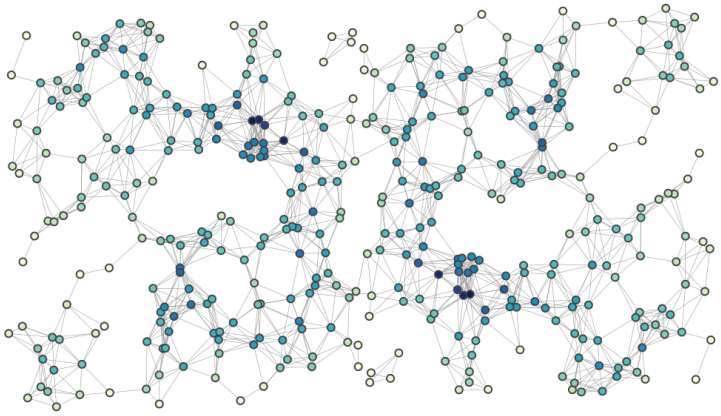

Old Dominion University

CS 432 Web Science

Assignment One

Derek Goddeau

Professor

Michael L. Nelson

February 23, 2017

1 POST to a from with `curl`

In order to submit `POST` data to a form using `curl` first it must be ensured that the form accepts `POST` data. This can be done by viewing the page source and verifying that the form tag has `method="post"` as in the nostarch.com search bar form tag shown somewhat abridged below.

```
<form action="/" method="post" id="search-theme-form">
<input name="search_theme_form" value="" class="form-text"/>
<input name="op" value="Search" class="form-submit"/>
<input type="hidden" name="form_build_id" value="form-6Skwd"/>
<input type="hidden" name="form_id" value="search_theme_form"/>
</form>
```

In order to craft the `curl` command the `-d` flag can be used along with the `"name=value"` pattern for each input to the form where `name` is copied from each input tag and `value` is changed in the fields where the default values are not desired.

```
curl -L -i -o results.html \
           -d "search_theme_form=$1" \
           -d "op=Search" \
           -d "form_build_id=form-6SkwdjCka872mUDOLyJspWzIHtkBGso7f5RMZ2fGr9U" \
           -d "form_id=search_theme_form" \
           https://www.nostarch.com/
```

The command `curl_post.sh car` will return a page with the search results for "car" on nostarch.com. Inspecting the output `results.html` the `HTTP/1.1 200 OK` after a single redirect and lack of a 405 Method not allowed error means the request was successful.

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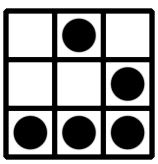

