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CS 4990.02

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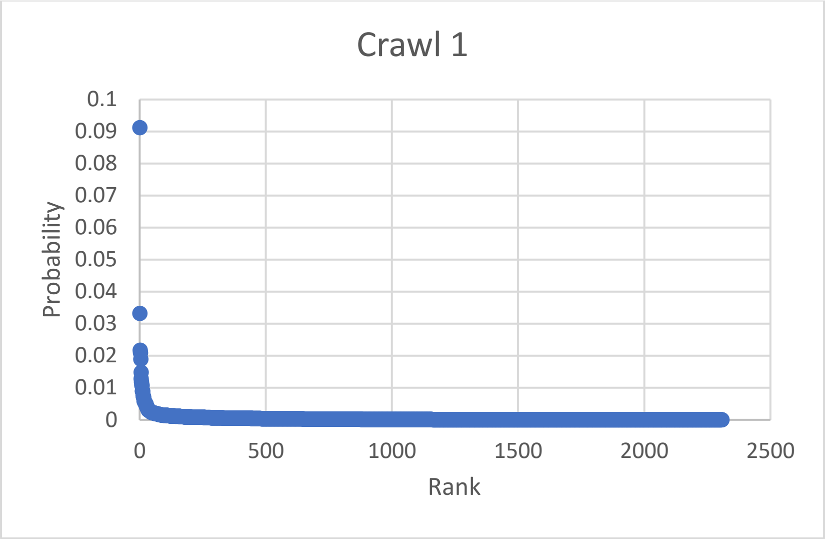
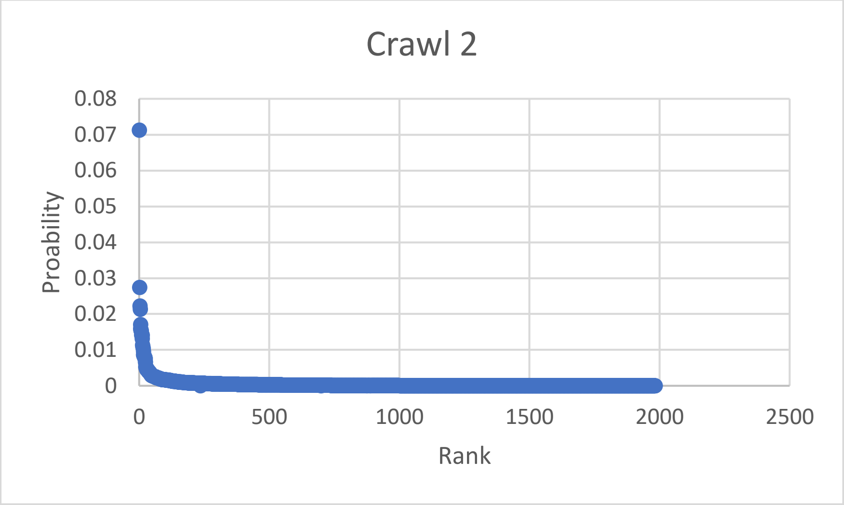
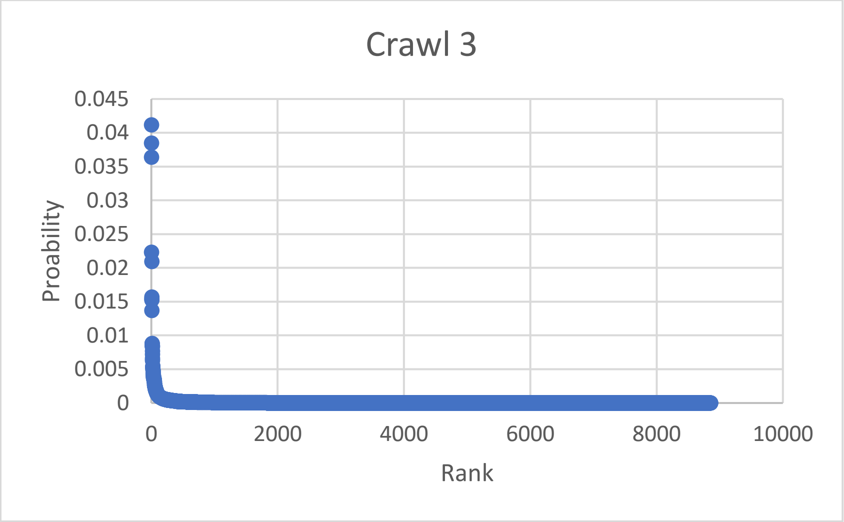
# Project 1 – Web Crawler

