
  <a href="http://phalanxgrpserives.org/" target="_blank">
    Phalanx Family Services
  </a>
</td>
<td>
  1201 W 115th St.
  <br/>
  Chicago IL 60643
</td>
<td>
  (773) 291-1086
</td>
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<td>
  <a href="http://www.nationalable.org/" target="_blank">
    
    </a>
  </td>
  <td>
    <a href="http://www.nationalable.org/" target="_blank">
      Pilsen Workforce Center
    <br/>
    National Able Network Inc.
    </a>
  </td>
  <td>
    1700 W 18th St.
    <br/>
    Chicago IL 60608
  </td>
  <td>
    (312) 994-8300
  </td>
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  <td>
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  </td>
</tr>
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  <td>
    <a href="http://polish.org/" target="_blank">
      
    </a>
  </td>
  <td>
    <a href="http://polish.org/" target="_blank">
      Polish American Association
    </a>
  </td>
  <td>
    3834 N. Cicero
    <br/>
    Chicago IL 60641
  </td>
  <td>
    (773) 282-1122
  </td>
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  <td>
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    </a>
  </td>
  <td>
    <a href="http://prairiestate.edu/" target="_blank">

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```

        Prairie State College
    </a>
</td>
<td>
    202 S. Halsted Street
    <br/>
    (ATOC Building 148)
    <br/>
    Chicago Heights IL 60411
</td>
<td>
    (708) 709-3911
</td>
<td>
</td>
<td>
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</tr>
<tr>
<td>
    <a href="http://pyramid-pci.com/" target="_blank">
        
    </a>
</td>
<td>
    <a href="http://pyramid-pci.com/" target="_blank">
        Pyramid Partnership, Inc.
    </a>
</td>
<td>
    3057 N. Lincoln Ave.
    <br/>
    Chicago IL 60657
</td>
<td>
    (773) 975-9898
</td>
<td>
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<tr>
<td>
    <a href="http://saferfoundation.org/" target="_blank">
        
    </a>
</td>
<td>
    <a href="http://saferfoundation.org/" target="_blank">
        Safer Foundation (Chicago)
    </a>
    <br/>
    <br/>
    <br/>

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    <a href="http://saferfoundation.org/" target="_blank">
      Safer Foundation (Harvey)
    </a>
  </td>
  <td>
    571 West Jackson Blvd.
    <br/>
    Chicago IL 60661
    <br/>
    <br/>
    15402 Center
    <br/>
    Harvey IL 60426
  </td>
  <td>
    (312) 341-8745
    <br/>
    <br/>
    <br/>
    (708) 339-2148 or
    <br/>
    (708) 339-1452
  </td>
  <td>
  </td>
  <td>
  </td>
</tr>
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  <td>
    <a href="http://www.chicago-serviceworks.com/" target="_blank">
      
    </a>
  </td>
  <td>
    <a href="http://www.chicago-serviceworks.com" target="_blank">
      ServiceWorks Chicago
      <br/>
      Educational Data Systems, Inc. (EDSI)
    </a>
  </td>
  <td>
    500 N Dearborn
    <br/>
    Chicago IL 60654
  </td>
  <td>
    (312) 494-9346
  </td>
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  </td>
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  </td>
</tr>

```

		<tr> <td> </td> <td> Broadway/Northside Workforce Center Dynamic Educational Systems, Inc. (DESI) </td> <td> 5060 N. Broadway 6th floor, Suite#690 Chicago IL 60640 </td> <td> (773) 334-4747 </td> <td> </td> <td> </td> <td> </td> </tr>
k">		 </td> <td>
k">		Skills for Chicagoland's Future </td> <td> 191 N. Wacker Drive Suite 925 Chicago IL 60606 </td> <td> (312) 906-7200 </td> <td> </td> <td> </td> </tr>
		<tr> <td>

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        </a>
      </td>
      <td>
        <a href="http://ssc.edu/" target="_blank">
          South Suburban College
        </a>
      </td>
      <td>
        15800 S. State St.
        <br/>
        South Holland IL 60473
      </td>
      <td>
        (708) 596-2000 x2394
      </td>
      <td>
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      <td>
        <a href="http://www.eesforjobs.com/" target="_blank">
          
        </a>
      </td>
      <td>
        <a href="http://www.eesforjobs.com/" target="_blank">
          Southwest/Daley Workforce Center
          <br/>
          Employment & Employer Services
        </a>
      </td>
      <td>
        7500 S Pulaski
        <br/>
        Building 100
        <br/>
        Chicago IL 60652
      </td>
      <td>
        (773) 884-7000
      </td>
      <td>
      </td>
      <td>
      </td>
    </tr>
    <tr>
      <td>
      </td>
      <td>
        St. Sabina Employment Resource Center (The Catholic Bishop of
        Chicago)
      </td>
      <td>

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7909 S. Racine
<br/>
Chicago IL 60620
</td>
<td>
(773) 783-3760
</td>
<td>
</td>
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<tr>
<td>
<a href="http://symboljobtraining.com/" target="_blank">

</a>
</td>
<td>
<a href="http://symboljobtraining.com/" target="_blank">
Symbol Training Institute
</a>
</td>
<td>
8151 Ridgeway Ave.
<br/>
Skokie IL 60076
</td>
<td>
(847) 673-6500
</td>
<td>
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</td>
</tr>
<tr>
<td>
<a href="http://cabetinc.org/" target="_blank">

</a>
</td>
<td>
<a href="http://cabetinc.org/" target="_blank">
The CABET Group, Inc.
</a>
</td>
<td>
228 S. Wabash Ave.
<br/>
Ste. 600
<br/>
Chicago IL 60604
</td>
<td>

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(312) 786-0890 ask for Myisha Farris
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<tr>
<td>
<a href="http://d214.org/" target="_blank">

</a>
</td>
<td>
<a href="http://d214.org/" target="_blank">
Township H.S. Dist. 214
</a>
</td>
<td>
2121 S. Goebbert Rd.
<br/>
Arlington Heights IL 60005
</td>
<td>
(847) 718-7933
</td>
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<td>
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<tr>
<td>
<a href="http://www.triton.edu/" target="_blank">

</a>
</td>
<td>
<a href="http://www.triton.edu/" target="_blank">
Triton College
</a>
</td>
<td>
2000 Fifth Avenue
<br/>
River Grove IL 60171
</td>
<td>
(708) 456-0388 x3149
</td>
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    Washington Heights Workforce Center
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    Dynamic Educational Systems, Inc. (DESI)
  </td>
  <td>
    10325 South Halsted Street
    <br/>
    Chicago IL 60628
  </td>
  <td>
    (773) 928-5272
  </td>
  <td>
  </td>
  <td>
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</tr>
<tr>
  <td>
  </td>
  <td>
    Youth Connection Charter
  </td>
  <td>
    2424 S State St
    <br/>
    Chicago IL 60616
  </td>
  <td>
    (312) 328-0799
  </td>
  <td>
  </td>
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  </td>
</tr>
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  <td>
    <a href="http://www.youth-guidance.org/" target="_blank">
      
    </a>
  </td>
  <td>
    <a href="http://www.youth-guidance.org/" target="_blank">
      Youth Guidance
    </a>
  </td>
  <td>
    4343 W Wrightwood Ave
    <br/>
    Chicago IL 60639
    <br/>

