

## **Steps Followed To Complete The Assignment**

### **Initial Setup**

I installed virtual machine with ubuntu as operating system. Then, I installed Solr along with downloading FOX\_NEWS data in parallel.

### **Lucene Result Setup**

After that, I made necessary changes in “managed-schema.xml” file and started the Solr on port 8989. Then, executed command to get page rank of the HTML files for my core “myexample”. Then after successful execution of index core was reloaded by using core admin from solr user interface. After that, I installed solr-php-client and using it, created user interface to take query input from user and display top 10 result. This code was written in PHP in file name named “user.php”. In this, while querying additional parameters were not used. For each of the query, top 10 url results were noted in below table. Each item of list displays document title, id, description and link. Link and title are clickable and would direct to corresponding html page when clicked. For documentation flow, query “Bitcoin Blockchain” screen shot was taken as per the requirement.

### **PageRank Result Setup**

In order to implement PageRank, JSOUP was downloaded. I wrote a java code to create outgoing edges from a html page using JSOUP. This file was named “external\_url.txt”. “external\_url.txt” served as an input to python code where a graph was generated using “NetworkX” library. On this graph, pagerank of each node was calculated with parameters as “alpha=0.85, personalization=None, max\_iter=30, tol=1e-06, nstart=None, weight='weight',dangling=None”. Once the pagerank was calculated successfully, each node(document) was saved as “documentId=documentRank” in “external\_PageRankFile.txt”. Now, “user.php” file was changed to include additional parameter as “sort: PageRankFile desc” and “external\_PageRankFile.txt” was placed in “data” folder under “myexample” core after updating “managed-schema.xml” and “solrconfig.xml” files. This completed the setup for PageRank algorithm. Again from solr user interface, core was refreshed. Once again, each query was executed and top 10 urls were noted in below table. For documentation flow, query “Bitcoin Blockchain” screen shot was taken as per the requirement.

### **Overlapping Graph**

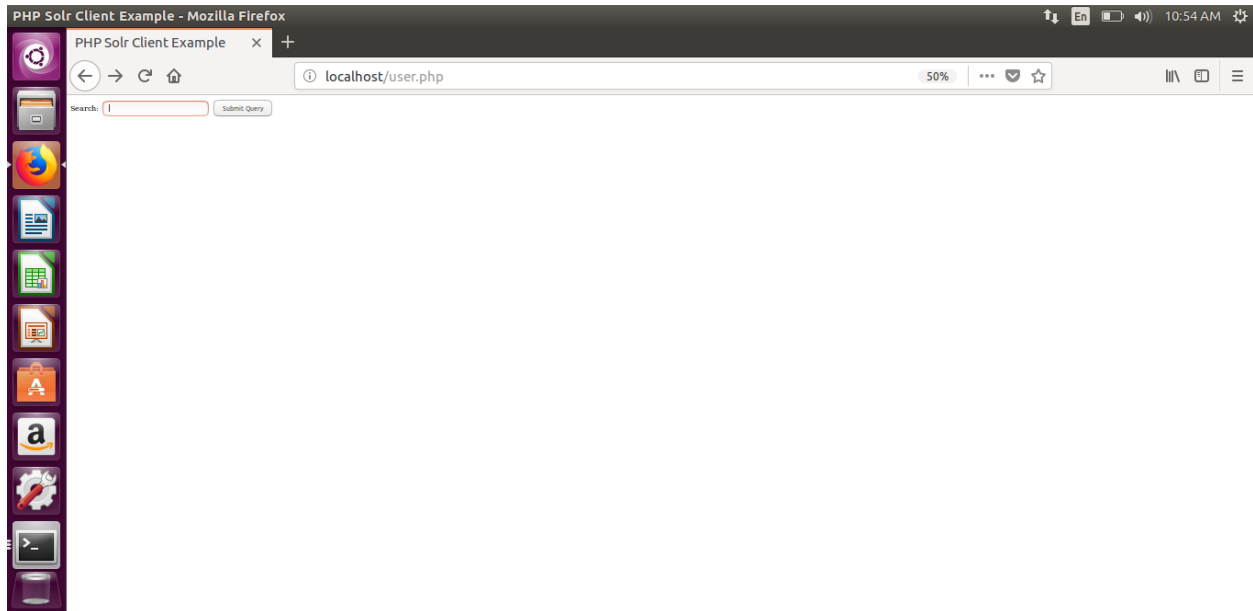
Once urls were recorded in table for default and PageRank, overlapping graph was plotted as the final step for the assignment. For a query, if the difference between url result of lucene(default) and PageRank had only difference in domain or protocol then I considered it not as an overlap.