Our project goal was to create a web crawler that would retrieve multiple links from a single seeded link. In our program, we have 6 methods within the Crawler class, and 1 main method. Our methods include crawl(String), connect(String), getNextUrl(), getLinks(), toCSV(), and convert(String[]). The methods toCSV() and convert(String[]) are for transferring links and URL counts to a CSV file. The methods crawl(String) and connect(String) were our most important methods. Crawl(String) would continually crawl through found links and call connect(String) so that it could fetch the new links and count them. Crawl(String) also called upon the CSV methods. Connect(String) also added all the fond links to a repository folder. Our page maximum was 20 pages. The main challenge in coding the project was getting all of the found links to display in the CSV file. Initially, it would only display the last link found. The problem was solved when we realized we did not have to keep creating a new Crawler Object in the while loop.

We tested 3 crawls from 3 different seeds. Below are the statistical graphs of the probability of a word occurrence versus the word ranking. In order to find the probability, we found the frequency of the word and divided it by the total number of words. The ranking is displayed from highest frequency to low.


Crawl 1
Probability
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
500
1000
1500
2000
2500
Rank

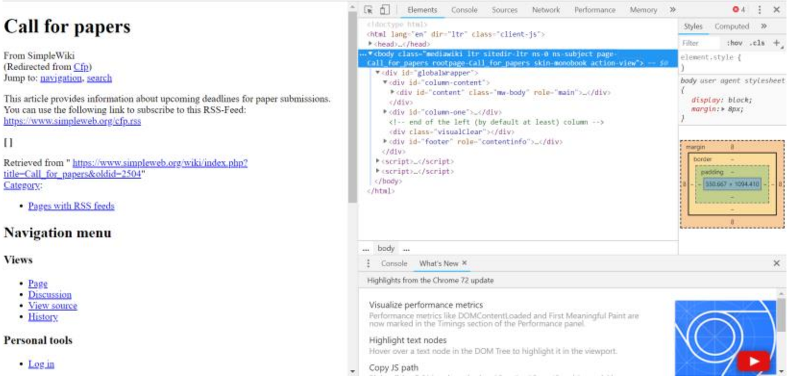

Crawl 2
Proability
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
500
1000
1500
2000
2500
Rank


Crawl 3
Proability
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0
2000
4000
6000
8000
10000
Rank

In order to get the data to construct these graphs, we went through each website of the respected crawl, extracted the HTML from the page, converted it to plain text, counted the word frequencies, and then counted the total words (all using 3rd-party websites as shown in Appendix).

All 3 graphs are very similar to Zipf’s Law. To further test the accuracy, random points were taken, in which the rank was multiplied by the probability. On average, the points would be close to ~0.1. This is significant because this is about the c value for English websites. The Appendix also includes the top 100 frequent words for each crawl.

In our group, Ocean did the most of the code for the crawler and did the research in how to use packages to code for this project. Anjela did the main bulk of the Zipf’s law analysis, as well as assist in debugging and adding additional methods in the code.



Call for papers

From SimpleWiki
(Redirected from Cfp)
Jump to: navigation, search

This article provides information about upcoming deadlines for paper submissions.
You can use the following link to subscribe to this RSS-Feed:
https://www.simpleweb.org/cfp.rss

[ ]

Retrieved from " https://www.simpleweb.org/wiki/index.php?title=Call_for_papers&oldid=2504"
Category:

- Pages with RSS feeds

Navigation menu

Views

- Page
- Discussion
- View source
- History

Personal tools

- Log in

```
<!doctype html>
<html lang="en" dir="ltr" class="client-js">
 ▶<head>…</head>
…▼<body class="mediawiki ltr sitedir-ltr ns-0 ns-subject page-Call_for_papers rootpage-Call_for_papers skin-monobook action-view"> == $0
   ▼<div id="globalWrapper">
     ▼<div id="column-content">
       ▶<div id="content" class="mw-body" role="main">…</div>
      </div>
     ▶<div id="column-one">…</div>
      <!-- end of the left (by default at least) column -->
      <div class="visualClear"></div>
     ▶<div id="footer" role="contentinfo">…</div>
    </div>
   ▶<script>…</script>
   ▶<script>…</script>
  </body>
</html>
```