```

```

        <br/>
        936 N Ashland Ave
        <br/>
        Chicago IL 60622
        <br/>
        <br/>
        6520 S Wood St
        <br/>
        Chicago IL 60636
    </td>
    <td>
        (312) 994-8184
        <br/>
        <br/>
        <br/>
        (312) 404-3205
        <br/>
        <br/>
        <br/>
        (312) 404-3194
    </td>
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    <td>
    </td>
</tr>
<tr>
    <td>
        <a href="http://youthjobcenter.org" target="_blank">
            
        </a>
    </td>
    <td>
        <a href="http://youthjobcenter.org" target="_blank">
            Youth Job Center of Evanston
        </a>
    </td>
    <td>
        1114 Church Street
        <br/>
        Evanston IL 60201
    </td>
    <td>
        (847) 864-5627
    </td>
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    </td>
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</tr>
</tbody>
</table>
</div>
</div>
<!-- contentbody -->
</div>

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  <div class="page-width" id="footer-content">
    <div class="footpanel" id="footerpanel-a">
      <div class="col-content">
        <div id="searchwrapper">
          <form action="/search.aspx" id="searchForm" method="get">
            <p>
              <label class="searchbox_label" for="searchboxid">
                Search
              </label>
              <label class="searchbox_label" for="submit_button">
                Submit Search
              </label>
              <input class="searchbox" id="searchboxid" maxlength="20" name
="search" title="search website" type="text" value=""/>
              <input alt="search" class="searchbox_submit" id="submit_butto
n" name="submit_button" src="/images/blank_submit.gif" type="image"/>
            </p>
          </form>
        </div>
        <p class="eoe">
          <a href="/media/1023/wia_eo_ppt_2013.pdf">
            Equal Opportunity Employers
          <br/>
            Programs Auxiliary Aids and Services Are Available Upon
Request
to Individuals with Disabilities.
          </a>
          <br/>
          <a href="http://get.adobe.com/reader/" title="Documents in Port
able Document Format (PDF) require Adobe Acrobat Reader">
            Get Adobe Acrobat Reader
          </a>
        </p>
      </div>
    </div>
    <div class="footpanel" id="footerpanel-b">
      <div class="col-content">
        <ul>
          <li>
            <a href="/a/sitemap/">
              Sitemap
            </a>
          </li>
          <li>
            <a href="/a/contact/">
              Contact Us
            </a>
          </li>
          <li>
            <a href="/media-room/">
              News
            </a>
          </li>
          <li>
            <a href="/events/">
              Events

```



```
</a>
</li>
</ul>
<ul>
<li>
<a href="/businesses/">
  Businesses
</a>
</li>
<li>
<a href="/employment/">
  The Partnership Jobs
</a>
</li>
<li>
<a href="/a/privacy/">
  Privacy
</a>
</li>
<li>
<a href="/a/terms-of-use/">
  Terms of Use
</a>
</li>
</ul>
<div class="clearboth">
</div>
</div>
<div class="footpanel" id="footerpanel-c">
<div class="col-content">
<p>
<strong>
  Chicago Cook
<br/>
  Workforce Partnership
</strong>
<br/>
  69 W Washington, Suite 2860
<br/>
  Chicago, IL 60602
<br/>
  Tel: (312) 603-0200
</p>
</div>
</div>
<div class="clearboth">
</div>
<div id="worknetlogo">
<a href="http://www.illinoisworknet.com" target="_blank">
  
</a>
</div>
<div class="copyright">
  © 2017 Chicago Cook Workforce Partnership. All rights reserved.
</div>
<br/>
```

```

    </div>
    <!-- footer-content -->
  </div>
  <!-- footer -->
</div>
<!-- wrapper -->
<script>
  (function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
    (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
    m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
  })(window,document,'script','//www.google-analytics.com/analytics.js','ga');

  ga('create', 'UA-46366606-1', 'workforceboard.org');
  ga('send', 'pageview');
</script>
<noscript>
  Google analytics
</noscript>
</body>
</html>

```

```

In [14]: # We can also ask our BeautifulSoup object for specific tags, like the title:
         soup.title

```

```

Out[14]: <title>
          Career Resources | Chicago Cook Workforce Partnership | Career Resources
        </title>

```

```

In [15]: # Notice that included the tag itself, but we could just get the text with:
         soup.title.text

```

```

Out[15]: '\r\n\tCareer Resources | Chicago Cook Workforce Partnership | Career Resources\r\n'

```

```

In [17]: ## Can clean this up with .replace method:
         print(soup.title.text.replace("\r","").replace("\n","").replace("\t",""))

```

```

Career Resources | Chicago Cook Workforce Partnership | Career Resources

```

```

In [18]: # Or alternatively, return just the tag name:
         soup.title.name

```

```

Out[18]: 'title'