### **Explanation Regarding Why Some Pages Have Higher Page Rank**

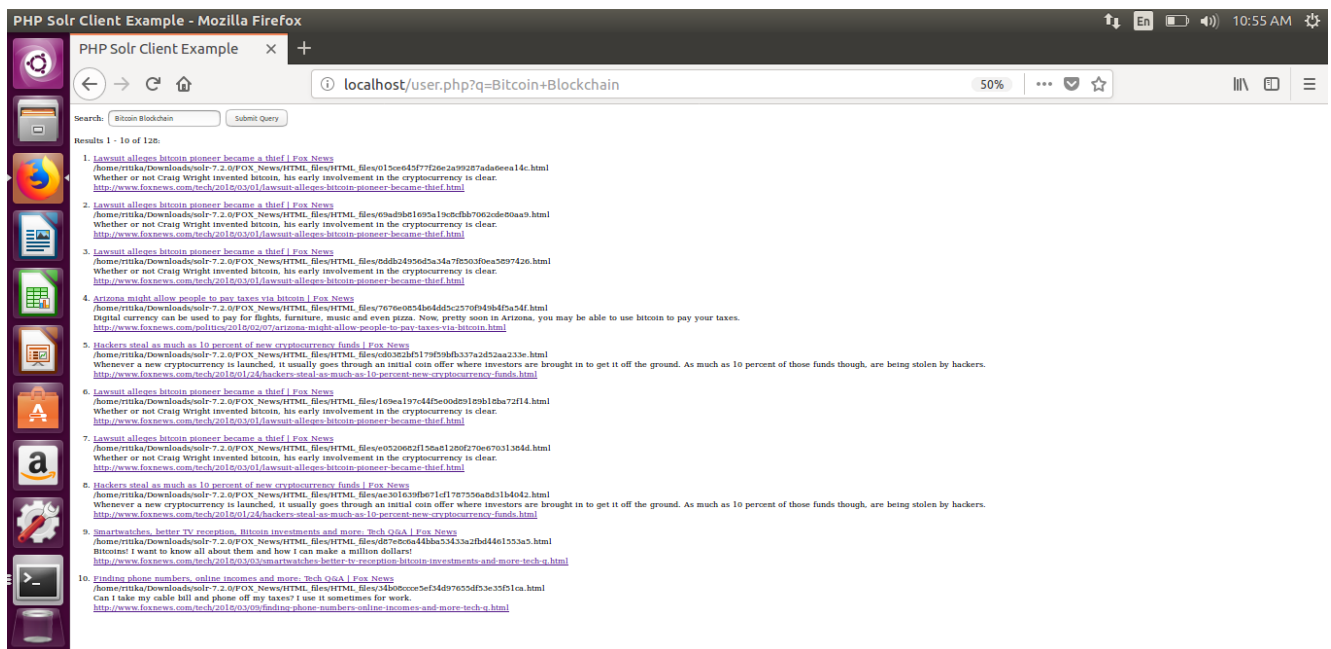
PageRank is calculated on the basis of number of incoming links to a page. Let’s say we have page1 with no incoming links and page2 with 1 incoming links and we only have 2 link. In this case, page2 will have more page rank than page1. The reason why “<http://www.foxnews.com>” is ranked first in query 1 is that it is homepage. Therefore, almost all other website would have link to it. Hence it’s PageRank is highest.

### **Document Flow Of Single Query**

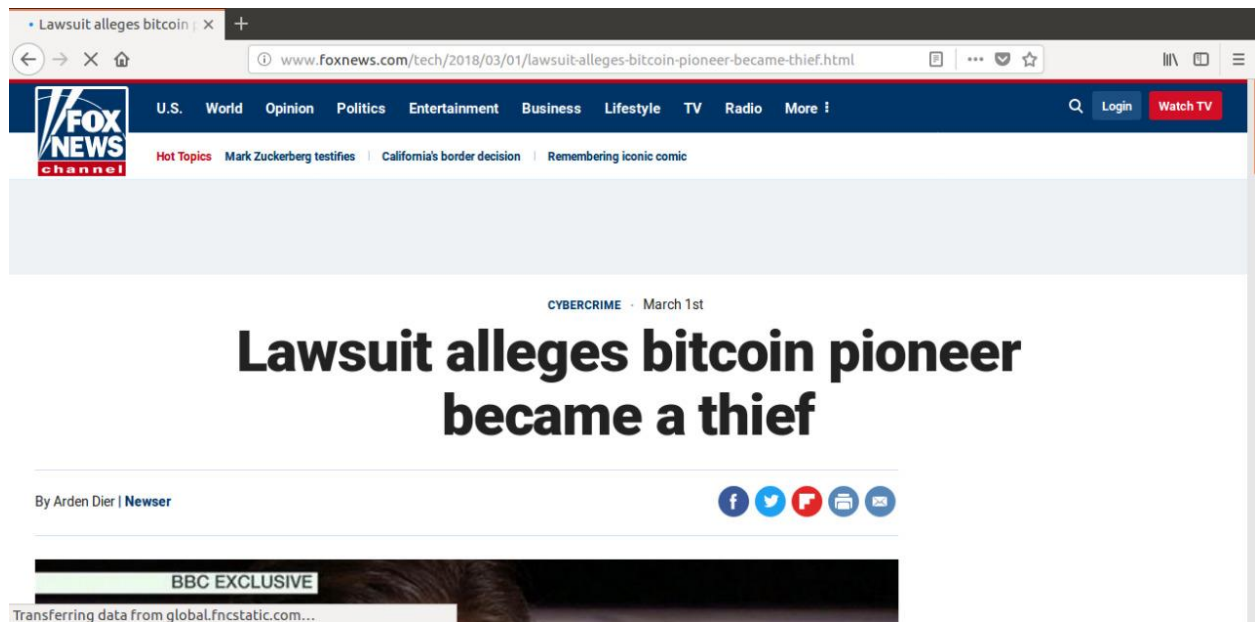
## Step 1.1: Lucene(Default) Initial Page



