Query processing and visualisation using hive

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Introduction

• Dream of a student/professional
• several jobs posted through various websites
• Naukri is a platform that brings the recruiters or the employers and the job Seekers together
• data set from www.kaggle.com
Significance

- Not restricted to only naukri
- Third party
- Regions with less jobs posted.
- Increase their profit by providing some discounts to their clients and ask for reference in the areas where less number of jobs are posted
- High paid jobs
- Regions for which job frequency is high
Concepts

Hadoop, HDFS

Hive, HQL

Zeppelin, Visualisation on HQL
Hadoop - Hadoop Distributed File System and MapReduce processing. It stores intermediary data on Hadoop Distributed File System, which is a disk-based distributed file system.

HDFS Hadoop technologies are disk-based, thus having physical limitations in processing speeds.

Parallel processing (Map reduce)
Hadoop

Main technologies of Hadoop are HDFS and MapReduce processing.

Hadoop - Hadoop Distributed File System and MapReduce processing. It stores intermediary data on Hadoop Distributed File System, which is a disk-based distributed file system.

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Parallel processing (Map reduce)

Hadoop is suitable for batch processing of big data.
Hive

- Initially developed by Facebook, data warehouse on Apache Hadoop
- Using hive is that data to be analyzed is stored in HDFS which provides all features like scalability, redundancy etc.,
- HQL like SQL, automatically translates SQL-like queries into MapReduce jobs
- Hive v0.7.0 added integration with Hadoop security
- Hive abstracts the complexity of Hadoop security
Apache Zeppelin

Open source Visualization tool provided by apache organization

Web front end

At the backend it connects to SQL system(eg.hive)

Hive integrated with zeppelin
Experimental Results
Logging initialized using configuration in jar:file:/home/orientit/work/apache-hive-1.2.1-bin/lib/hive-common-1.2.1.jar!/hive-log4j.properties
Orienit@hadoop:~$ hive

Logging initialized using configuration in jar:file:/home/orienit/work/apache-hive-1.2.1-bin/lib/hive-common-1.2.1.jar!/hive-log4j.properties

hive> show databases
   > ;
OK
default
team5
Time taken: 1.257 seconds, Fetched: 2 row(s)
hive> use team5;
OK
Time taken: 0.14 seconds
hive> show tables;
OK
naukri
Time taken: 0.049 seconds, Fetched: 1 row(s)
hive>
Orientit@hadoop:~$ hive
Logging initialized using configuration in jar:file:/home/orientit/work/apache-hive-1.2.1-bin/lib/hive-common-1.2.1.jar!/hive-log4j.properties
hive> show databases
   > ;
   OK
default
   team5
Time taken: 1.257 seconds, Fetched: 2 row(s)
hive> use team5;
   OK
Time taken: 0.14 seconds
hive> show tables;
   OK
naukri
Time taken: 0.049 seconds, Fetched: 1 row(s)
hive> describe naukri;
   OK
candidate_id string
title string
description string
candidate_info string
candidate_image string
candidate_location string
job_title string
company_name string
experience string
education string
industry string
job_description string
job_id string
job_location_address string
salary string
post_date string
site_name string
skills string
unq_id string
Time taken: 0.415 seconds, Fetched: 14 row(s)
hive>  

NameNode 'localhost:8020' (active)

Cluster Summary

Security is OFF.
183 files and directories, 109 blocks = 292 total.
Heap Memory used 31.64 MB is 18% of Committed Heap Memory 168 MB. Max Heap Memory is 889 MB.
Non Heap Memory used 34.97 MB is 97% of Committed Non Heap Memory 35.94 MB. Max Non Heap Memory is 214 MB.