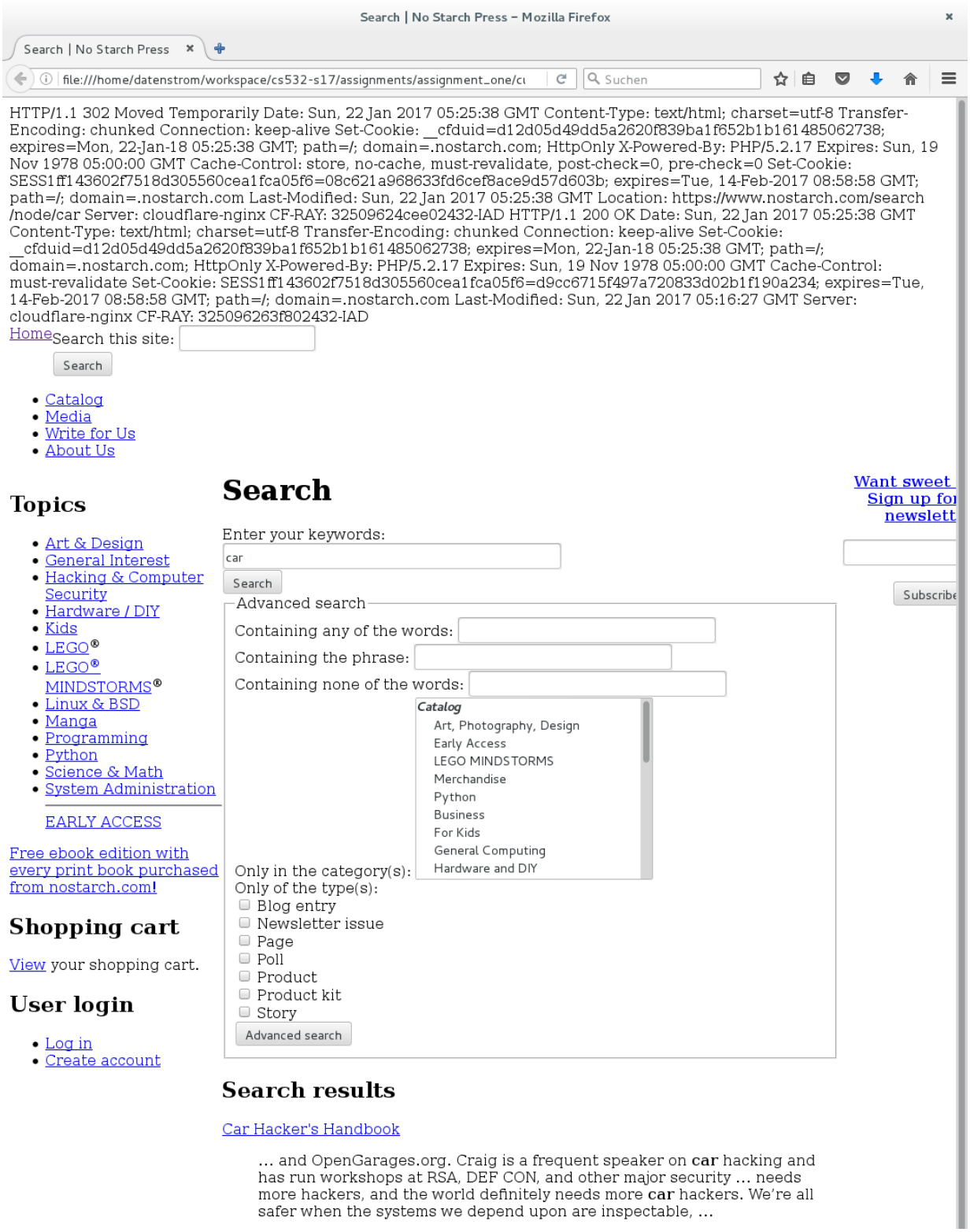
Search | No Starch Press – Mozilla Firefox
Search | No Starch Press
file:///home/datenstrom/workspace/cs532-s17/assignments/assignment_one/c
Suchen
HTTP/1.1 302 Moved Temporarily Date: Sun, 22 Jan 2017 05:25:38 GMT Content-Type: text/html; charset=utf-8 Transfer-Encoding: chunked Connection: keep-alive Set-Cookie: __cfduid=d12d05d49dd5a2620f839ba1f652b1b161485062738; expires=Mon, 22-Jan-18 05:25:38 GMT; path=/; domain=.nostarch.com; HttpOnly X-Powered-By: PHP/5.2.17 Expires: Sun, 19 Nov 1978 05:00:00 GMT Cache-Control: store, no-cache, must-revalidate, post-check=0, pre-check=0 Set-Cookie: SESS1ff143602f7518d305560cea1fca05f6=08c621a968633fd6cef8ace9d57d603b; expires=Tue, 14-Feb-2017 08:58:58 GMT; path=/; domain=.nostarch.com Last-Modified: Sun, 22 Jan 2017 05:25:38 GMT Location: https://www.nostarch.com/search/node/car Server: cloudflare-nginx CF-RAY: 32509624cee02432-IAD HTTP/1.1 200 OK Date: Sun, 22 Jan 2017 05:25:38 GMT Content-Type: text/html; charset=utf-8 Transfer-Encoding: chunked Connection: keep-alive Set-Cookie: __cfduid=d12d05d49dd5a2620f839ba1f652b1b161485062738; expires=Mon, 22-Jan-18 05:25:38 GMT; path=/; domain=.nostarch.com; HttpOnly X-Powered-By: PHP/5.2.17 Expires: Sun, 19 Nov 1978 05:00:00 GMT Cache-Control: must-revalidate Set-Cookie: SESS1ff143602f7518d305560cea1fca05f6=d9cc6715f497a720833d02b1f190a234; expires=Tue, 14-Feb-2017 08:58:58 GMT; path=/; domain=.nostarch.com Last-Modified: Sun, 22 Jan 2017 05:16:27 GMT Server: cloudflare-nginx CF-RAY: 325096263f802432-IAD
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General Interest
Hacking & Computer Security
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Advanced search
Containing any of the words:
Containing the phrase:
Containing none of the words:
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Early Access
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Only in the category(s):
Only of the type(s):
Blog entry
Newsletter issue
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... and OpenGarages.org. Craig is a frequent speaker on car hacking and has run workshops at RSA, DEF CON, and other major security ... needs more hackers, and the world definitely needs more car hackers. We're all safer when the systems we depend upon are inspectable, ...