## Step 1.2: Lucene(Default) Query Result for Bitcoin Blockchain

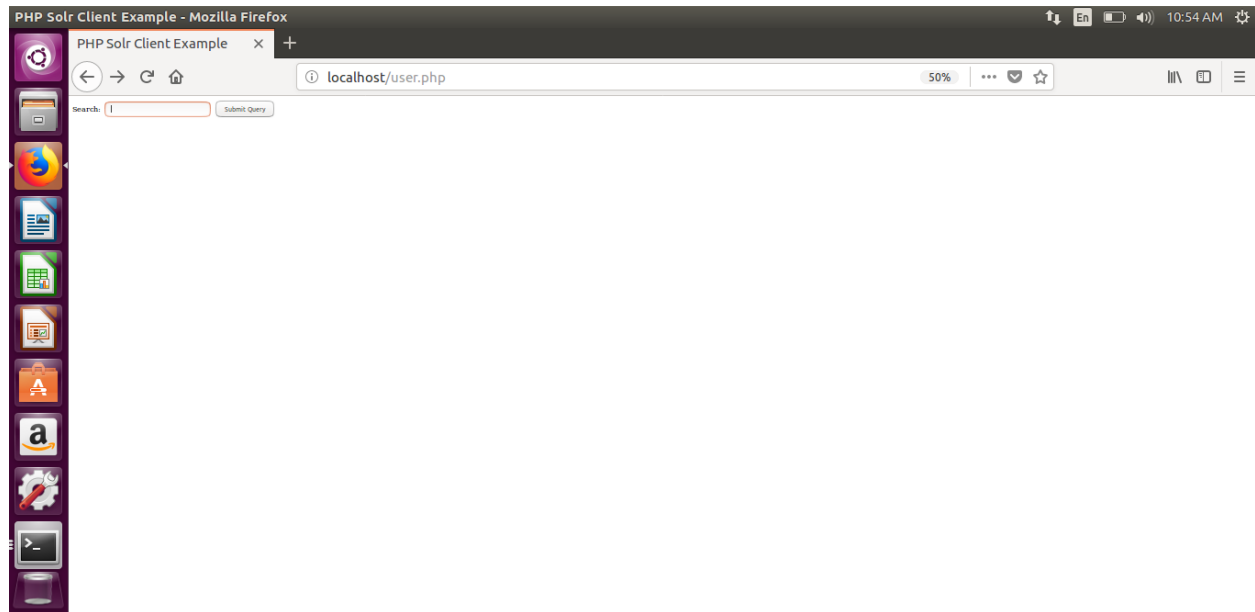


## Step 1.3: Lucene(Default) Link Page Upon Clicking first title



Add “additionalParameter” to query input and proceed to following steps.

### Step 2.1: PageRank Initial Page



### Step 2.2: PageRank Query Result for Bitcoin Blockchain

Solr Admin x /home/ritika/Downloads/ x PHP Solr Client Example x +

localhost/user.php?q=Bitcoin+Blockchain

Search:

Results 1 - 10 of 256:

1. [Fox News - Breaking News Updates | Latest News Headlines | Photos & News Videos](#)  
/home/ritika/Downloads/solr-7.2.0/FOX\_News/HTML\_files/e74b6c094853981f8b7c1ccde49b28bc.html  
Most Watched. Most Trusted.  
<http://www.foxnews.com>
2. [Computers | Fox News](#)  
/home/ritika/Downloads/solr-7.2.0/FOX\_News/HTML\_files/a7607ff74bf445b02d87fe60ead0c814.html  
N/A  
<http://www.foxnews.com/category/tech/topics/computers.html>
3. [Computers | Fox News](#)  
/home/ritika/Downloads/solr-7.2.0/FOX\_News/HTML\_files/0ede0789a7d2894ab85abf49a76b7504.html  
N/A  
<http://www.foxnews.com/category/tech/topics/computers.html>
4. [Fox News - Breaking News Updates | Latest News Headlines | Photos & News Videos](#)  
/home/ritika/Downloads/solr-7.2.0/FOX\_News/HTML\_files/8da923084554b2821233d6c5c5f02c97.html  
Most Watched. Most Trusted.  
<http://www.foxnews.com>
5. [Canadian CEO arrested in US on charges of supplying encrypted phones to Mexican cartels | Fox News](#)  
/home/ritika/Downloads/solr-7.2.0/FOX\_News/HTML\_files/31a78f536e183e40f14c77666df97a2d.html  
U.S. authorities last week arrested the head of a Canadian company that allegedly sold encrypted cellphones to Mexican drug cartels - shedding light on the growing use of private communications networks among organized crime groups looking to avoid the prying ears of the law.  
<http://www.foxnews.com/tech/2018/03/15/canadian-ceo-arrested-in-us-on-charges-supplying-encrypted-phones-to-mexican-cartels.html>

### Step 2.3: PageRank Link Page Upon Clicking first title

Solr Admin x PHP Solr Client Example x PHP Solr Client Example x • Fox News - Breaking News x +

www.foxnews.com

FOX NEWS channel

U.S. World Opinion Politics Entertainment Business Lifestyle TV Radio More i

Los Angeles, CA 60°

Hot Topics Syria strike

Markets S&P 500 +0.69%

ON NOW Fox & Friends

Exclusive Clips

THE NEXT REVOLUTION Swamp Watch: The omnibus spending bill

North Korea says it's

Transferring data from idms.foxbusiness.com...