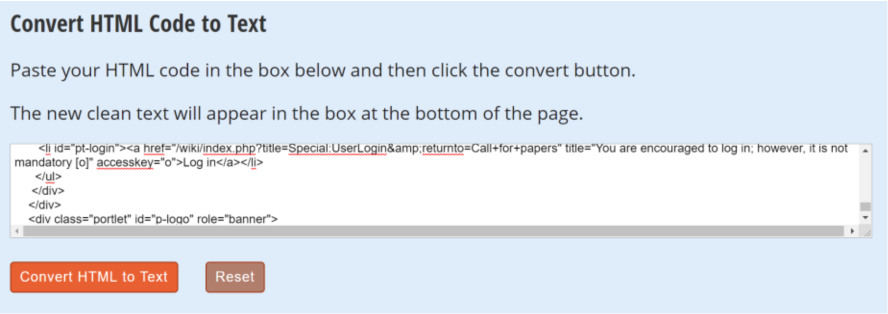
```
element.style {
}
body user agent stylesheet
{
  display: block;
  margin:▶ 8px;
}
```

Highlights from the Chrome 72 update

Visualize performance metrics
Performance metrics like DOMContentLoaded and First Meaningful Paint are now marked in the Timings section of the Performance panel.

Highlight text nodes
Hover over a text node in the DOM Tree to highlight it in the viewport.

Copy JS path

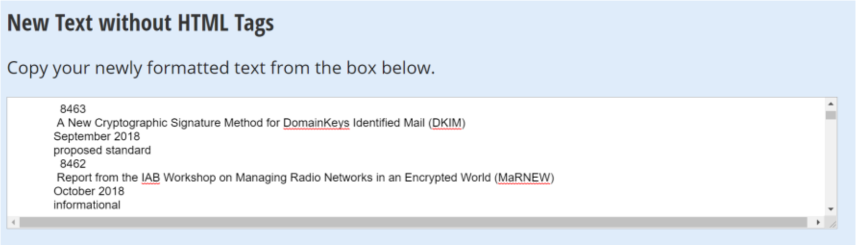


Convert HTML Code to Text

Paste your HTML code in the box below and then click the convert button.

The new clean text will appear in the box at the bottom of the page.

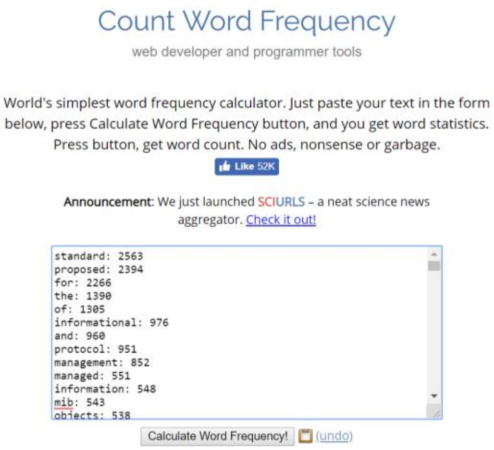
```
      <li id="pt-login"><a href="/wiki/index.php?title=Special:UserLogin&amp;returnto=Call+for+papers" title="You are encouraged to log in; however, it is not mandatory [o]" accesskey="o">Log in</a></li>
     </ul>
    </div>
   </div>
   <div class="portlet" id="p-logo" role="banner">
```



New Text without HTML Tags

Copy your newly formatted text from the box below.

```
    8463
    A New Cryptographic Signature Method for DomainKeys Identified Mail (DKIM)
   September 2018
   proposed standard
    8462
    Report from the IAB Workshop on Managing Radio Networks in an Encrypted World (MaRNEW)
   October 2018
   informational
```



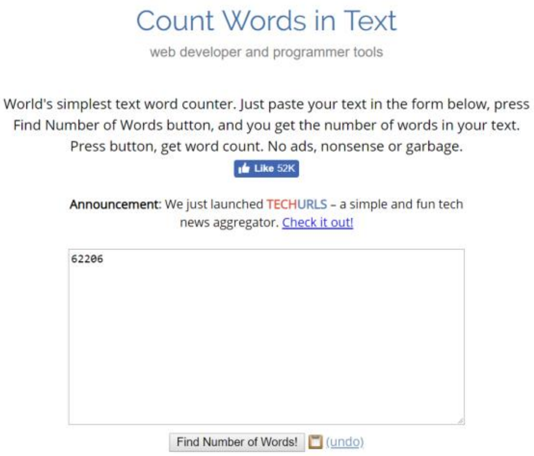
Count Word Frequency

web developer and programmer tools

World's simplest word frequency calculator. Just paste your text in the form below, press Calculate Word Frequency button, and you get word statistics. Press button, get word count. No ads, nonsense or garbage.