```

```
In [19]: # This works well for <title> since there should only be one for any web
         # page.
         # For more common tags, we can use the "find" method to grab the first t
         ag of a certain type (and its contents):
         soup.find("a")
```

```
Out[19]: <a href="/about-us/">About Us</a>
```

```
In [20]: # Alternatively, you can find all the tags of a certain type with "find_  
all":  
soup.find_all("ul")
```

```

Out[20]: [

<li><a href="/about-us/">About Us</a></li><li><a href="/a/sitema
p/">Sitemap</a></li><li><a href="/a/search/">Search</a></li><li class
="lastlink"><a href="/a/contact/">Contact</a></li></ul>,
  <ul class="dropdown"><li><a href="/about-us/">About Us</a><ul class="s
ubmenu"><li><a href="/about-us/workforce-plans/">Workforce Plans</a></l
i><li><a href="/about-us/our-board/">Our Board</a></li><li><a href="/ab
out-us/our-team/">Our Team</a><ul class="submenu"><li><a href="/about-u
s/our-team/our-staff/">Our Staff</a></li></ul></li><li><a href="/about-
us/funders-and-partners/">Funders and Partners</a><ul class="submenu"><
li><a href="/about-us/funders-and-partners/grants/">Grants</a></li></ul>
</li></ul></li><li><a href="/funding/">Funding</a><ul class="submenu">
<li><a href="/funding/request-for-proposals/">Request for Proposals</a>
<ul class="submenu"><li><a href="/funding/request-for-proposals/rfp-arc
hives/">RFP Archives</a></li></ul></li></ul></li><li><a href="/job-seek
ers/">Job Seekers</a><ul class="submenu"><li><a href="/job-seekers/amer
ican-job-centers/">American Job Centers</a></li></ul></li><li><a href
="/businesses/">Businesses</a></li><li><a href="/reports/">Reports</a><
ul class="submenu"><li><a href="/reports/labor-market-data/">Labor Mark
et Data</a><ul class="submenu"><li><a href="/reports/labor-market-data/
where-are-the-jobs/">Where Are the Jobs?</a></li><li><a href="/reports/
labor-market-data/target-occupation-profiles-(tops)/">Target Occupation
Profiles (TOPS)</a></li></ul></li><li><a href="/reports/archived-report
s/">Archived Reports</a></li></ul></li><li><a href="/youth-programs/">Y
outh Programs</a><ul class="submenu"><li><a href="/youth-programs/wioa-
implementation/">WIOA implementation</a></li><li><a href="/youth-progra
ms/opportunityworks/">Opportunity Works</a></li></ul></li><li><a href
="/employment/">Employment</a></li><li><a href="/contact-us/">Contact U
s</a></li><li><a href="/grantees/">Grantees</a></li></ul>,
  <ul class="submenu"><li><a href="/about-us/workforce-plans/">Workforce
Plans</a></li><li><a href="/about-us/our-board/">Our Board</a></li><li>
<a href="/about-us/our-team/">Our Team</a><ul class="submenu"><li><a hr
ef="/about-us/our-team/our-staff/">Our Staff</a></li></ul></li><li><a h
ref="/about-us/funders-and-partners/">Funders and Partners</a><ul class
="submenu"><li><a href="/about-us/funders-and-partners/grants/">Grants
</a></li></ul></li></ul>,
  <ul class="submenu"><li><a href="/about-us/our-team/our-staff/">Our St
aff</a></li></ul>,
  <ul class="submenu"><li><a href="/about-us/funders-and-partners/grant
s/">Grants</a></li></ul>,
  <ul class="submenu"><li><a href="/funding/request-for-proposals/">Requ
est for Proposals</a><ul class="submenu"><li><a href="/funding/request-
for-proposals/rfp-archives/">RFP Archives</a></li></ul></li></ul>,
  <ul class="submenu"><li><a href="/funding/request-for-proposals/rfp-ar
chives/">RFP Archives</a></li></ul>,
  <ul class="submenu"><li><a href="/job-seekers/american-job-centers/">A
merican Job Centers</a></li></ul>,
  <ul class="submenu"><li><a href="/reports/labor-market-data/">Labor Ma
rket Data</a><ul class="submenu"><li><a href="/reports/labor-market-dat
a/where-are-the-jobs/">Where Are the Jobs?</a></li><li><a href="/report
s/labor-market-data/target-occupation-profiles-(tops)/">Target Occupati
on Profiles (TOPS)</a></li></ul></li><li><a href="/reports/archived-rep
orts/">Archived Reports</a></li></ul>,
  <ul class="submenu"><li><a href="/reports/labor-market-data/where-are-
the-jobs/">Where Are the Jobs?</a></li><li><a href="/reports/labor-mark
et-data/target-occupation-profiles-(tops)/">Target Occupation Profiles
(TOPS)</a></li></ul>,
  <ul class="submenu"><li><a href="/youth-programs/wioa-implementatio

```

```

n/">WIOA implementation</a></li><li><a href="/youth-programs/opportunit
yworks/">Opportunity Works</a></li></ul>,
  <ul><li><a href="/">Home Page</a>  </li><li>Job Seekers</li></ul>,
  <ul><li class="lastlink"><a href="/job-seekers/american-job-centers/">
American Job Centers</a></li></ul>,
  <ul>
    <li>occupational training (based upon federal eligibility guidelines)
</li>
    <li>resume writing</li>
    <li>interview skills</li>
    <li>financial literacy</li>
    <li>job placement</li>
  </ul>,
  <ul>
    <li>Plan for your career and job search</li>
    <li>Improve your education</li>
    <li>Connect to work support services</li>
    <li>Connect to career advisors for assistance</li>
    <li>Get help for laid off workers</li>
    <li>File for Unemployment Insurance (at some centers)</li>
  </ul>,
  <ul><li><a href="/a/sitemap/">Sitemap</a></li><li><a href="/a/contac
t/">Contact Us</a></li><li><a href="/media-room/">News</a></li><li><a h
ref="/events/">Events</a></li> </ul>,
  <ul> <li><a href="/businesses/">Businesses</a></li><li><a href="/emplo
yment/">The Partnership Jobs</a></li><li><a href="/a/privacy/">Privacy
</a></li><li><a href="/a/terms-of-use/">Terms of Use</a></li></ul>]

```

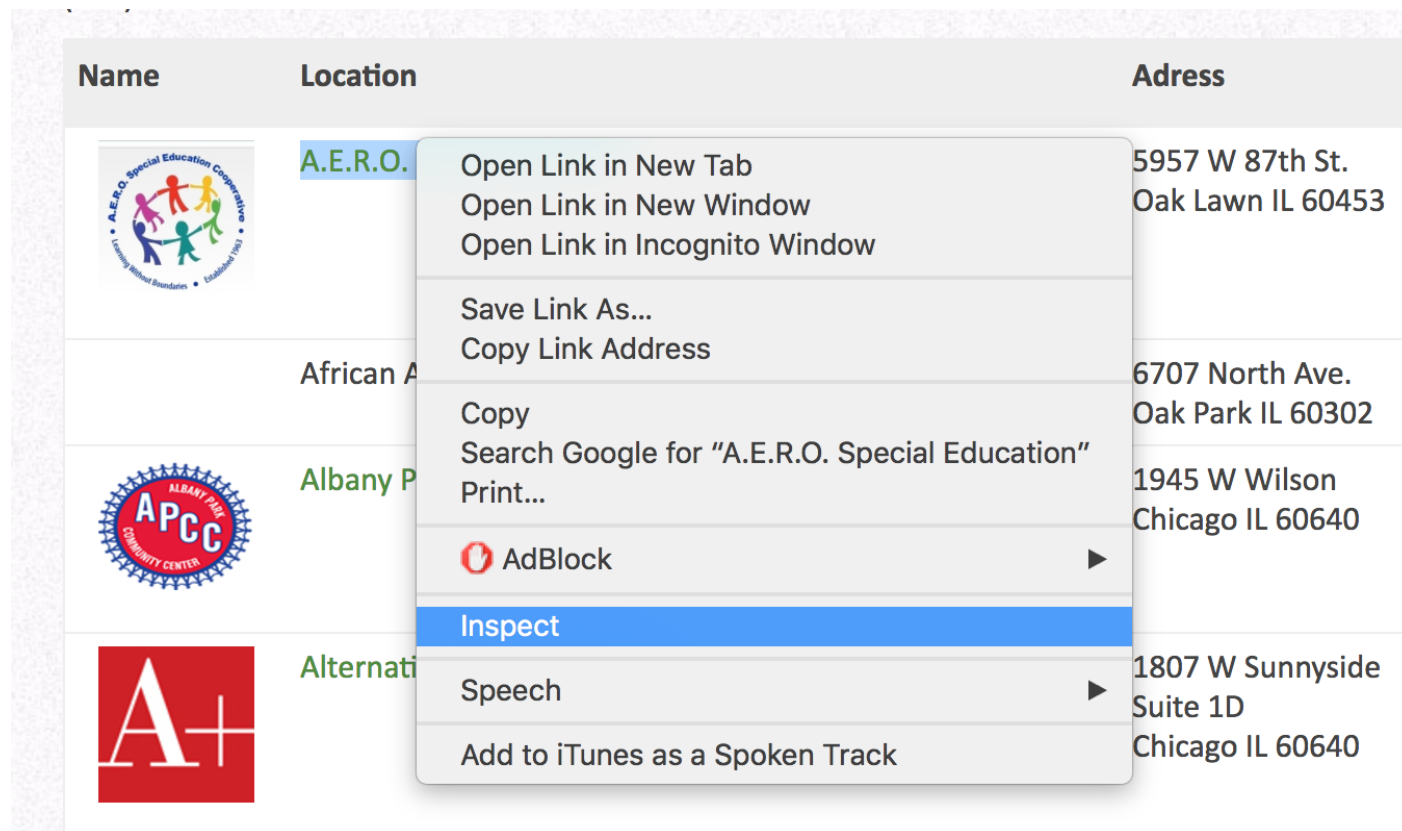
In [21]: *# To get more specific, you can find HTML tags by both their type and at
tributes, such as their id:*
`soup.find("div", {"id": "sidebarcol"})`