**AIRSTRIKE FALLOUT**

**Russia blames Israel for deadly airstrike on Assad base after alleged chemical attack**

Russia's Defense Ministry said two Israeli fighter jets launched the attack, and that Syria shot down five out of the eight missiles that targeted the base. The airstrikes reportedly killed 14, including Iranians.

Syria, Russia blame Israel; Department of Defense denies US involvement

KAZANIS: We now live in a world where using chemical weapons is considered OK

**Editor's Picks**

New York high school bus crash seriously injures 6 returning from spring break U.S.

Conor McGregor was 'causing trouble' in hotel room after release on bail, report says SPORTS

### URL Results For Query

#### Query 1: Bitcoin Blockchain

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html">http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html</a>	<a href="http://www.foxnews.com">http://www.foxnews.com</a>
2	<a href="http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html">http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html</a>	<a href="http://www.foxnews.com/category/tech/topics/computers.html">http://www.foxnews.com/category/tech/topics/computers.html</a>
3	<a href="http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html">http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html</a>	<a href="http://www.foxnews.com/category/tech/topics/computers.html">http://www.foxnews.com/category/tech/topics/computers.html</a>
4	<a href="http://www.foxnews.com/politics/2018/02/07/arizona-might-allow-people-to-pay-taxes-via-bitcoin.html">http://www.foxnews.com/politics/2018/02/07/arizona-might-allow-people-to-pay-taxes-via-bitcoin.html</a>	<a href="http://www.foxnews.com">http://www.foxnews.com</a>
5	<a href="http://www.foxnews.com/tech/2018/01/24/hackers-steal-as-much-as-10-percent-new-cryptocurrency-funds.html">http://www.foxnews.com/tech/2018/01/24/hackers-steal-as-much-as-10-percent-new-cryptocurrency-funds.html</a>	<a href="http://www.foxnews.com/tech/2018/03/15/canadian-ceo-arrested-in-us-on-charges-supplying-encrypted-phones-to-mexican-cartels.html">http://www.foxnews.com/tech/2018/03/15/canadian-ceo-arrested-in-us-on-charges-supplying-encrypted-phones-to-mexican-cartels.html</a>
6	<a href="http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html">http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html</a>	<a href="http://www.foxnews.com/tech/2018/03/02/eqifax-breach-worsens-sparking-more-concerns-about-consumers-data.html">http://www.foxnews.com/tech/2018/03/02/eqifax-breach-worsens-sparking-more-concerns-about-consumers-data.html</a>
7	<a href="http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html">http://www.foxnews.com/tech/2018/03/01/lawsuit-alleges-bitcoin-pioneer-became-thief.html</a>	<a href="http://www.foxnews.com/tech/2018/03/02/biggest-ddos-attack-on-record-hits-github.html">http://www.foxnews.com/tech/2018/03/02/biggest-ddos-attack-on-record-hits-github.html</a>
8	<a href="http://www.foxnews.com/tech/2018/01/24/hackers-steal-as-much-as-10-percent-new-cryptocurrency-funds.html">http://www.foxnews.com/tech/2018/01/24/hackers-steal-as-much-as-10-percent-new-cryptocurrency-funds.html</a>	<a href="http://www.foxnews.com/tech/2018/02/22/hackers-hijack-tesla-system-in-bold-cryptocurrency-attack.html">http://www.foxnews.com/tech/2018/02/22/hackers-hijack-tesla-system-in-bold-cryptocurrency-attack.html</a>
9	<a href="http://www.foxnews.com/tech/2018/03/03/smartwatches-better-tv-reception-bitcoin-investments-and-more-tech-q.html">http://www.foxnews.com/tech/2018/03/03/smartwatches-better-tv-reception-bitcoin-investments-and-more-tech-q.html</a>	<a href="http://www.foxnews.com/tech/2018/02/04/tech-q-dueling-assistants-outsmarting-hackers-blocking-texts-and-more.html">http://www.foxnews.com/tech/2018/02/04/tech-q-dueling-assistants-outsmarting-hackers-blocking-texts-and-more.html</a>
10	<a href="http://www.foxnews.com/tech/2018/03/09/finding-phone-numbers-online-incomes-and-more-tech-q.html">http://www.foxnews.com/tech/2018/03/09/finding-phone-numbers-online-incomes-and-more-tech-q.html</a>	<a href="http://www.foxnews.com/category/tech/topics/cybercrime.html">http://www.foxnews.com/category/tech/topics/cybercrime.html</a>

## Query 2: Stephen Hawking

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/science/slideshow/2018/03/14/look-back-on-life-renowned-physicist-stephen-hawking.html">http://www.foxnews.com/science/slideshow/2018/03/14/look-back-on-life-renowned-physicist-stephen-hawking.html</a>	<a href="http://www.foxnews.com/science.html">http://www.foxnews.com/science.html</a>
2	<a href="http://www.foxnews.com/science/slideshow/2018/03/14/look-back-on-life-renowned-physicist-stephen-hawking.html">http://www.foxnews.com/science/slideshow/2018/03/14/look-back-on-life-renowned-physicist-stephen-hawking.html</a>	<a href="http://www.foxnews.com/opinion.html">http://www.foxnews.com/opinion.html</a>
3	<a href="http://www.foxnews.com/science/2018/03/16/how-stephen-hawking-transformed-our-understanding-black-holes.html">http://www.foxnews.com/science/2018/03/16/how-stephen-hawking-transformed-our-understanding-black-holes.html</a>	<a href="http://www.foxnews.com/entertainment.html">http://www.foxnews.com/entertainment.html</a>

