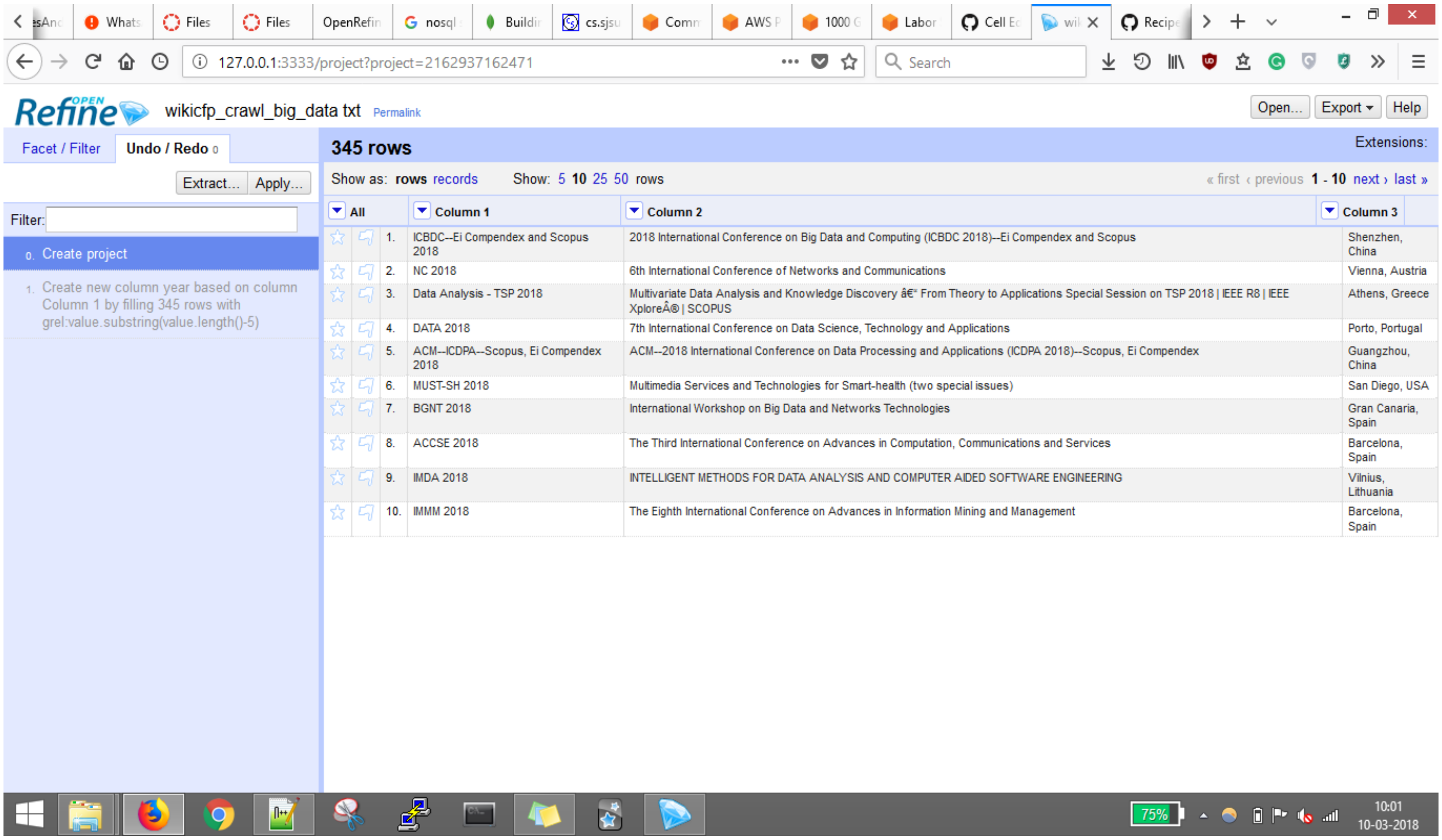
Report

Web crawling task:

- We had to crawl WikiCFP for big data, data mining, database,and AI conferences and their location every year.
- We wrote our own Java code and build the crawler based on that.
- When searching per category, WikiCFPallows navigation until page 20, so we crawled all 20 pages for big data, data mining,databases, and artificial intelligence. The output of the crawling was in the tab separated format: conference_acronym (event), conference_name(title), and conference_location(place).
- I had a separate output file for all the different categories.

Data cleaning:

- I used OpenRefine to clean each of these files (files for each category).
- I removed the unwanted fields, aggregated and segregated fields as per the requirement.
- I segregated the event acronym and the event year into two separate columns.
- I trimmed the country name from the location field as we only needed results according to the cities.
- Then I merged all the files together and created one single file of the crawled data.