2 A Python program that finds PDFs

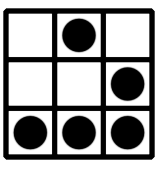
The `Common House Spider` can take any number of URIs as input optionaly from a specified file with the `-f` flag, and use multiple threads using the `-t` flag. It outputs all PDF URIs on the page and the PDF size as reported by the server. Note that the `-u` or `--ugly` parameter must be passed to print first and last URI.

```
datenstrom@redacted$ python cli.py -t 2 www.nostarch.com/carhacking https://www.nostarch.com/blackhatpython -u
[*] Crawling pages:
www.nostarch.com/carhacking
https://www.nostarch.com/blackhatpython
[*] Spinning up with 2 threads
[*] Thread 1 discovered 3 PDF links for https://www.nostarch.com/blackhatpython
[*] Thread 1 removed 0 duplicate PDF files

First link: http://www.nostarch.com/download/BlackHatPython_ch07.pdf
Last link: https://www.nostarch.com/download/BlackHatPython_ch07.pdf
PDF size: 88339

First link: http://www.nostarch.com/download/BlackHatPython_dTOC.pdf
Last link: https://www.nostarch.com/download/BlackHatPython_dTOC.pdf
PDF size: 54377

First link: http://www.nostarch.com/download/BlackHatPython_Index.pdf
Last link: https://www.nostarch.com/download/BlackHatPython_Index.pdf
PDF size: 116530

[*] Thread 0 discovered 5 PDF links for www.nostarch.com/carhacking
[*] Thread 0 removed 1 duplicate PDF file

First link: http://www.nostarch.com/download/Car Hackers Handbook_sample_Chapter5.pdf
Last link: https://www.nostarch.com/download/Car%20Hackers%20Handbook_sample_Chapter5.pdf
PDF size: 1713557

First link: http://www.nostarch.com/download/Car Hackers Handbook_sample_Chapter5.pdf
Last link: https://www.nostarch.com/download/Car%20Hackers%20Handbook_sample_Chapter5.pdf
PDF size: 1713557
```

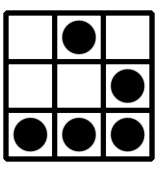
```
First link: http://www.nostarch.com/download/Car Hackers Handbook_sample_dTOC.pdf
Last link: https://www.nostarch.com/download/Car%20Hackers%20Handbook_sample_dTOC.pdf
PDF size: 594880

First link: http://www.nostarch.com/download/Car Hackers Handbook_sample_index.pdf
Last link: https://www.nostarch.com/download/Car%20Hackers%20Handbook_sample_index.pdf
PDF size: 660045

First link: https://www.usenix.org/system/files/login/articles/login_summer16_19_books.pdf
Last link: https://www.usenix.org/system/files/login/articles/login_summer16_19_books.pdf
PDF size: 81289

[*] PDF links discovered in 20.1669859409 seconds
```