4	<a href="http://www.foxnews.com/science/2018/03/16/how-stephen-hawking-transformed-our-understanding-black-holes.html">http://www.foxnews.com/science/2018/03/16/how-stephen-hawking-transformed-our-understanding-black-holes.html</a>	<a href="http://www.foxnews.com/category/science/natural-science.html">http://www.foxnews.com/category/science/natural-science.html</a>
5	<a href="http://www.foxnews.com/science/2018/03/14/stephen-hawking-unlocked-universe-possibilities-nasa-says.html">http://www.foxnews.com/science/2018/03/14/stephen-hawking-unlocked-universe-possibilities-nasa-says.html</a>	<a href="http://www.foxnews.com/category/science/air-and-space.html">http://www.foxnews.com/category/science/air-and-space.html</a>
6	<a href="http://www.foxnews.com/science/2018/03/14/stephen-hawking-unlocked-universe-possibilities-nasa-says.html">http://www.foxnews.com/science/2018/03/14/stephen-hawking-unlocked-universe-possibilities-nasa-says.html</a>	<a href="http://www.foxnews.com/category/world/global-economy.html">http://www.foxnews.com/category/world/global-economy.html</a>
7	<a href="http://www.foxnews.com/science/2018/03/14/stephen-hawking-famed-physicist-dead-at-76.html">http://www.foxnews.com/science/2018/03/14/stephen-hawking-famed-physicist-dead-at-76.html</a>	<a href="http://www.foxnews.com/category/us/personal-freedoms.html">http://www.foxnews.com/category/us/personal-freedoms.html</a>
8	<a href="http://www.foxnews.com/science/2018/03/14/stephen-hawking-famed-physicist-dead-at-76.html">http://www.foxnews.com/science/2018/03/14/stephen-hawking-famed-physicist-dead-at-76.html</a>	<a href="http://www.foxnews.com/category/tech/topics/security.html">http://www.foxnews.com/category/tech/topics/security.html</a>
9	<a href="http://www.foxnews.com/tech/2018/03/14/stephen-hawking-tech-execs-remember-legacy-famed-physicist.html">http://www.foxnews.com/tech/2018/03/14/stephen-hawking-tech-execs-remember-legacy-famed-physicist.html</a>	<a href="http://www.foxnews.com/science.html">http://www.foxnews.com/science.html</a>
10	<a href="http://www.foxnews.com/tech/2018/03/14/stephen-hawking-tech-execs-remember-legacy-famed-physicist.html">http://www.foxnews.com/tech/2018/03/14/stephen-hawking-tech-execs-remember-legacy-famed-physicist.html</a>	<a href="http://www.foxnews.com/entertainment.html">http://www.foxnews.com/entertainment.html</a>

### Query 3: Falcon Heavy

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html">http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html</a>	<a href="http://www.foxnews.com/weather/your-weather/index.html">http://www.foxnews.com/weather/your-weather/index.html</a>
2	<a href="http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html">http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html</a>	<a href="http://www.foxnews.com/category/world/disasters.html">http://www.foxnews.com/category/world/disasters.html</a>
3	<a href="http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-rocket-launches-successfully.html">http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-rocket-launches-successfully.html</a>	<a href="http://www.foxnews.com/category/tech/topics/security.html">http://www.foxnews.com/category/tech/topics/security.html</a>
4	<a href="http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html">http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html</a>	<a href="http://www.foxnews.com/category/politics/elections.html">http://www.foxnews.com/category/politics/elections.html</a>
5	<a href="http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-rocket-launches-successfully.html">http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-rocket-launches-successfully.html</a>	<a href="http://www.foxnews.com/category/health/mental-health.html">http://www.foxnews.com/category/health/mental-health.html</a>
6	<a href="http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html">http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html</a>	<a href="http://www.foxnews.com/weather/index.html">http://www.foxnews.com/weather/index.html</a>

	<a href="#">compares-to-elon-musks-other-powerful-spacecraft.html</a>	
7	<a href="http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html">http://www.foxnews.com/science/2018/03/12/how-spacex-falcon-heavy-rocket-compares-to-elon-musks-other-powerful-spacecraft.html</a>	<a href="http://www.foxnews.com/weather/index.html">http://www.foxnews.com/weather/index.html</a>
8	<a href="http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-rocket-launches-successfully.html">http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-rocket-launches-successfully.html</a>	<a href="http://www.foxnews.com/category/tech/topics/security.html">http://www.foxnews.com/category/tech/topics/security.html</a>
9	<a href="http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-launch-preview-what-when-and-why.html">http://www.foxnews.com/science/2018/02/06/spacex-falcon-heavy-launch-preview-what-when-and-why.html</a>	<a href="http://www.foxnews.com/category/politics/elections.html">http://www.foxnews.com/category/politics/elections.html</a>
10	<a href="http://www.foxnews.com/science/2018/02/07/elon-musk-has-launched-falcon-heavy-but-how-long-does-it-take-to-get-to-mars.html">http://www.foxnews.com/science/2018/02/07/elon-musk-has-launched-falcon-heavy-but-how-long-does-it-take-to-get-to-mars.html</a>	<a href="http://www.foxnews.com/category/health/mental-health.html">http://www.foxnews.com/category/health/mental-health.html</a>