0. Create project

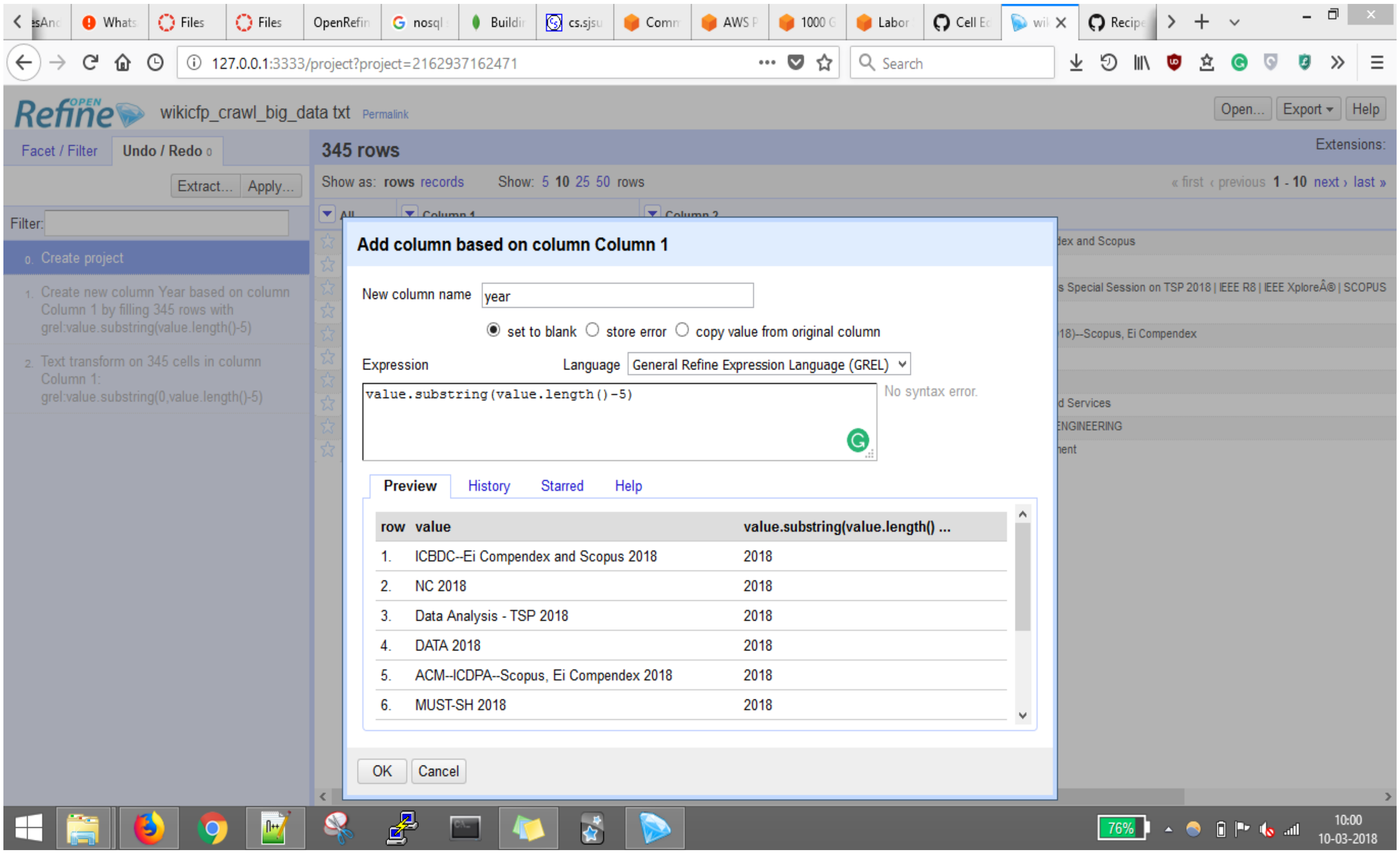
1. Create new column year based on column Column 1 by filling 345 rows with grel:value.substring(value.length()-5)

345 rows

Show as: rows records   Show: 5 10 25 50 rows   « first ‹ previous 1 - 10 next › last »

All	Column 1	Column 2	Column 3
1.	ICBDC--Ei Compendex and Scopus 2018	2018 International Conference on Big Data and Computing (ICBDC 2018)--Ei Compendex and Scopus	Shenzhen, China
2.	NC 2018	6th International Conference of Networks and Communications	Vienna, Austria
3.	Data Analysis - TSP 2018	Multivariate Data Analysis and Knowledge Discovery â€" From Theory to Applications Special Session on TSP 2018 | IEEE R8 | IEEE XploreÂ® | SCOPUS	Athens, Greece
4.	DATA 2018	7th International Conference on Data Science, Technology and Applications	Porto, Portugal
5.	ACM--ICDPA--Scopus, Ei Compendex 2018	ACM--2018 International Conference on Data Processing and Applications (ICDPA 2018)--Scopus, Ei Compendex	Guangzhou, China
6.	MUST-SH 2018	Multimedia Services and Technologies for Smart-health (two special issues)	San Diego, USA
7.	BGNT 2018	International Workshop on Big Data and Networks Technologies	Gran Canaria, Spain
8.	ACCSE 2018	The Third International Conference on Advances in Computation, Communications and Services	Barcelona, Spain
9.	IMDA 2018	INTELLIGENT METHODS FOR DATA ANALYSIS AND COMPUTER AIDED SOFTWARE ENGINEERING	Vilnius, Lithuania
10.	IMMM 2018	The Eighth International Conference on Advances in Information Mining and Management	Barcelona, Spain

Splitting column1 to get the year column:



127.0.0.1:3333/project?project=2162937162471

wikicfp_crawl_big_data txt

345 rows

Undo / Redo

0. Create project

1. Create new column Year based on column Column 1 by filling 345 rows with grel:value.substring(value.length()-5)

2. Text transform on 345 cells in column Column 1: grel:value.substring(0,value.length()-5)

Add column based on column Column 1

New column name: year

● set to blank ○ store error ○ copy value from original column

Expression — Language: General Refine Expression Language (GREL)

```
value.substring(value.length()-5)
```