Configured Capacity : 76.65 GB
DFS Used : 182.50 MB
Non DFS Used : 23.62 GB
DFS Remaining : 52.85 GB
DFS Used% : 0.23%
DFS Remaining% : 68.95%
Block Pool Used : 182.50 MB
Block Pool Used% : 0.23%

Live Nodes : 1 ( Decommissioned: 0 )
Dead Nodes : 0 ( Decommissioned: 0 )
Decommissioning Nodes : 0
Number of Under-Replicated Blocks : 2

NameNode Journal Status:

Current transaction ID: 5873

Journal Manager
FileJournalManager(root=/home/orient/work/hadoop2data/dfs/name) State
EditLogFileStream(/home/orient/work/hadoop2data/dfs/name/current/edits_inprogress_000000000000005873)
File: /home/orientit/work/warehouse/naukri1/naukri.txt

Goto: /home/orientit/work/warehouse/n

Go back to dir listing
Advanced view/download options

View Next chunk

company education experience industry jobdescription jobid joblocation address jobtitle numberofpositions paysate postdate site_name skills uniq_id
MM Media Pvt Ltd "U: B.Tech/B.E. - Any Specialization PG:Any Postgraduate - Any Specialization, Post Graduation Not Required" 1 - 3 yrs Media / Entertainment / Internet "Job Description Send me Jobs like this Qualifications: - == > basic to high level skills == > Technology, Technology skills: - == > basic to high level skills == > Technology, Technology experience: - == > basic to high level skills == > Technology, Technology salary: - == > basic to high level skills == > Technology, Technology jobtype: - == > basic to high level skills == > Technology, Technology requirement: - == > basic to high level skills == > Technology, Technology company: - == > basic to high level skills == > Technology, Technology location: - == > basic to high level skills == > Technology, Technology jobtitle: - == > basic to high level skills == > Technology, Technology joblocation: - == > basic to high level skills == > Technology, Technology experience: - == > basic to high level skills == > Technology, Technology industry: - == > basic to high level skills == > Technology, Technology keyskills: - == > basic to high level skills == > Technology, Technology address: - == > basic to high level skills == > Technology, Technology numberofpositions: - == > basic to high level skills == > Technology, Technology payrate: - == > basic to high level skills == > Technology, Technology postdate: - == > basic to high level skills == > Technology, Technology site_name: - == > basic to high level skills == > Technology, Technology skills: - == > basic to high level skills == > Technology, Technology uniq_id: - == > basic to high level skills == > Technology, Technology" 2016-01-03 21:00.0000
Omi Tech Ltd "U: B.Tech/B.E. - Any Specialization PG:Any Postgraduate - Any Specialization, Post Graduation Not Required" 1 - 3 yrs Media / Entertainment / Internet "Job Description Send me Jobs like this Qualifications: - == > basic to high level skills == > Technology, Technology skills: - == > basic to high level skills == > Technology, Technology experience: - == > basic to high level skills == > Technology, Technology salary: - == > basic to high level skills == > Technology, Technology jobtype: - == > basic to high level skills == > Technology, Technology requirement: - == > basic to high level skills == > Technology, Technology company: - == > basic to high level skills == > Technology, Technology location: - == > basic to high level skills == > Technology, Technology jobtitle: - == > basic to high level skills == > Technology, Technology joblocation: - == > basic to high level skills == > Technology, Technology experience: - == > basic to high level skills == > Technology, Technology industry: - == > basic to high level skills == > Technology, Technology keyskills: - == > basic to high level skills == > Technology, Technology address: - == > basic to high level skills == > Technology, Technology numberofpositions: - == > basic to high level skills == > Technology, Technology payrate: - == > basic to high level skills == > Technology, Technology postdate: - == > basic to high level skills == > Technology, Technology site_name: - == > basic to high level skills == > Technology, Technology skills: - == > basic to high level skills == > Technology, Technology uniq_id: - == > basic to high level skills == > Technology, Technology" 2016-01-03 21:00.0000
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Download this file
Tail this file

Chunk size to view (in bytes, up to file's DFS block size): 132768
Total number of blocks: 3
1073741809: 127.00.0.1:50010 View Block Info
1073741809: 127.00.0.1:50010 View Block Info
1073741809: 127.00.0.1:50010 View Block Info

Go back to DFS home
Local logs
Log directory
orientit@hadoop:~/work/apache-hive-1.2.1-bin/bin
orientit@hadoop:~$ cd work/
orientit@hadoop:~/work$ cd apache-hive-1.2.1-bin/
orientit@hadoop:~/work/apache-hive-1.2.1-bin$ cd bin/
orientit@hadoop:~/work/apache-hive-1.2.1-bin/bin$ hiveserver2
Welcome to Zeppelin!