**Announcement:** We just launched SCIURLS – a neat science news aggregator. Check it out!

```
standard: 2563
proposed: 2394
for: 2266
the: 1390
of: 1305
informational: 976
and: 960
protocol: 951
management: 852
managed: 551
information: 548
mib: 543
objects: 538
```



Count Words in Text

web developer and programmer tools

World's simplest text word counter. Just paste your text in the form below, press Find Number of Words button, and you get the number of words in your text. Press button, get word count. No ads, nonsense or garbage.

**Announcement:** We just launched TECHURLS – a simple and fun tech news aggregator. Check it out!

```
62206
```

Crawl 3

| Rank | Probability | Frequency | Word |
|---|---|---|---|
| 1 | 0.0412018 | 2563 | standard |
| 2 | 0.038485 | 2394 | proposed |
| 3 | 0.0364274 | 2266 | for |
| 4 | 0.0223451 | 1390 | the |
| 5 | 0.0209787 | 1305 | of |
| 6 | 0.0156898 | 976 | informational |
| 7 | 0.0154326 | 960 | and |
| 8 | 0.0152879 | 951 | protocol |
| 9 | 0.0136964 | 852 | management |
| 10 | 0.0088577 | 551 | managed |
| 11 | 0.0088094 | 548 | information |
| 12 | 0.0087291 | 543 | mib |
| 13 | 0.0086487 | 538 | objects |
| 14 | 0.0084719 | 527 | definitions |
| 15 | 0.0084236 | 524 | network |
| 16 | 0.0077002 | 479 | • |
| 17 | 0.007234 | 450 | in |
| 18 | 0.0066071 | 411 | base |
| 19 | 0.0063177 | 393 | 2011 |
| 20 | 0.0054979 | 342 | 2012 |
| 21 | 0.0054496 | 339 | to |
| 22 | 0.0053532 | 333 | a |
| 23 | 0.0052567 | 327 | 2014 |
| 24 | 0.0050638 | 315 | 2016 |
| 25 | 0.0048227 | 300 | 2015 |
| 26 | 0.0048227 | 300 | using |
| 27 | 0.0045012 | 280 | march |
| 28 | 0.004469 | 278 | 2013 |
| 29 | 0.004244 | 264 | 2017 |
| 30 | 0.0041636 | 259 | may |
| 31 | 0.0039546 | 246 | internet |
| 32 | 0.0039546 | 246 | version |
| 33 | 0.0038421 | 239 | april |
| 34 | 0.0037938 | 236 | experimental |
| 35 | 0.0037938 | 236 | transport |
| 36 | 0.0037456 | 233 | august |
| 37 | 0.0037295 | 232 | february |
| 38 | 0.0036492 | 227 | october |
| 39 | 0.0036331 | 226 | security |
| 40 | 0.0035849 | 223 | control |
| 41 | 0.0035849 | 223 | june |
| 42 | 0.0035366 | 220 | ipv6 |
| 43 | 0.003408 | 212 | july |
| 44 | 0.003392 | 211 | 2018 |
| 45 | 0.0032955 | 205 | interface |
| 46 | 0.0032634 | 203 | november |
| 47 | 0.003199 | 199 | networks |
| 48 | 0.0031669 | 197 | september |
| 49 | 0.0030222 | 188 | january |
| 50 | 0.0027329 | 170 | 2010 |
| 51 | 0.0027329 | 170 | service |
| 52 | 0.0027168 | 169 | extensions |
| 53 | 0.0026203 | 163 | over |
| 54 | 0.002556 | 159 | simple |
| 55 | 0.0025239 | 157 | with |
| 56 | 0.0024917 | 155 | data |
| 57 | 0.0023631 | 147 | label |