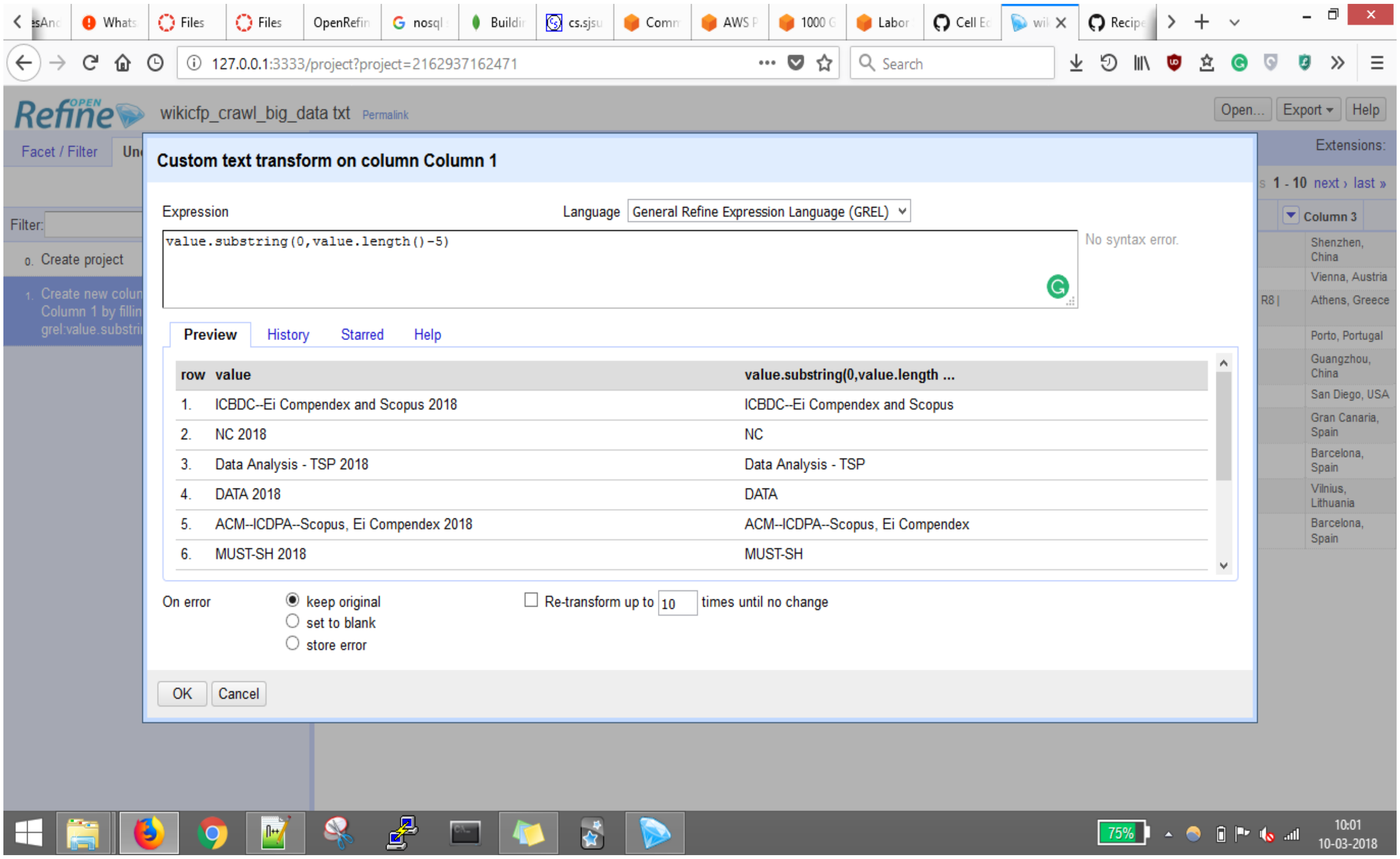
No syntax error.

Preview | History | Starred | Help

row	value	value.substring(value.length() ...
1.	ICBDC--Ei Compendex and Scopus 2018	2018
2.	NC 2018	2018
3.	Data Analysis - TSP 2018	2018
4.	DATA 2018	2018
5.	ACM--ICDPA--Scopus, Ei Compendex 2018	2018
6.	MUST-SH 2018	2018

OK | Cancel

Removing unwanted data:



Custom text transform on column Column 1

Expression — Language: General Refine Expression Language (GREL)

```
value.substring(0,value.length()-5)
```

No syntax error.