Zeppelin is web-based notebook that enables interactive data analytics.
You can make beautiful data-driven, interactive, collaborative document with SQL, code and even more!

Notebook
- Import note
- Create new note

Help
- Get started with Zeppelin documentation

Community
- Please feel free to help us to improve Zeppelin,
  Any contribution are welcome!
- Mailing list
- Issues tracking
- Github
```
SELECT count(*), skills FROM randomSample GROUP BY skills;
```

![Pie chart showing skills distribution](chart.png)

- **Skills Distribution**
  - IT Software - Application Programming: 13.00 (37%)
  - Other Skills: 24.00 (73%)

*Note: The chart visualizes the skills distribution among the sample population.*
```
select count(*) , skills from nutshell group by skills;
```
SELECT COUNT(*) , skills FROM rawSkills GROUP BY skills
```sql
SELECT count(*) AS skills FROM raw_skills GROUP BY skills;
```
```sql
select company, numberofpositions from mbakr where numberofpositions >1000;
```
```
SELECT company, numberofpositions FROM mytable WHERE numberofpositions > 1000;
```
```
jdbc

SELECT DISTINCT industry FROM rskrl1;
```

<table>
<thead>
<tr>
<th>industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting / Finance</td>
</tr>
<tr>
<td>Advertising / PR / MR / Event Management</td>
</tr>
<tr>
<td>Agriculture / Dairy</td>
</tr>
<tr>
<td>Animation / Gaming</td>
</tr>
<tr>
<td>Architecture / Interior Design</td>
</tr>
<tr>
<td>Automobile / Auto Ancillary / Auto Components</td>
</tr>
<tr>
<td>Aviation / Aerospace Firms</td>
</tr>
<tr>
<td>BPO / Call Centre / ITES</td>
</tr>
<tr>
<td>Banking / Financial Services / Broking</td>
</tr>
<tr>
<td>Brewery / Distillery</td>
</tr>
</tbody>
</table>