Out[21]: `<div id="sidebarcol"><div id="submenu"><h2>Section Navigation</h2><li class="lastlink">Americ
an Job Centers</div><div id="sbpanel"><div id="sbpanelto
p"><div id="sbpanelbot"><h3>Related Services</h3>
<p><a href="http://www.illinoisworknet.com/vos_portal/?partner" target
="_blank">Illinois Worknet: For the purpose of expanding economic o
pportunity, the Illinois workNet® Portal and Program utilizes partnersh
ips and technology to expand seamless and real-time access to workforce
development resources aimed at individuals, businesses and workforce pr
ofessionals.</p>
<p>Connect Chica
go: Connect Chicago is a loose network of more than 250 places in t
he city where internet and computer access, digital skills training, an
d online learning resources are available—for free.</p>
</div></div></div><div id="sidebareventblock"><h2>Upcoming Events</h2><p> </p><div class="eventdate"><div class="dateb
lock"><div class="month">Dec</div><div class="day">14</div></div><div c
lass="eventdata"><div class="etitle"><a href="/events-calendar/the-chic
ago-cook-workforce-investment-board-meeting-december-2017/">The Chicago
Cook Workforce Investment Board Meeting December 2017</div></div></div>
</div></div>`

Exploring and Inspecting a Webpage

- Back to [Table of Contents](#)

The methods available within the `BeautifulSoup` object let us intelligently search our scraped HTML. These tools will let us quickly grab all the data on this webpage once we know what we are looking for. Sometimes, the easiest way to find what you want to scrape is to start with a manual inspection. In this case, in our web browser, we can right click on the elements we are curious about and select `inspect`.



After doing this, we will be able to see the HTML code associated with the visual part of the webpage.

```

<table border="0" class="atable" summary="Table of partners">
  <thead>...</thead>
  <tbody>
    <tr>
      <td>...</td>
      <td valign="middle">
...
        <a href="http://www.aerosped.org/" target=
          "_blank">A.E.R.O. Special Education</a> == $0
        </td>
      <td style="white-space: nowrap;">...</td>
      <td style="white-space: nowrap;">(708) 499-0181</td>
      <td>&nbsp;</td>
      <td>&nbsp;</td>
    </tr>
    <tr>...</tr>
    <tr>...</tr>
  </tbody>
</table>