Preview | History | Starred | Help

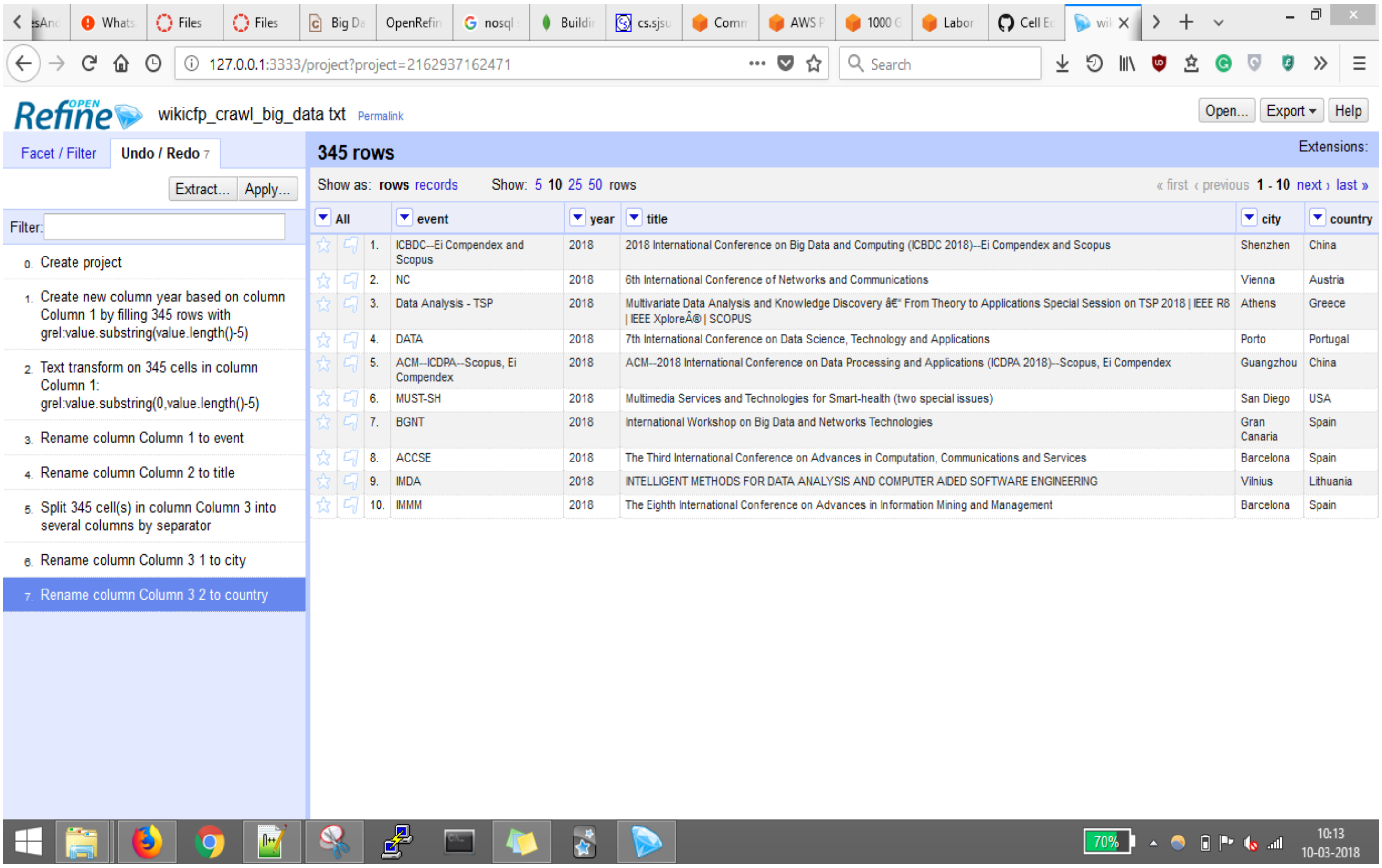
row	value	value.substring(0,value.length ...
1.	ICBDC--Ei Compendex and Scopus 2018	ICBDC--Ei Compendex and Scopus
2.	NC 2018	NC
3.	Data Analysis - TSP 2018	Data Analysis - TSP
4.	DATA 2018	DATA
5.	ACM--ICDPA--Scopus, Ei Compendex 2018	ACM--ICDPA--Scopus, Ei Compendex
6.	MUST-SH 2018	MUST-SH

On error: ● keep original ○ set to blank ○ store error

□ Re-transform up to 10 times until no change

OK | Cancel

Final data (after all the other operations):



0. Create project
1. Create new column year based on column Column 1 by filling 345 rows with grel:value.substring(value.length()-5)
2. Text transform on 345 cells in column Column 1: grel:value.substring(0,value.length()-5)
3. Rename column Column 1 to event
4. Rename column Column 2 to title
5. Split 345 cell(s) in column Column 3 into several columns by separator
6. Rename column Column 3 1 to city
7. Rename column Column 3 2 to country