 Took 48 sec. Last updated by anonymous at April 12 2013, 2:42:27 AM (jstated)
SELECT count(*) , Industry FROM market1 GROUP BY Industry;
<table>
<thead>
<tr>
<th>Submit Time IST</th>
<th>Start Time</th>
<th>Finish Time</th>
<th>Job ID</th>
<th>Name</th>
<th>User</th>
<th>Queue</th>
<th>State</th>
<th>Maps Total</th>
<th>Maps Completed</th>
<th>Reduces Total</th>
<th>Reduces Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018.04.12 02:23:41</td>
<td>2018.04.12 02:23:36</td>
<td>2018.04.12 02:24:15</td>
<td>job_1522347561033_0010</td>
<td>select count(*) from joblocation_address</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 02:19:04</td>
<td>2018.04.12 02:19:34</td>
<td>2018.04.12 02:21:01</td>
<td>job_1522347561033_0009</td>
<td>select count(*) from naukri1 w, %Chennai%</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 01:05:35</td>
<td>2018.04.12 01:06:14</td>
<td>2018.04.12 01:07:18</td>
<td>job_1522347561033_0008</td>
<td>select count(*) from naukr... (Stage) 1</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 00:58:40</td>
<td>2018.04.12 00:59:17</td>
<td>2018.04.12 01:00:08</td>
<td>job_1522347561033_0007</td>
<td>select count(*) from nauk... skills (Stage) 1</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 00:51:15</td>
<td>2018.04.12 00:51:54</td>
<td>2018.04.12 00:52:33</td>
<td>job_1522347561033_0006</td>
<td>select skills, count(*) from naukr... skills (Stage) 1</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 00:50:05</td>
<td>2018.04.12 00:50:44</td>
<td>2018.04.12 00:51:24</td>
<td>job_1522347561033_0005</td>
<td>select skills from naukrisample gro... skills (Stage) 1</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 00:48:23</td>
<td>2018.04.12 00:48:34</td>
<td>2018.04.12 00:49:08</td>
<td>job_1522347561033_0004</td>
<td>select count(*) , skills from nauk... skills (Stage) 1</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>2018.04.12 00:43:50</td>
<td>2018.04.12 00:44:31</td>
<td>2018.04.12 00:45:00</td>
<td>job_1522347561033_0003</td>
<td>select count(*) from naukrisam... %Chennai% (Stage) 1</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 00:43:50</td>
<td>2018.04.12 00:44:31</td>
<td>2018.04.12 00:45:00</td>
<td>job_1522347561033_0003</td>
<td>select count(*) from naukrisam... %Chennai% (Stage) 1</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.12 00:42:02</td>
<td>2018.04.12 00:42:54</td>
<td>2018.04.12 00:43:25</td>
<td>job_1522347561033_0002</td>
<td>select distinct industry from naukrisample (Stage-1)</td>
<td>hiveUser</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.11 03:52:23</td>
<td>2018.04.11 03:52:35</td>
<td>2018.04.11 03:53:24</td>
<td>job_1522386112830_0025</td>
<td>select count(*) , skills from naukr... skills (Stage) 1</td>
<td>orient</td>
<td>default</td>
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<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.11 03:36:56</td>
<td>2018.04.11 03:37:19</td>
<td>2018.04.11 03:37:39</td>
<td>job_1522386112830_0024</td>
<td>select count(*) , skills from naukr... skills (Stage) 1</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
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<td>1</td>
</tr>
<tr>
<td>2018.04.11 03:36:01</td>
<td>2018.04.11 03:36:29</td>
<td>2018.04.11 03:36:47</td>
<td>job_1522386112830_0023</td>
<td>select count(*) , skills from naukr... skills (Stage) 1</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>2018.04.11 03:17:28</td>
<td>2018.04.11 03:17:35</td>
<td>2018.04.11 03:18:09</td>
<td>job_1522386112830_0022</td>
<td>select distinct skills from naukrisample (Stage-1)</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
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<tr>
<td>2018.04.11 03:17:28</td>
<td>2018.04.11 03:17:35</td>
<td>2018.04.11 03:18:09</td>
<td>job_1522386112830_0022</td>
<td>select distinct skills from naukrisample (Stage-1)</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
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<tr>
<td>2018.04.11 03:15:54</td>
<td>2018.04.11 03:16:00</td>
<td>2018.04.11 03:16:20</td>
<td>job_1522386112830_0021</td>
<td>select distinct skills from naukrisample (Stage-1)</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.11 03:11:45</td>
<td>2018.04.11 03:12:07</td>
<td>2018.04.11 03:12:33</td>
<td>job_1522386112830_0020</td>
<td>select distinct skills from naukrisample (Stage-1)</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
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<td>1</td>
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<tr>
<td>2018.04.11 03:08:51</td>
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<td>2018.04.11 03:09:23</td>
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<td>select distinct skills from naukrisample (Stage-1)</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.11 03:02:37</td>
<td>2018.04.11 03:02:47</td>
<td>2018.04.11 03:03:10</td>
<td>job_1522386112830_0018</td>
<td>select count(*) , skills from naukr... skills (Stage) 1</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2018.04.11 02:50:37</td>
<td>2018.04.11 02:51:20</td>
<td>2018.04.11 02:51:43</td>
<td>job_1522386112830_0017</td>
<td>select max(skills) from naukrisample... skills (Stage) 1</td>
<td>orient</td>
<td>default</td>
<td>SUCCEEDED</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Conclusion

- Visualisation
- Most efficient
- Fast results, Hive is faster than hadoop
Demo time