It is also both Python 2.6+ and Python 3 compatible:

```
datenstrom@redacted$ python3 cli.py http://www.cs.odu.edu/~mln/teaching/cs532-s17/test/pdfs.html -u
[*] Crawling pages:
http://www.cs.odu.edu/~mln/teaching/cs532-s17/test/pdfs.html
[*] Spinning up with 1 thread
[*] Thread 0 discovered 11 PDF links for http://www.cs.odu.edu/~mln/teaching/cs532-s17/test/pdfs.html
[*] Thread 0 removed 0 duplicate PDF files

[*] Thread 0 discovered 11 PDF links for http://www.cs.odu.edu/~mln/teaching/cs532-s17/test/pdfs.html
[*] Thread 0 removed 0 duplicate PDF files

First link: http://www.cs.odu.edu/~mln/pubs/ht-2015/hypertext-2015-temporal-violations.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/ht-2015/hypertext-2015-temporal-violations.pdf
PDF size: 2184076

First link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-annotations.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-annotations.pdf
PDF size: 622981

First link: http://arxiv.org/pdf/1512.06195
Last link: https://arxiv.org/pdf/1512.06195.pdf
PDF size: 1748961
```

```
First link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-off-topic.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-off-topic.pdf
PDF size: 4308768

First link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-stories.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-stories.pdf
PDF size: 1274604

First link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-profiling.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/tpdl-2015/tpdl-2015-profiling.pdf
PDF size: 639001

First link: http://www.cs.odu.edu/~mln/pubs/jcdl-2014/jcdl-2014-brunelle-damage.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/jcdl-2014/jcdl-2014-brunelle-damage.pdf
PDF size: 2205546

First link: http://bit.ly/1ZDatNK
Last link: http://www.cs.odu.edu/~mln/pubs/jcdl-2015/jcdl-2015-temporal-intention.pdf
PDF size: 720476

First link: http://www.cs.odu.edu/~mln/pubs/jcdl-2015/jcdl-2015-mink.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/jcdl-2015/jcdl-2015-mink.pdf
PDF size: 1254605

First link: http://www.cs.odu.edu/~mln/pubs/jcdl-2015/jcdl-2015-arabic-sites.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/jcdl-2015/jcdl-2015-arabic-sites.pdf
PDF size: 709420

First link: http://www.cs.odu.edu/~mln/pubs/jcdl-2015/jcdl-2015-dictionary.pdf
Last link: http://www.cs.odu.edu/~mln/pubs/jcdl-2015/jcdl-2015-dictionary.pdf
PDF size: 2350603

[*] PDF links discovered in 14.306671047210693 seconds
```