```

From this, we can see that these rows of data are in fact in an HTML `<table>` tag. That's enough to get started.


```
In [22]: table = soup.find("tbody")  
         print(table)
```

```

<tbody>
<tr>
<td><a href="http://www.aerosped.org/" target="_blank"> </a></td>
<td valign="middle"><a href="http://www.aerosped.org/" target="_blank">
A.E.R.O. Special Education</a></td>
<td style="white-space: nowrap;">5957 W 87th St.<br/> Oak Lawn IL 60453
</td>
<td style="white-space: nowrap;">(708) 499-0181</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td> </td>
<td>African American Christian Foundation</td>
<td>6707 North Ave.<br/> Oak Park IL 60302</td>
<td>(708) 848-1700</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://apcc-chgo.org/" target="_blank"> </a></td>
<td><a href="http://apcc-chgo.org/" target="_blank">Albany Park Communi
ty Center</a></td>
<td>1945 W Wilson<br/> Chicago IL 60640</td>
<td>(773) 539-3828</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://www.asnchicago.net/" target="_blank"> </a></td>
<td><a href="http://www.asnchicago.net/" target="_blank">Alternative Sc
hools Network</a></td>
<td style="white-space: nowrap;">1807 W Sunnyside<br/> Suite 1D<br/> Ch
icago IL 60640</td>
<td>(773) 728-4030</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://bcsillinois.org/" target="_blank"> </a></td>
<td>Arlington Heights Workforce Center<br/>Business & Career Servic
es, Inc. (BCS)</td>
<td>723 W Algonquin <br/>Arlington Heights IL 60005</td>
<td>(847) 981-7400</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://ahschicago.org/" target="_blank"> </a></td>
<td>Asian Human Services</td>
<td>4820 N Broadway<br/> 3rd Floor<br/> Chicago IL 60640</td>
<td>(773) 293-8119</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://aspirail.org/" target="_blank"> </a></td>
<td><a href="http://aspirail.org/" target="_blank">Aspira</a></td>
<td>2415 N. Milwaukee<br/> Chicago IL 60647</td>
<td>(773) 770-1940</td>
<td> </td>
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</tr>
<tr>
<td><a href="http://auntmarthas.org/" target="_blank"> </a></td>
<td><a href="http://auntmarthas.org/" target="_blank">Aunt Martha's</a>
</td>
<td>440 Forest Blvd.<br/> Park Forest IL 60466</td>
<td>(708) 679-8126</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td>
<p> </p>
<p> </p>
<p> </p>
</td>
<td>Bethel Community Facility</td>
<td>1250 Portland Ave.<br/>Chicago Heights IL 60411</td>
<td>(708) 758-5585</td>
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</tr>
<tr>
<td><a href="http://www.bgcc.org/" target="_blank"> </a></td>
<td><a href="http://www.bgcc.org/" target="_blank">Boys & Girls Clu
b of Chicago </a></td>
<td>3400 S Emerald St.<br/> Chicago IL 60616;<br/><br/> 2102 W Monroe <
br/> Chicago IL 60612; <br/><br/> 9600 S Vincennes<br/> Chicago IL 6064
3</td>
<td>(773) 927-7373 x4718</td>
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</tr>
<tr>
<td><a href="http://calumetareaindustrial.com/" target="_blank"> </a></td>
<td><a href="http://calumetareaindustrial.com/" target="_blank">Calumet
Area Industrial Commission</a></td>
<td>1000 E. 111th St.<br/> 10th Floor<br/> Chicago IL 60628</td>
<td>(773) 928-6000</td>
<td> </td>
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<tr>
<td><a href="http://www.centralstater.org" target="_blank"> </a></td>
<td><a href="http://www.centralstater.org" target="_blank">Central S
tates SER </a></td>
<td>3948 W. 26th St., Ste. 213<br/> Chicago IL 60623</td>
<td>(773) 542-9030 x1283</td>
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<tr>
<td><a href="http://www.cflwac.org/" target="_blank"> </a></td>
<td><a href="http://www.cflwac.org/" target="_blank">Chicago Federation
of Labor - WAC</a></td>
<td>130 E. Randolph<br/> Ste. 2600<br/> Chicago IL 60601</td>
<td>(312) 565-9431</td>
<td> </td>
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</tr>
<tr>
<td><a href="http://www.nationalable.org/" target="_blank"> </a></td>
<td><a href="http://www.nationalable.org/" target="_blank">Chicago Heig
hts Workforce Center<br/> National Able Network</a></td>
<td>Prairie State College<br/>ATOC Building<br/>202 S. Halsted, Suite 1
48<br/>Chicago Heights, IL 60411</td>
<td>(708) 709-7975</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://caslservice.org/" target="_blank"> </a></td>
<td><a href="http://caslservice.org/" target="_blank">Chinese American
Service League (CASL)</a></td>
<td>2141 S. Tan Court<br/> Chicago IL 60616</td>
<td>(312) 791-0418</td>
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<tr>
<td><a href="http://www.sercohq.com/" target="_blank"> </a></td>

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<td><a href="http://www.sercohq.com/" target="_blank">Cicero Workforce
  Center<br/> SERCO</a></td>
<td>2138 S. 61st Court <br/> 3rd Floor<br/> Cicero IL 60804</td>
<td>(708) 222-3100</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://eriehouse.org/" target="_blank"> </a
></td>
<td><a href="http://eriehouse.org/" target="_blank">Erie Neighborhood H
ouse</a></td>
<td>1347 W Erie<br/> Chicago IL 60642</td>
<td>(312) 666-3430</td>
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</tr>
<tr>
<td><a href="http://www.sercohq.com/" target="_blank"> </a></td>
<td><a href="http://www.sercohq.com/" target="_blank">Garfield Workforc
e Center<br/> SERCO</a></td>
<td>10 S. Kedzie<br/> 1st Floor<br/> Chicago IL 60612</td>
<td>(773) 722-3885</td>
<td> </td>
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<tr>
<td><a href="http://www.gwtp.edu/" target="_blank"> </a></td>
<td><a href="http://www.gwtp.edu/" target="_blank">Greater West Town</a
></td>
<td>500 N. Sacramento<br/> Chicago IL 60612<br/><br/>790 N Milwaukee<b
r/>Chicago IL 60642</td>
<td>(312) 563-9570<br/><br/><br/>(312) 432-1300</td>
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<tr>
<td><a href="http://howardarea.org/" target="_blank"> </a
></td>
<td><a href="http://howardarea.org/" target="_blank">Howard Area Commun
ity Center</a></td>
<td>1527 W Morse<br/>Chicago IL 60626<br/><br/>1623 W Howard<br/>Chicag
o IL 60626</td>
<td>(773) 381-3652<br/><br/><br/>(773) 262-3515
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<td><a href="http://www.inspirationcorp.org/" target="_blank"> </a></td>
<td><a href="http://www.inspirationcorp.org/" target="_blank">Inspirati
on Corporation</a></td>
<td>4554 N Broadway<br/> Chicago IL 60640</td>
<td>(773) 878-0981</td>
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<tr>
<td><a href="http://idpl.org/" target="_blank"> </a></td>
<td><a href="http://idpl.org/" target="_blank">Instituto del Progreso
Latino</a></td>
<td>2520 S Western Ave.<br/> Chicago IL 60608</td>
<td>(773) 890-0055</td>
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<tr>
<td><a href="http://www.chicagomfgworks.org/" target="_blank"> </a></td>
<td><a href="http://www.chicagomfgworks.org/" target="_blank">Instituto
del Progreso Latino / ManufacturingWorks</a></td>
<td>2800 S Western Ave.<br/> Chicago IL 60608</td>
<td>(773) 890-8055</td>
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<td><a href="http://www.jane-addams.org/" target="_blank"> </a></td>
<td><a href="http://www.jane-addams.org/" target="_blank">Jane Addams R
esource Corporation (JARC)</a></td>
<td>4222 N Ravenswood<br/> Chicago IL 60613</td>
<td>(773) 751-7123 or <br/> (773) 751-7115</td>
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<tr>
<td><a href="http://jvschicago.org/" target="_blank"> </a></td>
<td><a href="http://jvschicago.org/" target="_blank">Jewish Vocational
Services (JVS)</a></td>
<td>216 W. Jackson<br/>Chicago IL 60606<br/><br/>300 Revere Dr.<br/>Nor
thbrook IL 60062</td>
<td>(847) 412-4300</td>
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<tr>
<td><a href="http://www.ladse.org/" target="_blank"> </a></td>

```

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<td><a href="http://www.ladse.org/" target="_blank">LaGrange Area Depar
tment of Special Education (LADSE)</a></td>
<td>1301 W. Cossitt Avenue<br/> LaGrange IL 60525</td>
<td>(708) 482-1170</td>
<td> </td>
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<tr>
<td><a href="http://www.maine207.org/" target="_blank"> </a></td>
<td><a href="http://www.maine207.org/" target="_blank">Maine Township D
istrict 207 JumpStart Program</a></td>
<td>2601 Dempster Street <br/> Rm. 148<br/> Park Ridge IL 60068</td>
<td>(847) 692-8341</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td> </td>
<td>Marriott Foundation</td>
<td>850 W. Jackson<br/> Suite 260<br/> Chicago IL 60607</td>
<td>(312) 432-6240<br/> x3000</td>
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</tr>
<tr>
<td><a href="http://www.eesforjobs.com/" target="_blank"> </a></td>
<td><a href="http://www.eesforjobs.com/" target="_blank">Maywood Workfo
rce Center<br/> Employment & Employer Services</a></td>
<td>1701 South 1st Avenue Suite 10<br/> Maywood Illinois 60153</td>
<td>(708) 223-2652</td>
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<tr>
<td><a href="http://metrofamily.org/" target="_blank"> </a></td>
<td><a href="http://metrofamily.org/" target="_blank">Metropolitan Fami
ly Services</a></td>
<td>235 E 103rd St.<br/>Chicago IL 60628</td>
<td>(773) 371-3625</td>
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<tr>
<td><a href="https://www.microtrain.net/" target="_blank"> </a>
</td>
<td><a href="https://www.microtrain.net/" target="_blank">Microtrain Te
chnologies</a></td>
<td>1010 Dixie Hwy #102<br/> Chicago Heights IL 60411<br/><br/>200 W Ad
ams<br/> Chicago IL 60606</td>
<td>(708) 323-4191<br/><br/><br/>(312) 628-9232</td>
<td> </td>