#### Query 4: Syrian War

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html">http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html</a>	<a href="http://www.foxnews.com/world.html">http://www.foxnews.com/world.html</a>
2	<a href="http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html">http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html</a>	<a href="http://www.foxnews.com/us.html">http://www.foxnews.com/us.html</a>
3	<a href="http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html">http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html</a>	<a href="http://www.foxnews.com/science.html">http://www.foxnews.com/science.html</a>
4	<a href="http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html">http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html</a>	<a href="http://www.foxnews.com/opinion.html">http://www.foxnews.com/opinion.html</a>
5	<a href="http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html">http://www.foxnews.com/world/2018/03/15/syria-marks-7-years-war-hundreds-leave-besieged-enclave.html</a>	<a href="http://www.foxnews.com/shows.html">http://www.foxnews.com/shows.html</a>
6	<a href="http://www.foxnews.com/politics/2017/03/10/new-trump-travel-ban-cant-be-enforced-on-syrian-family-trying-to-flee-to-wisconsin-judge-says.html">http://www.foxnews.com/politics/2017/03/10/new-trump-travel-ban-cant-be-enforced-on-syrian-family-trying-to-flee-to-wisconsin-judge-says.html</a>	<a href="http://www.foxnews.com/weather/your-weather/index.html">http://www.foxnews.com/weather/your-weather/index.html</a>
7	<a href="http://www.foxnews.com/opinion/2018/03/16/rep-adam-kinzinger-it-s-for-us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html">http://www.foxnews.com/opinion/2018/03/16/rep-adam-kinzinger-it-s-for-us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html</a>	<a href="http://www.foxnews.com/auto.html">http://www.foxnews.com/auto.html</a>
8	<a href="http://www.foxnews.com/opinion/2018/03/16/rep-adam-kinzinger-it-s-for-us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html">http://www.foxnews.com/opinion/2018/03/16/rep-adam-kinzinger-it-s-for-us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html</a>	<a href="http://www.foxnews.com/category/science/archaeology.html">http://www.foxnews.com/category/science/archaeology.html</a>



	<a href="http://www.foxnews.com/opinion/2018/03/16/rep-adam-kinzinger-it-s-for-us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html">us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html</a>	
9	<a href="http://www.foxnews.com/opinion/2018/03/16/rep-adam-kinzinger-it-s-for-us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html">http://www.foxnews.com/opinion/2018/03/16/rep-adam-kinzinger-it-s-for-us-to-lead-on-syria-failure-to-act-is-failure-by-all-us.html</a>	<a href="http://www.foxnews.com/category/science/archaeology/dinosaurs.html">http://www.foxnews.com/category/science/archaeology/dinosaurs.html</a>
10	<a href="http://www.foxnews.com/world/2017/04/08/in-istanbul-little-syria-refugees-want-more-from-us.html">http://www.foxnews.com/world/2017/04/08/in-istanbul-little-syria-refugees-want-more-from-us.html</a>	<a href="http://www.foxnews.com/category/science/planet-earth.html">http://www.foxnews.com/category/science/planet-earth.html</a>

#### Query 5: LA Rams

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/sports/2017/01/25/jim-kelly-draws-on-experience-in-campaign-against-cancer.html">http://www.foxnews.com/sports/2017/01/25/jim-kelly-draws-on-experience-in-campaign-against-cancer.html</a>	<a href="http://www.foxnews.com">http://www.foxnews.com</a>
2	<a href="http://www.foxnews.com/us/2018/02/04/super-bowl-protesters-to-take-knee-in-minneapolis-with-rally-against-police-brutality.html">http://www.foxnews.com/us/2018/02/04/super-bowl-protesters-to-take-knee-in-minneapolis-with-rally-against-police-brutality.html</a>	<a href="http://www.foxnews.com/tech.html">http://www.foxnews.com/tech.html</a>
3	<a href="http://www.foxnews.com/us/2018/02/04/super-bowl-protesters-to-take-knee-in-minneapolis-with-rally-against-police-brutality.html">http://www.foxnews.com/us/2018/02/04/super-bowl-protesters-to-take-knee-in-minneapolis-with-rally-against-police-brutality.html</a>	<a href="http://www.foxnews.com/lifestyle.html">http://www.foxnews.com/lifestyle.html</a>
4	<a href="http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html">http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html</a>	<a href="http://www.foxnews.com/category/style-and-beauty.html">http://www.foxnews.com/category/style-and-beauty.html</a>
5	<a href="http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html">http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html</a>	<a href="http://www.foxnews.com/category/politics/elections.html">http://www.foxnews.com/category/politics/elections.html</a>
6	<a href="http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html">http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html</a>	<a href="http://www.foxnews.com/tech.html">http://www.foxnews.com/tech.html</a>
7	<a href="http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html">http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html</a>	<a href="http://www.foxnews.com/lifestyle.html">http://www.foxnews.com/lifestyle.html</a>
8	<a href="http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html">http://www.foxnews.com/sports/2018/01/24/rams-add-former-ucla-offensive-coordinator-jedd-fisch-to-staff.html</a>	<a href="http://www.foxnews.com/category/style-and-beauty.html">http://www.foxnews.com/category/style-and-beauty.html</a>
9	<a href="http://www.foxnews.com/auto/2018/01/23/tesla-allegedly-on-autopilot-rams-into-back-fire-truck.html">http://www.foxnews.com/auto/2018/01/23/tesla-allegedly-on-autopilot-rams-into-back-fire-truck.html</a>	<a href="http://www.foxnews.com/category/politics/elections.html">http://www.foxnews.com/category/politics/elections.html</a>
10	<a href="http://www.foxnews.com/us/2018/02/04/super-bowl-protesters-to-take-knee-in">http://www.foxnews.com/us/2018/02/04/super-bowl-protesters-to-take-knee-in</a>	<a href="http://www.foxnews.com/shows/cavuto-live.html">http://www.foxnews.com/shows/cavuto-live.html</a>