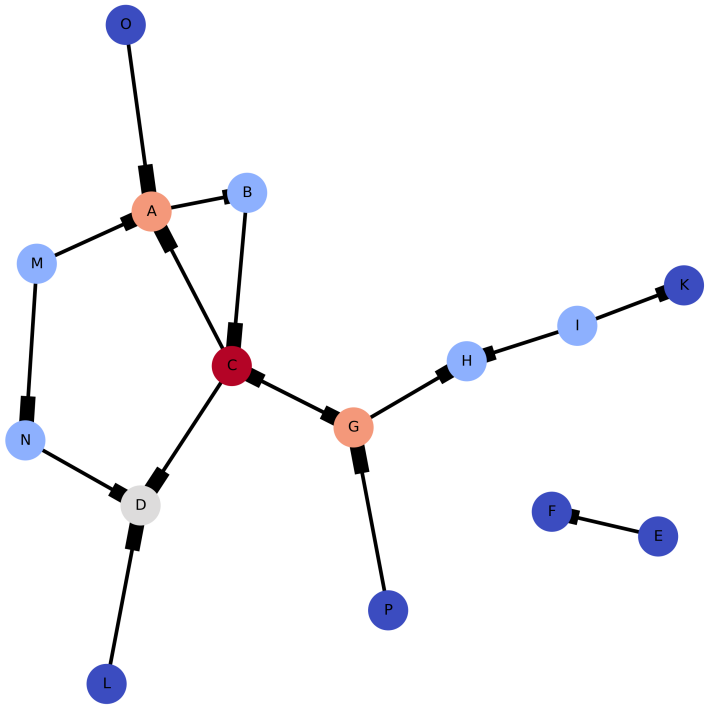



3 Graph Structure

The sample graph below is the dataset that will be used to demonstrate the `SCC`, `IN`, `OUT`, `DISCONNECTED`, `TUBES`, and `TENDRILS` components. The heatmaping in figure one is based on the degree for each node. Using this directed graph the single `SCC` component can be found, it contains all of the nodes which are reachable from eachother. In this sample graph these nodes are `A`, `B`, `C`, and `G` which are color coded red in figure 2.

Once the `SCC` has been discovered, the `IN` and `OUT` components can be found. These consist of the nodes that link only into or out of the `SCC` respectively. The `IN` component consists of nodes `O`, `M`, and `P` which are colored green in figure 2. The `OUT` components are `H` and `D`, yellow in figure 2.

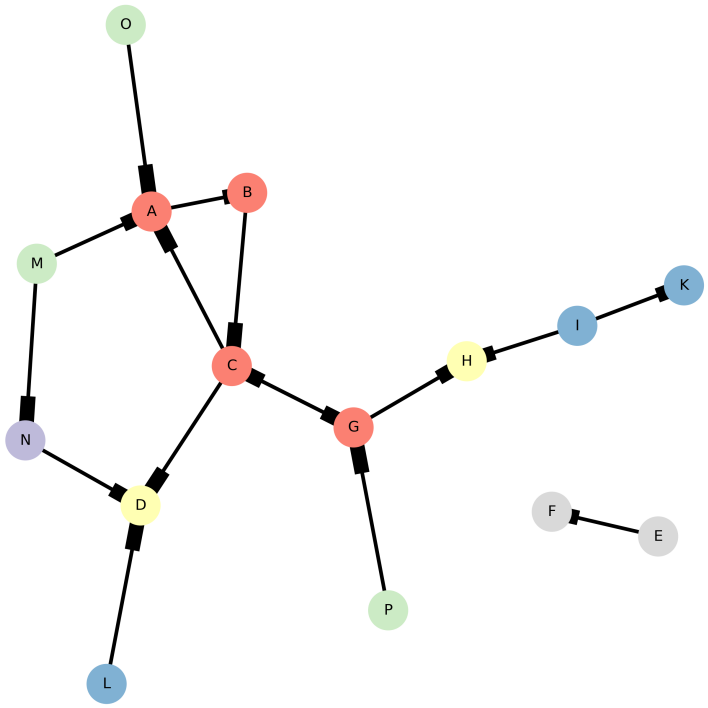
Figure 1: Graph heatmap by node degree



The `DISCONNECTED` component contains all nodes unreachable from the other components, which are the grey nodes `F` and `E`. `TUBES` are nodes which connect `IN` and `OUT` nodes, there is only one node in this example `N` colored purple. Finally the `TENDRILS` are the blue nodes `I`, `K`, and `L` which shoot off of the `IN` and `OUT` components but do not directly interact with the `SCC`.

Component	Color	Nodes
SCC	red	4
IN	green	3
OUT	yellow	2
TENDRILS	blue	3
TUBES	purple	1
DISCONNECTED	grey	2

Figure 2: Graph components



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