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<td> </td>
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<tr>
<td><a href="http://www.eesforjobs.com/" target="_blank"> </a></td>
<td><a href="http://www.eesforjobs.com/" target="_blank">Mid-South Work
force Center<br/> Employment & Employer Services</a></td>
<td>4314 S Cottage Grove<br/> Room 209<br/> Chicago IL 60653</td>
<td>(773) 538-5627</td>
<td> </td>
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<tr>
<td><a href="http://morainevalley.edu/" target="_blank"> </a></td>
<td><a href="http://morainevalley.edu/" target="_blank">Moraine Valley
Community College</a></td>
<td style="white-space: nowrap;">9000 West College Parkway<br/> Palos H
ills IL 60463</td>
<td>(708) 974-5735</td>
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<tr>
<td><a href="http://www.nationalable.org/" target="_blank"> </a></td>
<td><a href="http://www.nationalable.org/" target="_blank">National Abl
e Network, Inc.<br/>(Evanston and Oakton CC)</a></td>
<td>1703 Orrington<br/>3rd Floor<br/>Evanston IL 60201<br/><br/>Oakton
Community College<br/>[Skokie Campus]7701 Lincoln Ave., Rm A151<br/>Sk
okie, IL 60077</td>
<td>(847) 448-8600<br/> Ask for WorkNet Center</td>
<td> </td>
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</tr>
<tr>
<td><a href="http://www.eesforjobs.com/" target="_blank"> </a></td>
<td><a href="http://www.eesforjobs.com/" target="_blank">Oak Forest Wor
kforce Center<br/> Employment & Employer Services </a></td>
<td>15900 S Cicero Ave.<br/> Building B - 2nd Floor<br/> Oak Forest IL
60452</td>
<td>(708) 633-2777</td>
<td> </td>
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<tr>
<td><a href="http://phalanxgrpsservices.org/" target="_blank"> </a></td>
<td><a href="http://phalanxgrpsservices.org/" target="_blank">Phalanx Fa
mily Services </a></td>
<td>1201 W 115th St.<br/> Chicago IL 60643</td>
<td>(773) 291-1086</td>
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<td> </td>
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<tr>
<td><a href="http://www.nationalable.org/" target="_blank"> </a></td>
<td><a href="http://www.nationalable.org/" target="_blank">Pilsen Workf
orce Center<br/> National Able Network Inc.</a></td>
<td>1700 W 18th St.<br/> Chicago IL 60608</td>
<td>(312) 994-8300</td>
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<tr>
<td><a href="http://polish.org/" target="_blank"> 
</a></td>
<td><a href="http://polish.org/" target="_blank">Polish American Associ
ation </a></td>
<td>3834 N. Cicero<br/> Chicago IL 60641</td>
<td>(773) 282-1122</td>
<td> </td>
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<tr>
<td><a href="http://prairiestate.edu/" target="_blank"> </
a></td>
<td><a href="http://prairiestate.edu/" target="_blank">Prairie State Co
llege</a></td>
<td>202 S. Halsted Street <br/> (ATOC Building 148)<br/> Chicago Height
s IL 60411</td>
<td>(708) 709-3911</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td><a href="http://pyramid-pci.com/" target="_blank"> </a></td>
<td><a href="http://pyramid-pci.com/" target="_blank">Pyramid Partnersh
ip, Inc.</a></td>
<td>3057 N. Lincoln Ave.<br/> Chicago IL 60657</td>
<td>(773) 975-9898</td>
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<tr>
<td><a href="http://saferfoundation.org/" target="_blank"> </a></td>
<td><a href="http://saferfoundation.org/" target="_blank">Safer Foundat
ion (Chicago)</a><br/><br/><br/> <a href="http://saferfoundation.org/"
target="_blank">Safer Foundation (Harvey) </a></td>
<td>571 West Jackson Blvd.<br/> Chicago IL 60661<br/><br/>15402 Center<
br/> Harvey IL 60426</td>
<td>(312)341-8745<br/><br/><br/>(708) 339-2148 or<br/> (708) 339-1452</

```

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g alt="ServiceWorks logo" src="/Portals/0/Images/AgencyLogos/servicewor
ks.jpg"/></a></td>
<td><a href="http://www.chicago-serviceworks.com" target="_blank">Servi
ceWorks Chicago<br/> Educational Data Systems, Inc. (EDSI)</a></td>
<td>500 N Dearborn<br/> Chicago IL 60654</td>
<td>(312) 494-9346</td>
<td> </td>
<td> </td>
</tr>
<tr>
<td> </td>
<td>Broadway/Northside Workforce Center<br/> Dynamic Educational System
s, Inc. (DESI)</td>
<td>5060 N. Broadway<br/> 6th floor, Suite#690<br/>Chicago IL 60640</td>
<td>(773) 334-4747</td>
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<td><a href="http://www.skillsforchicagoland.com/" target="_blank"> <im
g alt="Skills for Chicagoland logo" src="/Portals/0/Images/AgencyLogos/
skillsfor.jpg"/></a></td>
<td><a href="http://www.skillsforchicagoland.com/" target="_blank">Skil
ls for Chicagoland's Future</a></td>
<td>191 N. Wacker Drive<br/> Suite 925<br/> Chicago IL 60606</td>
<td>(312) 906-7200</td>
<td> </td>
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  <td>2121 S. Goebbert Rd.<br/> Arlington Heights IL 60005</td>
  <td>(847) 718-7933</td>
  <td> </td>
  <td> </td>
</tr>, <tr>
  <td><a href="http://www.triton.edu/" target="_blank"> </a></td>
  <td><a href="http://www.triton.edu/" target="_blank">Triton College</a>
</td>
  <td>2000 Fifth Avenue<br/> River Grove IL 60171</td>
  <td>(708) 456-0388 x3149</td>
  <td> </td>
  <td> </td>
</tr>, <tr>
  <td> </td>
  <td>Washington Heights Workforce Center<br/>Dynamic Educational System