| | | | |
|---|---|---|---|
| 58 | 0.002331 | 145 | smiv2 |
| 59 | 0.0023149 | 144 | ip |
| 60 | 0.0022827 | 142 | december |
| 61 | 0.0022827 | 142 | key |
| 62 | 0.0022506 | 140 | routing |
| 63 | 0.002122 | 132 | monitoring |
| 64 | 0.0020738 | 129 | multicast |
| 65 | 0.0020577 | 128 | authentication |
| 66 | 0.0020255 | 126 | session |
| 67 | 0.0019934 | 124 | historic |
| 68 | 0.0019451 | 121 | practice |
| 69 | 0.0019451 | 121 | extension |
| 70 | 0.001913 | 119 | current |
| 71 | 0.001913 | 119 | an |
| 72 | 0.0018808 | 117 | layer |
| 73 | 0.0018808 | 117 | on |
| 74 | 0.0018648 | 116 | use |
| 75 | 0.0018487 | 115 | model |
| 76 | 0.0018487 | 115 | best |
| 77 | 0.0018165 | 113 | traffic |
| 78 | 0.0017362 | 108 | by |
| 79 | 0.0016236 | 101 | mpls |
| 80 | 0.0016236 | 101 | textual |
| 81 | 0.0016076 | 100 | system |
| 82 | 0.0015754 | 98 | resource |
| 83 | 0.0015593 | 97 | address |
| 84 | 0.0015433 | 96 | requirements |
| 85 | 0.0015433 | 96 | (mib) |
| 86 | 0.0015272 | 95 | message |
| 87 | 0.001495 | 93 | mobile |
| 88 | 0.0014629 | 91 | framework |
| 89 | 0.0014629 | 91 | conventions |
| 90 | 0.0014147 | 88 | virtual |
| 91 | 0.0013986 | 87 | access |
| 92 | 0.0013986 | 87 | ieee |
| 93 | 0.0013825 | 86 | support |
| 94 | 0.0013825 | 86 | switching |
| 95 | 0.0013664 | 85 | (snmp) |
| 96 | 0.0013504 | 84 | format |
| 97 | 0.0013343 | 83 | application |
| 98 | 0.0013021 | 81 | rtp |
| 99 | 0.00127 | 79 | initiation |
| 100 | 0.00127 | 79 | type |

## Crawl 2

| Rank | Probability | Frequency | Word |
|---|---|---|---|
| 1 | 0.0712928 | 1763 | • |
| 2 | 0.0274981 | 680 | apple |
| 3 | 0.0222815 | 551 | iphone |
| 4 | 0.0213514 | 528 | and |
| 5 | 0.0171054 | 423 | the |
| 6 | 0.0159327 | 394 | to |
| 7 | 0.0155283 | 384 | menu |
| 8 | 0.015407 | 381 | for |
| 9 | 0.0142343 | 352 | a |
| 10 | 0.0141939 | 351 | with |
| 11 | 0.014113 | 349 | your |
| 12 | 0.0131829 | 326 | you |
| 13 | 0.0114036 | 282 | or |
| 14 | 0.0108375 | 268 | from |
| 15 | 0.0104735 | 259 | in |
| 16 | 0.0095839 | 237 | new |
| 17 | 0.0086942 | 215 | more |
| 18 | 0.0084516 | 209 | close |
| 19 | 0.0083303 | 206 | of |
| 20 | 0.0080068 | 198 | on |
| 21 | 0.0079664 | 197 | store |
| 22 | 0.0077642 | 192 | open |
| 23 | 0.0076024 | 188 | learn |
| 24 | 0.0066319 | 164 | an |
| 25 | 0.0053379 | 132 | watch |
| 26 | 0.0051357 | 127 | can |
| 27 | 0.0050144 | 124 | device |
| 28 | 0.0047313 | 117 | all |
| 29 | 0.0045695 | 113 | is |
| 30 | 0.0045695 | 113 | about |
| 31 | 0.0045291 | 112 | it |
| 32 | 0.0044887 | 111 | shop |
| 33 | 0.0042865 | 106 | at |
| 34 | 0.0041652 | 103 | case |
| 35 | 0.0040843 | 101 | buy |
| 36 | 0.0040438 | 100 | be |
| 37 | 0.0038821 | 96 | at&t |
| 38 | 0.0038821 | 96 | verizon |
| 39 | 0.0037608 | 93 | trade-in |
| 40 | 0.0037203 | 92 | may |
| 41 | 0.0037203 | 92 | i |
| 42 | 0.0034373 | 85 | mac |
| 43 | 0.0033968 | 84 | ipad |
| 44 | 0.0032755 | 81 | if |
| 45 | 0.0032351 | 80 | are |
| 46 | 0.0029924 | 74 | music |
| 47 | 0.0029116 | 72 | purchase |
| 48 | 0.0028711 | 71 | space |
| 49 | 0.0028711 | 71 | carrier |
| 50 | 0.0028307 | 70 | use |
| 51 | 0.0028307 | 70 | business |
| 52 | 0.0028307 | 70 | sport |
| 53 | 0.0027498 | 68 | find |
| 54 | 0.0027094 | 67 | education |
| 55 | 0.0027094 | 67 | series |
| 56 | 0.0026689 | 66 | get |
| 57 | 0.0026285 | 65 | upgrade |
| 58 | 0.0025881 | 64 | 4 |
| 59 | 0.0025476 | 63 | aluminum |
| 60 | 0.0025072 | 62 | xs |
| 61 | 0.0025072 | 62 | sprint |
| 62 | 0.0025072 | 62 | 64gb1 |
| 63 | 0.0025072 | 62 | 256gb1 |