345 rows

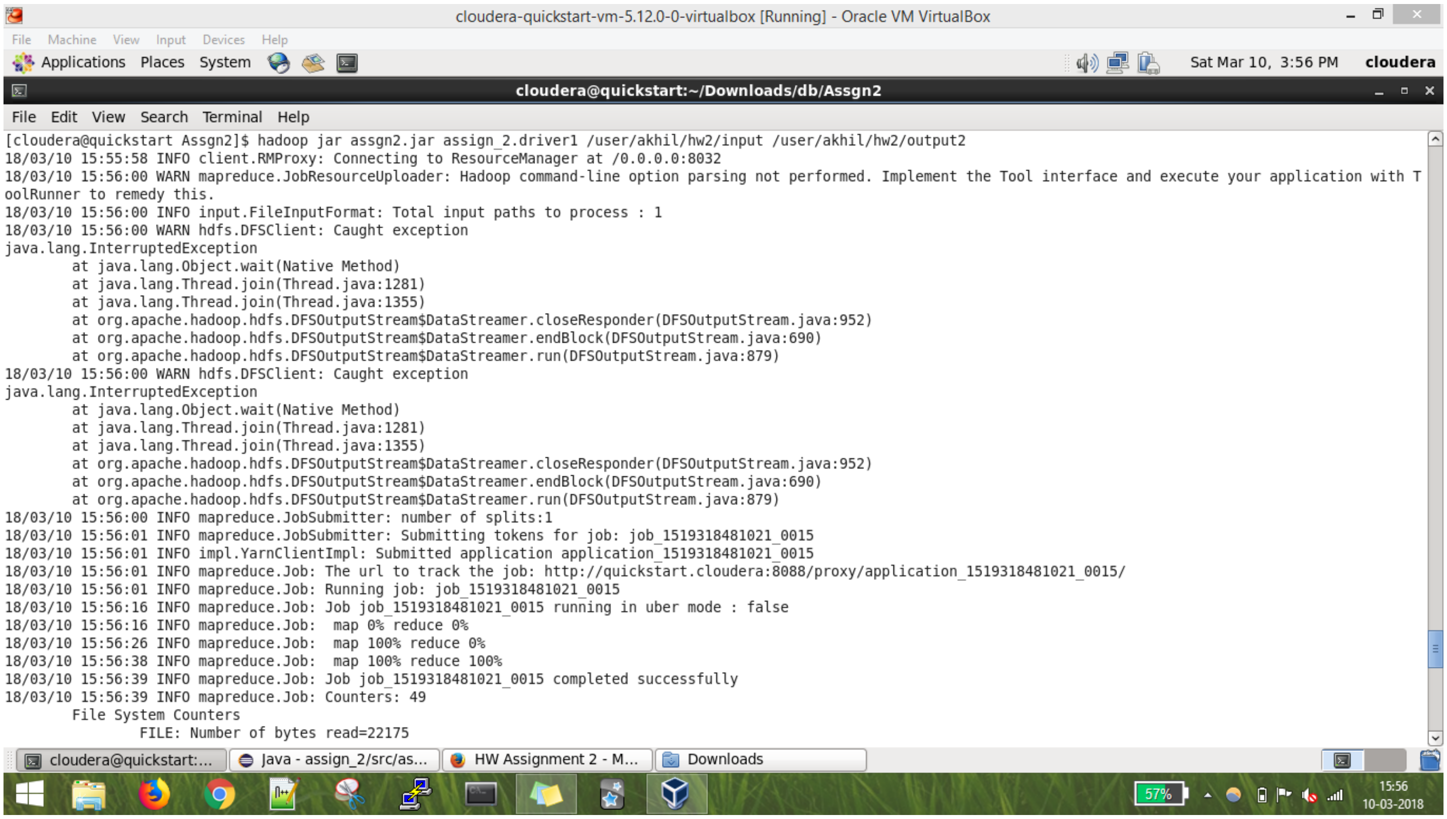
All	event	year	title	city	country
1.	ICBDC--Ei Compendex and Scopus	2018	2018 International Conference on Big Data and Computing (ICBDC 2018)--Ei Compendex and Scopus	Shenzhen	China
2.	NC	2018	6th International Conference of Networks and Communications	Vienna	Austria
3.	Data Analysis - TSP	2018	Multivariate Data Analysis and Knowledge Discovery â€“ From Theory to Applications Special Session on TSP 2018 | IEEE R8 | IEEE XploreÂ® | SCOPUS	Athens	Greece
4.	DATA	2018	7th International Conference on Data Science, Technology and Applications	Porto	Portugal
5.	ACM--ICDPA--Scopus, Ei Compendex	2018	ACM--2018 International Conference on Data Processing and Applications (ICDPA 2018)--Scopus, Ei Compendex	Guangzhou	China
6.	MUST-SH	2018	Multimedia Services and Technologies for Smart-health (two special issues)	San Diego	USA
7.	BGNT	2018	International Workshop on Big Data and Networks Technologies	Gran Canaria	Spain
8.	ACCSE	2018	The Third International Conference on Advances in Computation, Communications and Services	Barcelona	Spain
9.	IMDA	2018	INTELLIGENT METHODS FOR DATA ANALYSIS AND COMPUTER AIDED SOFTWARE ENGINEERING	Vilnius	Lithuania
10.	IMMM	2018	The Eighth International Conference on Advances in Information Mining and Management	Barcelona	Spain

<u>Tasks:</u> In this part, we used Hadoop on the data we just crawled to compute various statistics.