	<a href="http://www.foxnews.com/entertainment/2018/02/02/stan-lee-95-feeling-great-after-return-from-la-hospital.html">minneapolis-with-rally-against-police-brutality.html</a>	
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#### Query 6: Black Panther

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/entertainment/2018/02/02/stan-lee-95-feeling-great-after-return-from-la-hospital.html">http://www.foxnews.com/entertainment/2018/02/02/stan-lee-95-feeling-great-after-return-from-la-hospital.html</a>	<a href="http://www.foxnews.com/us.html">http://www.foxnews.com/us.html</a>
2	<a href="http://www.foxnews.com/entertainment/2018/02/02/stan-lee-95-feeling-great-after-return-from-la-hospital.html">http://www.foxnews.com/entertainment/2018/02/02/stan-lee-95-feeling-great-after-return-from-la-hospital.html</a>	<a href="http://www.foxnews.com/science.html">http://www.foxnews.com/science.html</a>
3	<a href="http://www.foxnews.com/entertainment/2018/02/02/stan-lee-95-feeling-great-after-return-from-la-hospital.html">http://www.foxnews.com/entertainment/2018/02/02/stan-lee-95-feeling-great-after-return-from-la-hospital.html</a>	<a href="http://www.foxnews.com/lifestyle.html">http://www.foxnews.com/lifestyle.html</a>
4	<a href="http://www.foxnews.com/entertainment/2018/02/28/stan-lee-robbed-1-4m-report-says.html">http://www.foxnews.com/entertainment/2018/02/28/stan-lee-robbed-1-4m-report-says.html</a>	<a href="http://www.foxnews.com/food-drink.html">http://www.foxnews.com/food-drink.html</a>
5	<a href="http://www.foxnews.com/tech/2017/12/20/twitters-purge-far-right-accounts-sparks-backlash-praise-and-confusion.html">http://www.foxnews.com/tech/2017/12/20/twitters-purge-far-right-accounts-sparks-backlash-praise-and-confusion.html</a>	<a href="http://www.foxnews.com/category/science/air-and-space.html">http://www.foxnews.com/category/science/air-and-space.html</a>
6	<a href="http://www.foxnews.com/tech/2017/12/20/twitters-purge-far-right-accounts-sparks-backlash-praise-and-confusion.html">http://www.foxnews.com/tech/2017/12/20/twitters-purge-far-right-accounts-sparks-backlash-praise-and-confusion.html</a>	<a href="http://www.foxnews.com/category/health/medical-research.html">http://www.foxnews.com/category/health/medical-research.html</a>
7	<a href="http://www.foxnews.com/us/2018/03/15/fiu-bridge-collapse-sparks-reaction-from-politicians-lawmakers.html">http://www.foxnews.com/us/2018/03/15/fiu-bridge-collapse-sparks-reaction-from-politicians-lawmakers.html</a>	<a href="http://www.foxnews.com/us.html">http://www.foxnews.com/us.html</a>
8	<a href="http://www.foxnews.com/us/2018/03/15/fiu-bridge-collapse-sparks-reaction-from-politicians-lawmakers.html">http://www.foxnews.com/us/2018/03/15/fiu-bridge-collapse-sparks-reaction-from-politicians-lawmakers.html</a>	<a href="http://www.foxnews.com/science.html">http://www.foxnews.com/science.html</a>
9	<a href="http://www.foxnews.com/us/2018/03/15/fiu-bridge-collapse-sparks-reaction-from-politicians-lawmakers.html">http://www.foxnews.com/us/2018/03/15/fiu-bridge-collapse-sparks-reaction-from-politicians-lawmakers.html</a>	<a href="http://www.foxnews.com/lifestyle.html">http://www.foxnews.com/lifestyle.html</a>
10	<a href="http://www.foxnews.com/entertainment/2017/06/17/cosby-hung-jury-judge-declares-mistrial-in-bill-cosby-sexual-assault-case.html">http://www.foxnews.com/entertainment/2017/06/17/cosby-hung-jury-judge-declares-mistrial-in-bill-cosby-sexual-assault-case.html</a>	<a href="http://www.foxnews.com/food-drink.html">http://www.foxnews.com/food-drink.html</a>

#### Query 7: Austin Bombings

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html">http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html</a>	<a href="http://www.foxnews.com/tech.html">http://www.foxnews.com/tech.html</a>