| | | | |
|---|---|---|---|
| 64 | 0.0023859 | 59 | as |
| 65 | 0.0023454 | 58 | shopping |
| 66 | 0.0023454 | 58 | up |
| 67 | 0.002305 | 57 | not |
| 68 | 0.0022645 | 56 | xr |
| 69 | 0.0022645 | 56 | gray |
| 70 | 0.0022645 | 56 | silver |
| 71 | 0.0022241 | 55 | trade |
| 72 | 0.0022241 | 55 | payment |
| 73 | 0.0022241 | 55 | gold |
| 74 | 0.0021837 | 54 | tv |
| 75 | 0.0021432 | 53 | we |
| 76 | 0.0021028 | 52 | available |
| 77 | 0.0021028 | 52 | t-mobile |
| 78 | 0.0020624 | 51 | id |
| 79 | 0.0020219 | 50 | any |
| 80 | 0.0019815 | 49 | gift |
| 81 | 0.0019006 | 47 | do |
| 82 | 0.0019006 | 47 | when |
| 83 | 0.0019006 | 47 | stainless |
| 84 | 0.0019006 | 47 | steel |
| 85 | 0.0019006 | 47 | black |
| 86 | 0.0018602 | 46 | how |
| 87 | 0.0018197 | 45 | accessories |
| 88 | 0.0018197 | 45 | that |
| 89 | 0.0017793 | 44 | online |
| 90 | 0.0017793 | 44 | values |
| 91 | 0.0017793 | 44 | terms |
| 92 | 0.0017793 | 44 | unlocked |
| 93 | 0.0017388 | 43 | will |
| 94 | 0.0017388 | 43 | order |
| 95 | 0.0017388 | 43 | health |
| 96 | 0.0017388 | 43 | account |
| 97 | 0.0017388 | 43 | program |
| 98 | 0.0017388 | 43 | band |
| 99 | 0.0016984 | 42 | my |
| 100 | 0.0016984 | 42 | by |