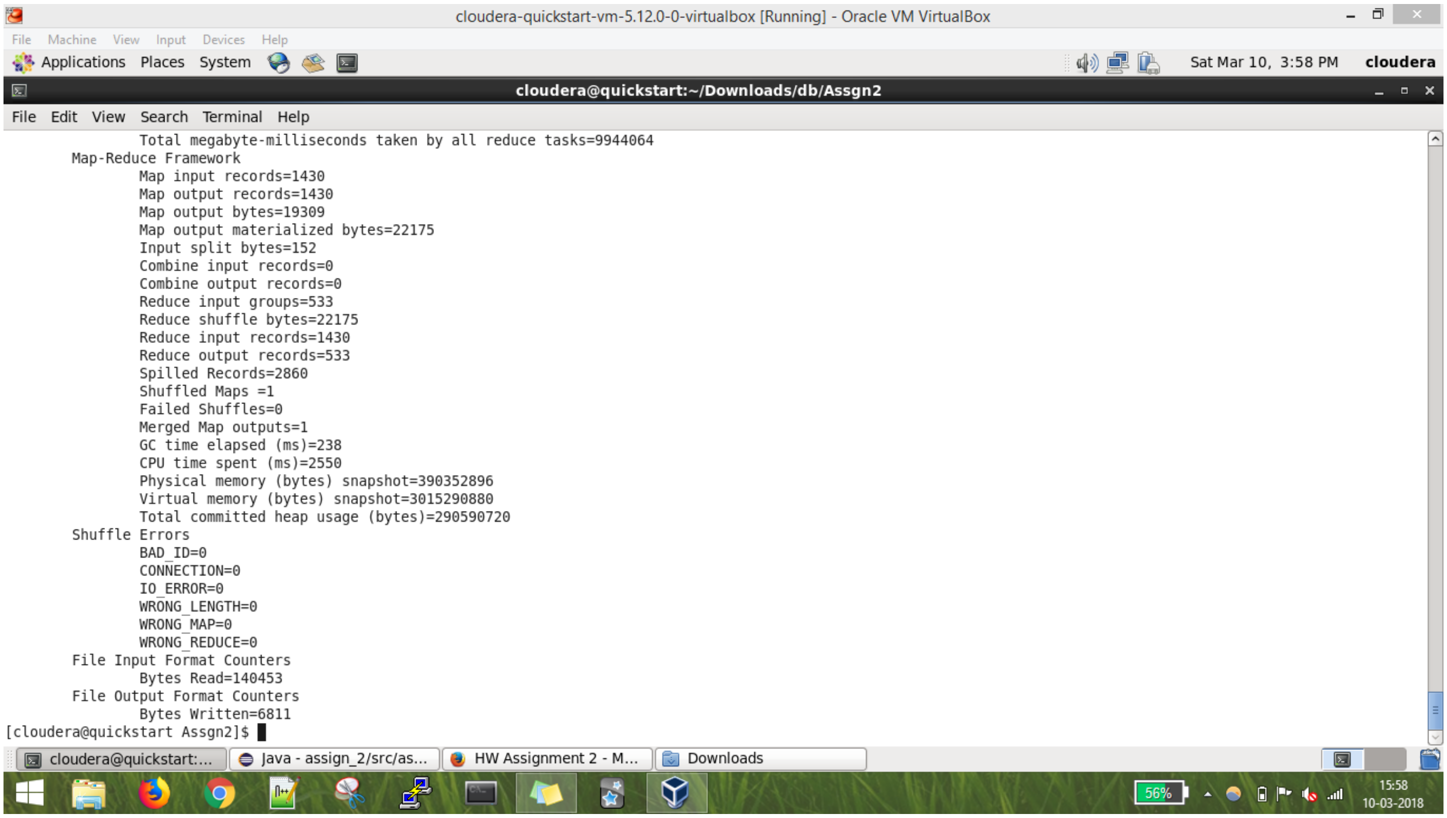
<u>**Task I:**</u> Compute and plot the number of conferences per city. Which are the top 10 locations?

- For this task, we wrote a Hadoop MapReduce program.
- Before that, we place the crawled data file in the HDFS using –put command.
- The driver class created a job and called the Mapper and Reducer classes.
- The Mapper class mapped all the similar cities together and passed it as the outputKey, along with an IntWritable variable (1) as outputValue which is used to sum up the count, to the reducer.
- The reducer then gets the city name and sum up the count 1 by 1 for each city.
- We export this package as a jar and use the following command to run it as Hadoop jar.

    - `hadoop jar jarname.jar package.driver /inputpath /outputpath`


cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Sat Mar 10, 3:56 PM
cloudera
cloudera@quickstart:~/Downloads/db/Assgn2
File Edit View Search Terminal Help
cloudera@quickstart:...
Java - assign_2/src/as...
HW Assignment 2 - M...
Downloads
57%
15:56
10-03-2018