2	<a href="http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html">http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html</a>	<a href="http://www.foxnews.com/category/health/cancer.html">http://www.foxnews.com/category/health/cancer.html</a>
3	<a href="http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html">http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html</a>	<a href="http://www.foxnews.com/category/us/terror.html">http://www.foxnews.com/category/us/terror.html</a>
4	<a href="http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html">http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html</a>	<a href="http://www.foxnews.com/category/tech/topics/innovation.html">http://www.foxnews.com/category/tech/topics/innovation.html</a>
5	<a href="http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html">http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html</a>	<a href="http://www.foxnews.com/tech.html">http://www.foxnews.com/tech.html</a>
6	<a href="http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html">http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html</a>	<a href="http://www.foxnews.com/category/health/cancer.html">http://www.foxnews.com/category/health/cancer.html</a>
7	<a href="http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html">http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html</a>	<a href="http://www.foxnews.com/category/tech/topics/innovation.html">http://www.foxnews.com/category/tech/topics/innovation.html</a>
8	<a href="http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html">http://www.foxnews.com/us/2018/03/14/austin-package-bomb-victim-remembered-as-boy-who-could-have-accomplished-anything.html</a>	<a href="http://www.foxnews.com/category/us/terror.html">http://www.foxnews.com/category/us/terror.html</a>
9	<a href="http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html">http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html</a>	<a href="http://www.foxnews.com/weather/2017/11/01/winds-from-north-korea-nuclear-test-site-may-send-radiation-toward-japan/">http://www.foxnews.com/weather/2017/11/01/winds-from-north-korea-nuclear-test-site-may-send-radiation-toward-japan/</a>
10	<a href="http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html">http://www.foxnews.com/us/2018/03/15/austin-package-bombs-probably-pretty-simple-components-could-lead-cops-to-suspect-experts-say.html</a>	<a href="http://www.foxnews.com/category/tech/topics/sxsw.html">http://www.foxnews.com/category/tech/topics/sxsw.html</a>

#### Query 8: Paris Climate Deal

Rank	Lucene (Default) Result	PageRank Result
1	<a href="http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html">http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html</a>	<a href="http://www.foxnews.com/world.html">http://www.foxnews.com/world.html</a>
2	<a href="http://www.foxnews.com/us/2017/09/16/eu-officials-says-us-wont-reject-paris-">http://www.foxnews.com/us/2017/09/16/eu-officials-says-us-wont-reject-paris-</a>	<a href="http://www.foxnews.com/tech.html">http://www.foxnews.com/tech.html</a>

	<a href="http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html">climate-treaty-but-white-house-denies-statement.html</a>	
3	<a href="http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html">http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html</a>	<a href="http://www.foxnews.com/us.html">http://www.foxnews.com/us.html</a>
4	<a href="http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html">http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html</a>	<a href="http://www.foxnews.com/lifestyle.html">http://www.foxnews.com/lifestyle.html</a>
5	<a href="http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html">http://www.foxnews.com/politics/2017/12/06/post-trump-un-climate-pact-supporters-switch-to-state-and-local-strategy.html</a>	<a href="http://www.foxnews.com/entertainment.html">http://www.foxnews.com/entertainment.html</a>
6	<a href="http://www.foxnews.com/opinion/2017/12/12/heres-how-trump-could-make-quick-and-complete-exit-from-paris-climate-agreement-right-now.html">http://www.foxnews.com/opinion/2017/12/12/heres-how-trump-could-make-quick-and-complete-exit-from-paris-climate-agreement-right-now.html</a>	<a href="http://www.foxnews.com/food-drink.html">http://www.foxnews.com/food-drink.html</a>
7	<a href="http://www.foxnews.com/opinion/2017/06/06/cal-thomas-secular-progressives-reveal-again-why-are-not-fit-to-lead-anything.html">http://www.foxnews.com/opinion/2017/06/06/cal-thomas-secular-progressives-reveal-again-why-are-not-fit-to-lead-anything.html</a>	<a href="http://www.foxnews.com/auto.html">http://www.foxnews.com/auto.html</a>
8	<a href="http://www.foxnews.com/world/2017/07/08/g-20-summit-us-rejects-paris-climate-accord-as-19-members-reaffirm.html">http://www.foxnews.com/world/2017/07/08/g-20-summit-us-rejects-paris-climate-accord-as-19-members-reaffirm.html</a>	<a href="http://www.foxnews.com/category/science/archaeology/dinosaurs.html">http://www.foxnews.com/category/science/archaeology/dinosaurs.html</a>
9	<a href="http://www.foxnews.com/category/us/environment/climate-change.html">http://www.foxnews.com/category/us/environment/climate-change.html</a>	<a href="http://www.foxnews.com/category/health/heart-health.html">http://www.foxnews.com/category/health/heart-health.html</a>
10	<a href="http://www.foxnews.com/world/2018/03/11/french-president-pokes-at-trump-for-leaving-paris-accord.html">http://www.foxnews.com/world/2018/03/11/french-president-pokes-at-trump-for-leaving-paris-accord.html</a>	<a href="http://www.foxnews.com/category/science/planet-earth.html">http://www.foxnews.com/category/science/planet-earth.html</a>

### Overlapping Graph For Query

Query 1	0
Query 2	0
Query 3	0
Query 4	0
Query 5	0
Query 6	0
Query 7	0
Query 8	0