```

```

s, Inc. (DESI)</td>
<td>10325 South Halsted Street<br/>Chicago IL 60628</td>
<td>(773) 928-5272</td>
<td> </td>
<td> </td>
</tr>, <tr>
<td> </td>
<td>Youth Connection Charter</td>
<td>2424 S State St<br/> Chicago IL 60616</td>
<td>(312) 328-0799</td>
<td> </td>
<td> </td>
</tr>, <tr>
<td><a href="http://www.youth-guidance.org/" target="_blank"> </a></td>
<td><a href="http://www.youth-guidance.org/" target="_blank">Youth Gui
dance</a></td>
<td>4343 W Wrightwood Ave<br/> Chicago IL 60639<br/><br/>936 N Ashland
Ave<br/> Chicago IL 60622<br/><br/>6520 S Wood St<br/> Chicago IL 60636
</td>
<td>(312) 994-8184<br/><br/><br/>(312) 404-3205<br/><br/><br/>(312) 40
4-3194</td>
<td> </td>
<td> </td>
</tr>, <tr>
<td><a href="http://youthjobcenter.org" target="_blank"> </a></td>
<td><a href="http://youthjobcenter.org" target="_blank">Youth Job Cent
er of Evanston</a></td>
<td>1114 Church Street<br/> Evanston IL 60201</td>
<td>(847) 864-5627</td>
<td> </td>
<td> </td>
</tr>]

```

```

In [24]: ## Instead of printing that out, let's save it as a variable called row
s:
rows = table.find_all("tr")
type(rows)

```

```
Out[24]: bs4.element.ResultSet
```

```
In [25]: # And we can look within each row (below, just the first row) for table
         elements <td>:
         rows[0].find_all("td")
```

```
Out[25]: [<td><a href="http://www.aerosped.org/" target="_blank"> </a></td>,
         <td valign="middle"><a href="http://www.aerosped.org/" target="_blan
k">A.E.R.O. Special Education</a></td>,
         <td style="white-space: nowrap;">5957 W 87th St.<br/> Oak Lawn IL 6045
3</td>,
         <td style="white-space: nowrap;">(708) 499-0181</td>,
         <td> </td>,
         <td> </td>]
```

```
In [26]: # Alternatively, we can use the 'findChildren' method.
         print(rows[0].findChildren('td'))
         print(rows[1].findChildren('td'))
         print(rows[2].findChildren('td'))
         print(rows[3].findChildren('td'))
         print(rows[4].findChildren('td'))
         # Note that 'child' is a relative term, refering to a tag within a tag.
         # The container tag is called the 'parent' tag, likewise relative to the
         child tag.
```

```
[<td><a href="http://www.aerosped.org/" target="_blank"> </a></td>, <td valign="middle"><
a href="http://www.aerosped.org/" target="_blank">A.E.R.O. Special Educ
ation</a></td>, <td style="white-space: nowrap;">5957 W 87th St.<br/> O
ak Lawn IL 60453</td>, <td style="white-space: nowrap;">(708) 499-0181
</td>, <td> </td>, <td> </td>]
[<td> </td>, <td>African American Christian Foundation</td>, <td>6707 N
orth Ave.<br/> Oak Park IL 60302</td>, <td>(708) 848-1700</td>, <td> </
td>, <td> </td>]
[<td><a href="http://apcc-chgo.org/" target="_blank"> </a></td>, <td><a href="htt
p://apcc-chgo.org/" target="_blank">Albany Park Community Center</a></t
d>, <td>1945 W Wilson<br/> Chicago IL 60640</td>, <td>(773) 539-3828</t
d>, <td> </td>, <td> </td>]
[<td><a href="http://www.asnchicago.net/" target="_blank"> </a></td>, <td><a href="http://www.asnchicago.ne
t/" target="_blank">Alternative Schools Network</a></td>, <td style="wh
ite-space: nowrap;">1807 W Sunnyside<br/> Suite 1D<br/> Chicago IL 6064
0</td>, <td>(773) 728-4030</td>, <td> </td>, <td> </td>]
[<td><a href="http://bcsillinois.org/" target="_blank"> </a></td>, <td>Arlington Heights Workforce Center<b
r/>Business & Career Services, Inc. (BCS)</td>, <td>723 W Algonquin
<br/>Arlington Heights IL 60005</td>, <td>(847) 981-7400</td>, <td> </t
d>, <td> </td>]
```


Building Our First Parser

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With just the python we've learned so far, we can make a parse our scraper data. We'll need a list object to fill with results, a for loop to iterate over all the `<tr>` elements, BeautifulSoup's `find_all` method, and the list's `append` method.

```
In [29]: ## The correct answer to the web scraping exercise is below:

# Use requests to grab the HTML page for Chicago Workforce Centers
url = "http://www.workforceboard.org/job-seekers/"
response = requests.get(url)

# Create BeautifulSoup object and pull out the table rows:
soup = BeautifulSoup(response.text)
table = soup.find("table")
rows = table.find_all("tr")

# Create lists to hold our scraped data
centers = []
addresses = []
phone_numbers = []

rows = rows[1:] #Skip the header row
for row in rows:

    name_td = row.find_all("td")[1]
    if name_td.find("a"):
        center_name = name_td.find("a").text
    else:
        center_name = name_td.text

    centers.append(center_name)
    addresses.append(row.find_all("td")[2].text)
    phone_numbers.append(row.find_all("td")[3].text)

## Create pandas dataframe:
centers_df = pd.DataFrame({"center_name" : pd.Series(centers),
    "address" : pd.Series(addresses),
    "phone_number" : pd.Series(phone_numbers)})

## A little cleanup to remove extraneous tags:
centers_df["center_name"] = centers_df["center_name"].str.replace("<td>", "")
centers_df["center_name"] = centers_df["center_name"].str.replace("<br/>", "")

centers_df.head()
```

/Users/crh278/anaconda3/envs/geo_py36/lib/python3.6/site-packages/bs4/_init_.py:181: UserWarning: No parser was explicitly specified, so I'm using the best available HTML parser for this system ("lxml"). This usually isn't a problem, but if you run this code on another system, or in a different virtual environment, it may use a different parser and behave differently.

The code that caused this warning is on line 193 of the file /Users/crh278/anaconda3/envs/geo_py36/lib/python3.6/runpy.py. To get rid of this warning, change code that looks like this:

```
BeautifulSoup(YOUR_MARKUP})
```

to this:

```
BeautifulSoup(YOUR_MARKUP, "lxml")
```

```
markup_type=markup_type))
```

Out[29]:

	address	center_name	phone_number
0	5957 W 87th St. Oak Lawn IL 60453	A.E.R.O. Special Education	(708) 499-0181
1	6707 North Ave. Oak Park IL 60302	African American Christian Foundation	(708) 848-1700
2	1945 W Wilson Chicago IL 60640	Albany Park Community Center	(773) 539-3828
3	1807 W Sunnyside Suite 1D Chicago IL 60640	Alternative Schools Network	(773) 728-4030
4	723 W Algonquin Arlington Heights IL 60005	Arlington Heights Workforce CenterBusiness & C...	(847) 981-7400

```
In [31]: ## Save our scraped data as a csv:
centers_df.to_csv("./data/chicago-workforce-centers.csv")
```

Appendix

Note on HTML Parsers

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If HTML is particularly malformed or invalid, different HTML parsers will render that HTML differently, some better than others. For example, when the built-in Python HTML parser (`html.parser`) finds bad HTML, it sometimes simply stops parsing, lumping the remainder of the document into a big string blob that is all but useless for scraping. On the same document, however, `html5lib` will not get confused at all.