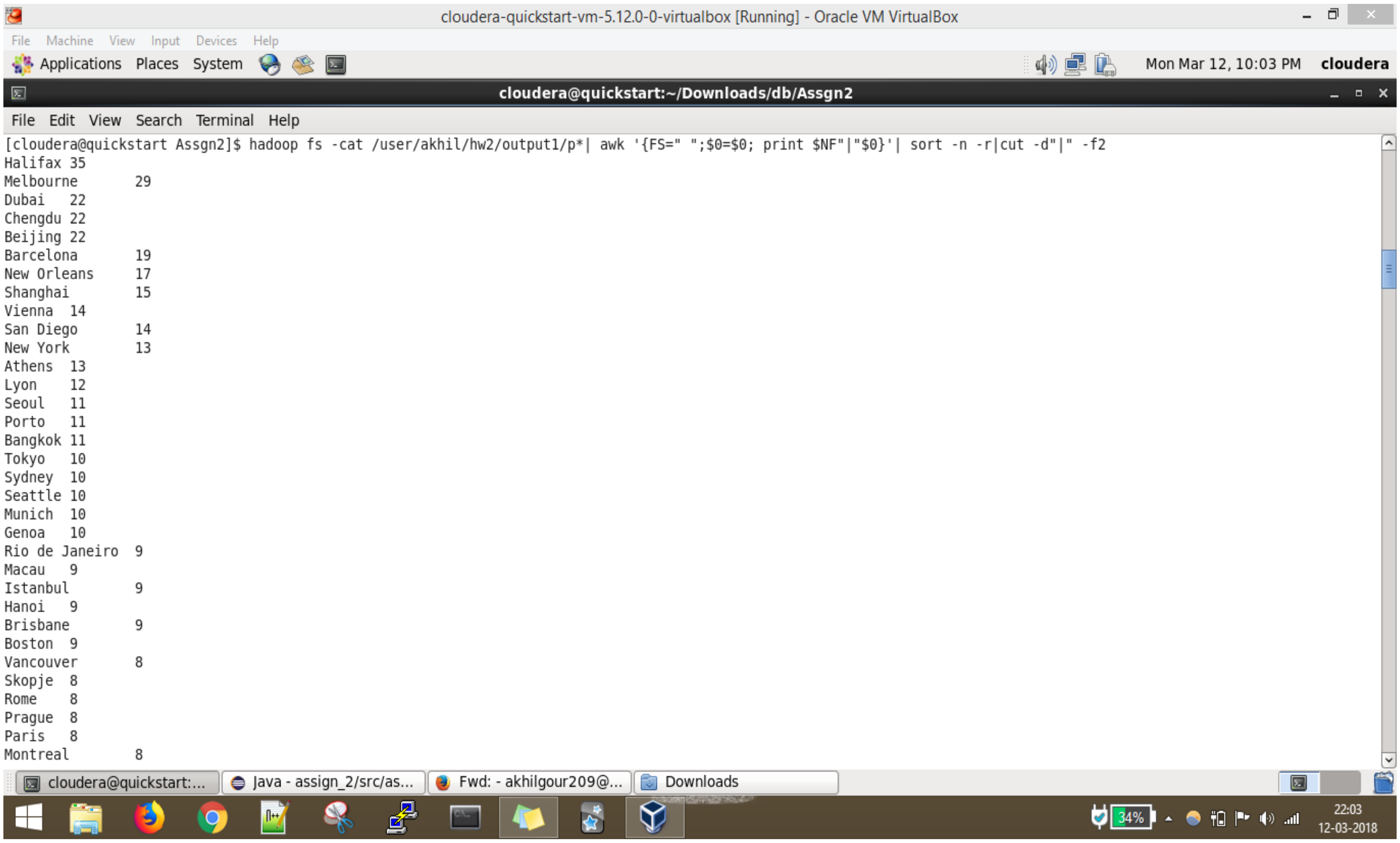
```
[cloudera@quickstart Assgn2]$ hadoop jar assgn2.jar assign_2.driver1 /user/akhil/hw2/input /user/akhil/hw2/output2
18/03/10 15:55:58 INFO client.RMProxy: Connecting to ResourceManager at /0.0.0.0:8032
18/03/10 15:56:00 WARN mapreduce.JobResourceUploader: Hadoop command-line option parsing not performed. Implement the Tool interface and execute your application with T
oolRunner to remedy this.
18/03/10 15:56:00 INFO input.FileInputFormat: Total input paths to process : 1
18/03/10 15:56:00 WARN hdfs.DFSClient: Caught exception
java.lang.InterruptedException
        at java.lang.Object.wait(Native Method)
        at java.lang.Thread.join(Thread.java:1281)
        at java.lang.Thread.join(Thread.java:1355)
        at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.closeResponder(DFSOutputStream.java:952)
        at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.endBlock(DFSOutputStream.java:690)
        at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.run(DFSOutputStream.java:879)
18/03/10 15:56:00 WARN hdfs.DFSClient: Caught exception
java.lang.InterruptedException
        at java.lang.Object.wait(Native Method)
        at java.lang.Thread.join(Thread.java:1281)
        at java.lang.Thread.join(Thread.java:1355)
        at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.closeResponder(DFSOutputStream.java:952)
        at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.endBlock(DFSOutputStream.java:690)
        at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.run(DFSOutputStream.java:879)
18/03/10 15:56:00 INFO mapreduce.JobSubmitter: number of splits:1
18/03/10 15:56:01 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1519318481021_0015
18/03/10 15:56:01 INFO impl.YarnClientImpl: Submitted application application_1519318481021_0015
18/03/10 15:56:01 INFO mapreduce.Job: The url to track the job: http://quickstart.cloudera:8088/proxy/application_1519318481021_0015/
18/03/10 15:56:01 INFO mapreduce.Job: Running job: job_1519318481021_0015
18/03/10 15:56:16 INFO mapreduce.Job: Job job_1519318481021_0015 running in uber mode : false
18/03/10 15:56:16 INFO mapreduce.Job:  map 0% reduce 0%
18/03/10 15:56:26 INFO mapreduce.Job:  map 100% reduce 0%
18/03/10 15:56:38 INFO mapreduce.Job:  map 100% reduce 100%
18/03/10 15:56:39 INFO mapreduce.Job: Job job_1519318481021_0015 completed successfully
18/03/10 15:56:39 INFO mapreduce.Job: Counters: 49
        File System Counters
                FILE: Number of bytes read=22175
```


cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Sat Mar 10, 3:58 PM
cloudera
cloudera@quickstart:~/Downloads/db/Assgn2
File Edit View Search Terminal Help
cloudera@quickstart:...
Java - assign_2/src/as...
HW Assignment 2 - M...
Downloads
56%
15:58
10-03-2018

```
                Total megabyte-milliseconds taken by all reduce tasks=9944064
        Map-Reduce Framework
                Map input records=1430
                Map output records=1430
                Map output bytes=19309
                Map output materialized bytes=22175
                Input split bytes=152
                Combine input records=0
                Combine output records=0
                Reduce input groups=533
                Reduce shuffle bytes=22175
                Reduce input records=1430
                Reduce output records=533
                Spilled Records=2860
                Shuffled Maps =1
                Failed Shuffles=0
                Merged Map outputs=1
                GC time elapsed (ms)=238
                CPU time spent (ms)=2550
                Physical memory (bytes) snapshot=390352896
                Virtual memory (bytes) snapshot=3015290880
                Total committed heap usage (bytes)=290590720
        Shuffle Errors
                BAD_ID=0
                CONNECTION=0
                IO_ERROR=0
                WRONG_LENGTH=0
                WRONG_MAP=0
                WRONG_REDUCE=0
        File Input Format Counters
                Bytes Read=140453
        File Output Format Counters
                Bytes Written=6811
[cloudera@quickstart Assgn2]$ 
```