## Crawl 1

| Rank | Probability | Frequency | Word |
|---|---|---|---|
| 1 | 0.0895895 | 753 | • |
| 2 | 0.0298632 | 251 | the |
| 3 | 0.0184414 | 155 | and |
| 4 | 0.0167757 | 141 | to |
| 5 | 0.0167757 | 141 | of |
| 6 | 0.0145152 | 122 | & |
| 7 | 0.0145152 | 122 | in |
| 8 | 0.0134444 | 113 | cal |
| 9 | 0.0111838 | 94 | poly |
| 10 | 0.0107079 | 90 | student |
| 11 | 0.01047 | 88 | for |
| 12 | 0.010232 | 86 | university |
| 13 | 0.010113 | 85 | posted |
| 14 | 0.0098751 | 83 | pomona |
| 15 | 0.0096371 | 81 | 2019 |
| 16 | 0.0091612 | 77 | / |
| 17 | 0.0089233 | 75 | news |
| 18 | 0.0078525 | 66 | campus |
| 19 | 0.0077335 | 65 | on |
| 20 | 0.0074955 | 63 | about |
| 21 | 0.0074955 | 63 | admissions |
| 22 | 0.0069007 | 58 | services |
| 23 | 0.0061868 | 52 | a |
| 24 | 0.0055919 | 47 | is |
| 25 | 0.0055919 | 47 | students |
| 26 | 0.004997 | 42 | at |
| 27 | 0.0047591 | 40 | views |
| 28 | 0.0040452 | 34 | january |
| 29 | 0.0039262 | 33 | menu |
| 30 | 0.0038073 | 32 | building |
| 31 | 0.0038073 | 32 | rose |
| 32 | 0.0038073 | 32 | float |
| 33 | 0.0036883 | 31 | events |
| 34 | 0.0035693 | 30 | academic |
| 35 | 0.0035693 | 30 | polycentric |
| 36 | 0.0033314 | 28 | give |
| 37 | 0.0033314 | 28 | professor |
| 38 | 0.0030934 | 26 | athletics |
| 39 | 0.0030934 | 26 | with |
| 40 | 0.0029744 | 25 | by |
| 41 | 0.0028554 | 24 | online |
| 42 | 0.0028554 | 24 | award |
| 43 | 0.0028554 | 24 | march |
| 44 | 0.0028554 | 24 | parade |
| 45 | 0.0027365 | 23 | research |
| 46 | 0.0027365 | 23 | will |
| 47 | 0.0027365 | 23 | center |
| 48 | 0.0027365 | 23 | college |
| 49 | 0.0026175 | 22 | library |
| 50 | 0.0026175 | 22 | february |
| 51 | 0.0026175 | 22 | » |
| 52 | 0.0024985 | 21 | directory |
| 53 | 0.0024985 | 21 | close |
| 54 | 0.0023795 | 20 | 15 |
| 55 | 0.0023795 | 20 | life |
| 56 | 0.0023795 | 20 | this |
| 57 | 0.0022606 | 19 | safety |
| 58 | 0.0022606 | 19 | more |
| 59 | 0.0022606 | 19 | from |
| 60 | 0.0022606 | 19 | president |
| 61 | 0.0021416 | 18 | 18 |
| 62 | 0.0021416 | 18 | maps |
| 63 | 0.0021416 | 18 | annual |
| 64 | 0.0021416 | 18 | website |
| 65 | 0.0021416 | 18 | giving |
| 66 | 0.0021416 | 18 | an |
| 67 | 0.0021416 | 18 | that |
| 68 | 0.0021416 | 18 | site |
| 69 | 0.0021416 | 18 | alumni |

| | | | |
|---|---|---|---|
| 70 | 0.0021416 | 18 | communications |
| 71 | 0.0021416 | 18 | media |
| 72 | 0.0020226 | 17 | skip |
| 73 | 0.0020226 | 17 | content |
| 74 | 0.0020226 | 17 | education |
| 75 | 0.0020226 | 17 | academics |
| 76 | 0.0020226 | 17 | visit |
| 77 | 0.0020226 | 17 | why |
| 78 | 0.0019036 | 16 | was |
| 79 | 0.0019036 | 16 | opens |
| 80 | 0.0019036 | 16 | day |
| 81 | 0.0019036 | 16 | quizzes |
| 82 | 0.0019036 | 16 | poly’s |
| 83 | 0.0019036 | 16 | development |
| 84 | 0.0017847 | 15 | all |
| 85 | 0.0017847 | 15 | new |
| 86 | 0.0017847 | 15 | be |
| 87 | 0.0017847 | 15 | department |
| 88 | 0.0017847 | 15 | affairs |
| 89 | 0.0017847 | 15 | product |
| 90 | 0.0016657 | 14 | activities |
| 91 | 0.0016657 | 14 | faculty |
| 92 | 0.0016657 | 14 | than |
| 93 | 0.0016657 | 14 | lanterman |
| 94 | 0.0016657 | 14 | tags |
| 95 | 0.0016657 | 14 | her |
| 96 | 0.0015467 | 13 | 7 |
| 97 | 0.0015467 | 13 | graduate |
| 98 | 0.0015467 | 13 | housing |
| 99 | 0.0015467 | 13 | kellogg |
| 100 | 0.0015467 | 13 | pomona’s |