For cases where a particular parser doesn't work for a given document, BeautifulSoup supports explicitly choosing from multiple parsers, selected by passing an optional second argument to the BeautifulSoup constructor:

- ***html.parser*** - Python's `html.parser` - fast, doesn't require additional packages, but not able to deal with truly gnarly HTML. Usage:

```
# built-in Python parser for HTML
BeautifulSoup( response_html, "html.parser" )
```

- ***lxml*** - fast, lenient parser that can process both HTML and XML. Must be installed (`conda install lxml` or `pip install lxml`). Best for XML documents and clean HTML. Usage:

```
# lxml for HTML
BeautifulSoup( response_html, "lxml" )

# lxml for XML
BeautifulSoup( response_html, [ "lxml", "xml" ] )
BeautifulSoup( response_html, "xml" )
```

- ***html5lib*** - extremely lenient, parses the way a web browser does, and makes valid HTML 5. But, slow compared to `lxml` and Python's built-in HTML parser, and must be installed (`conda install html5lib` or `pip install html5lib`). Usage:

```
# html5lib for HTML
BeautifulSoup( response_html, "html5lib" )
```

- More information: <http://www.crummy.com/software/BeautifulSoup/bs4/doc/#installing-a-parser>
(<http://www.crummy.com/software/BeautifulSoup/bs4/doc/#installing-a-parser>)

Exploring HTML in a web page

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Once you've targeted a web page and pulled down its HTML source, you'll need to examine the HTML to try to figure out how to most easily get at the information you seek. You'll need to learn how to view, filter, and search inside the HTML result of any in-browser rendering so you can figure out what you need to target. Some useful tools in Firefox:

- **View selection source** command - this command, available when you select text in a web page, then right click on the selection, will pull up just the HTML for the selected area of the web page. This doesn't give you context, but it can be extremely useful if you are trying to get an `id`, `class`, or `name` for a particular element.
- **Firefox's built-in developer tools** - <https://developer.mozilla.org/en-US/docs/Tools> (<https://developer.mozilla.org/en-US/docs/Tools>) - Firefox's built in developer tools are impressive, and they've recently pulled in all the functionality that the Firebug plugin provides, as well, allowing for inspection and searching within a document. A full accounting is beyond the scope of this notebook, but these are worth learning more about if you scrape a lot.
- **Web Developer** toolbar - <https://addons.mozilla.org/en-US/firefox/addon/web-developer/> (<https://addons.mozilla.org/en-US/firefox/addon/web-developer/>) - The web developer toolbar provides many tools that can be helpful in analyzing a page you want to scrape or crawl through. In particular, a few essential features:
 - In the "View Source" menu, "View Generated Source" will present for you the source of the page once any in-browser rendering is done. This is the source that you are looking at, not necessarily the HTML that was initially sent over to your browser. You can use this source to plan how you'll interact with the final result of rendering the page.
 - In the "Forms" menu, the command "Display Form Details" will show you details on each form on the page, including all the `<inputs>` for each form. This goes a long way toward helping you figure out how a form you want to try to interact with works.
 - The "Outline" menu contains numerous tools that allow you to see more information about a part of the current web page when you hover your mouse over it.
- For more information, see: <http://www.crummy.com/software/BeautifulSoup/bs4/doc/#quick-start> (<http://www.crummy.com/software/BeautifulSoup/bs4/doc/#quick-start>)

Submitting a form

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Steps for submitting a web form:

- Load the page in a browser and look it over, identify form you want to submit programmatically.
- Get source for page.
- In source, find the form. Options:
 - use "web developer" toolbar in Firefox, go to "Forms"-->"View Form Information".
 - use the "web developer" toolbar --> "View Source" --> "View Generated Source", then do a text search for text associated with the form.
 - Enable Firebug and all firebug panels, load the page you are interested in, then open up Firebug window, go to the HTML tab, then search for terms you are looking for.
- Once you find the form:
 - look for the `<form>` element so you can figure out if the form is expecting a GET or a POST request, and the URL where the form should be submitted.

Example:

```
<form action="action_page.php" method="GET">
```

Where:

- action = URL of page where form should be submitted.
- method = type of request to make (usually will be either "get" or "post").
- then, look for all the `<input>`s, `<textarea>`s, and `<select>`s to the form, so you can get their names and figure out what information you have to pass to the form in each parameter to get results back.

Example:

```
First name:<br>
<input type="text" name="firstname">
<br>
Last name:<br>
<input type="text" name="lastname">
```

- Once you know names and values you need to pass, then build the code to submit requests to the FORM.

HTTP Response Example

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Example:

```
HTTP/1.1 200 OK
Date: Mon, 23 May 2005 22:38:34 GMT
Server: Apache/1.3.3.7 (Unix) (Red-Hat/Linux)
Last-Modified: Wed, 08 Jan 2003 23:11:55 GMT
ETag: "3f80f-1b6-3e1cb03b"
Content-Type: text/html; charset=UTF-8
Content-Length: 131
Accept-Ranges: bytes
Connection: close

<html>
<head>
  <title>An Example Page</title>
</head>
<body>
  Hello World, this is a very simple HTML document.
</body>
</html>
```

An HTTP response is very similar. It contains:

- a text **status line** that includes the following, in this order, with each separated by a single space:
 - the specific version of HTTP you are using.
 - the status code for the request. Common status codes:
 - 200 - OK
 - 404 - File not found
 - 500 - server error
 - 503 - server down
 - a status message for the request.
- a **header block** that contains one or more header variables, name-value pairs with name separate from value by a colon and a space.
 - example: Content-Type: text/html
- a blank line
- the body of the response which could contain just about anything, depending on what you've requested. For a request from a web browser to a web server, for example the response will contain the HTML for the page, which the browser will render. For an API request, the response body could contain data in any number of formats (JSON, XML, etc.).

More Examples

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Examples:

- <http://www.gregreda.com/2013/03/03/web-scraping-101-with-python/>
(<http://www.gregreda.com/2013/03/03/web-scraping-101-with-python/>)
- <http://blog.miguelgrinberg.com/post/easy-web-scraping-with-python>
(<http://blog.miguelgrinberg.com/post/easy-web-scraping-with-python>)