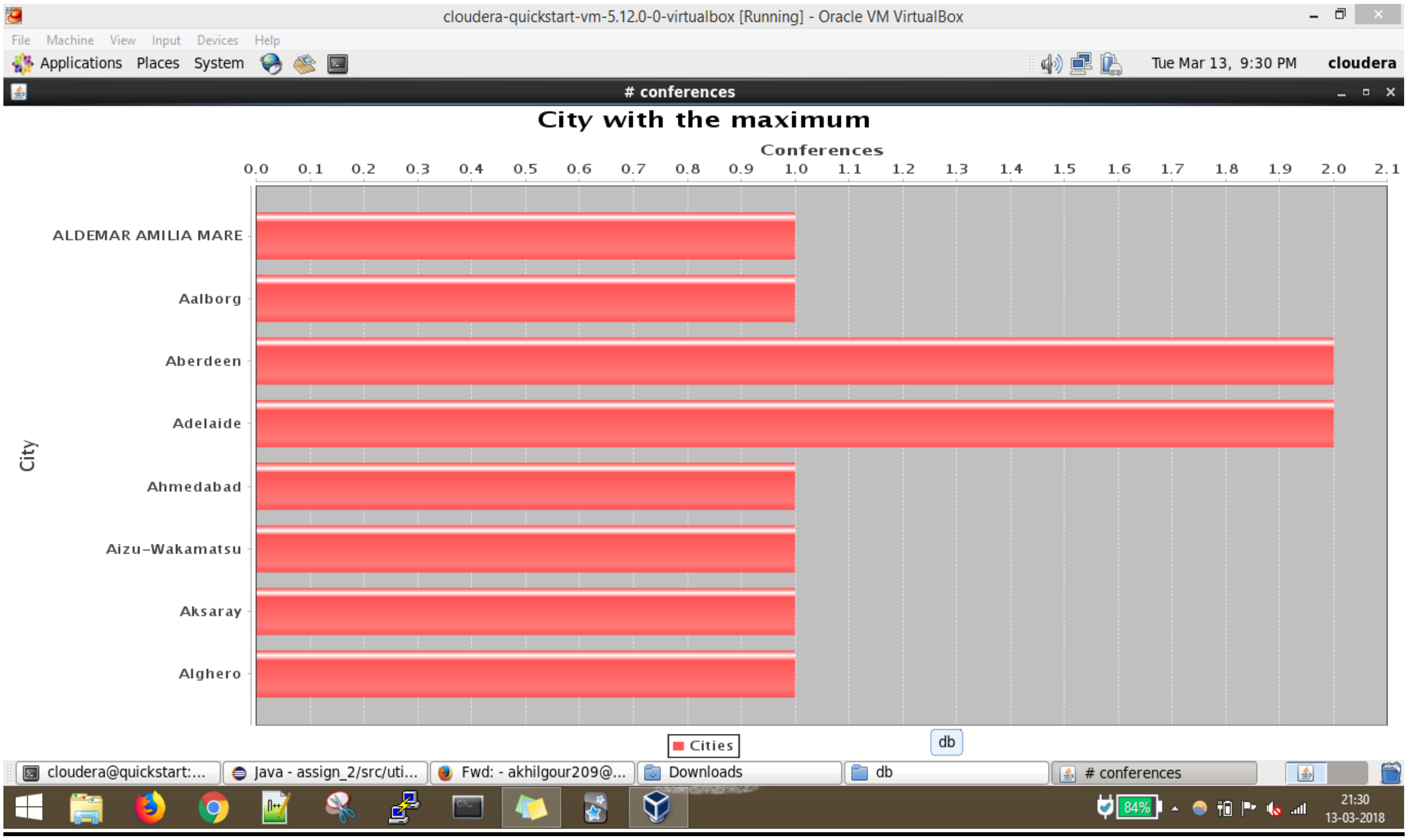
Then we get the output file to our local file system or we can choose to cat the output from the Hadoop itself.

Output: Top cities in descending order:


cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Mon Mar 12, 10:03 PM cloudera
cloudera@quickstart:~/Downloads/db/Assgn2
File Edit View Search Terminal Help
cloudera@quickstart:...
Java - assign_2/src/as...
Fwd: - akhilgour209@...
Downloads
34%
22:03
12-03-2018

```
[cloudera@quickstart Assgn2]$ hadoop fs -cat /user/akhil/hw2/output1/p*| awk '{FS=" ";$0=$0; print $NF"|"$0}'| sort -n -r|cut -d"|" -f2
Halifax 35
Melbourne       29
Dubai   22
Chengdu 22
Beijing 22
Barcelona       19
New Orleans     17
Shanghai        15
Vienna  14
San Diego       14
New York        13
Athens  13
Lyon    12
Seoul   11
Porto   11
Bangkok 11
Tokyo   10
Sydney  10
Seattle 10
Munich  10
Genoa   10
Rio de Janeiro  9
Macau   9
Istanbul        9
Hanoi   9
Brisbane        9
Boston  9
Vancouver       8
Skopje  8
Rome    8
Prague  8
Paris   8
Montreal        8
```

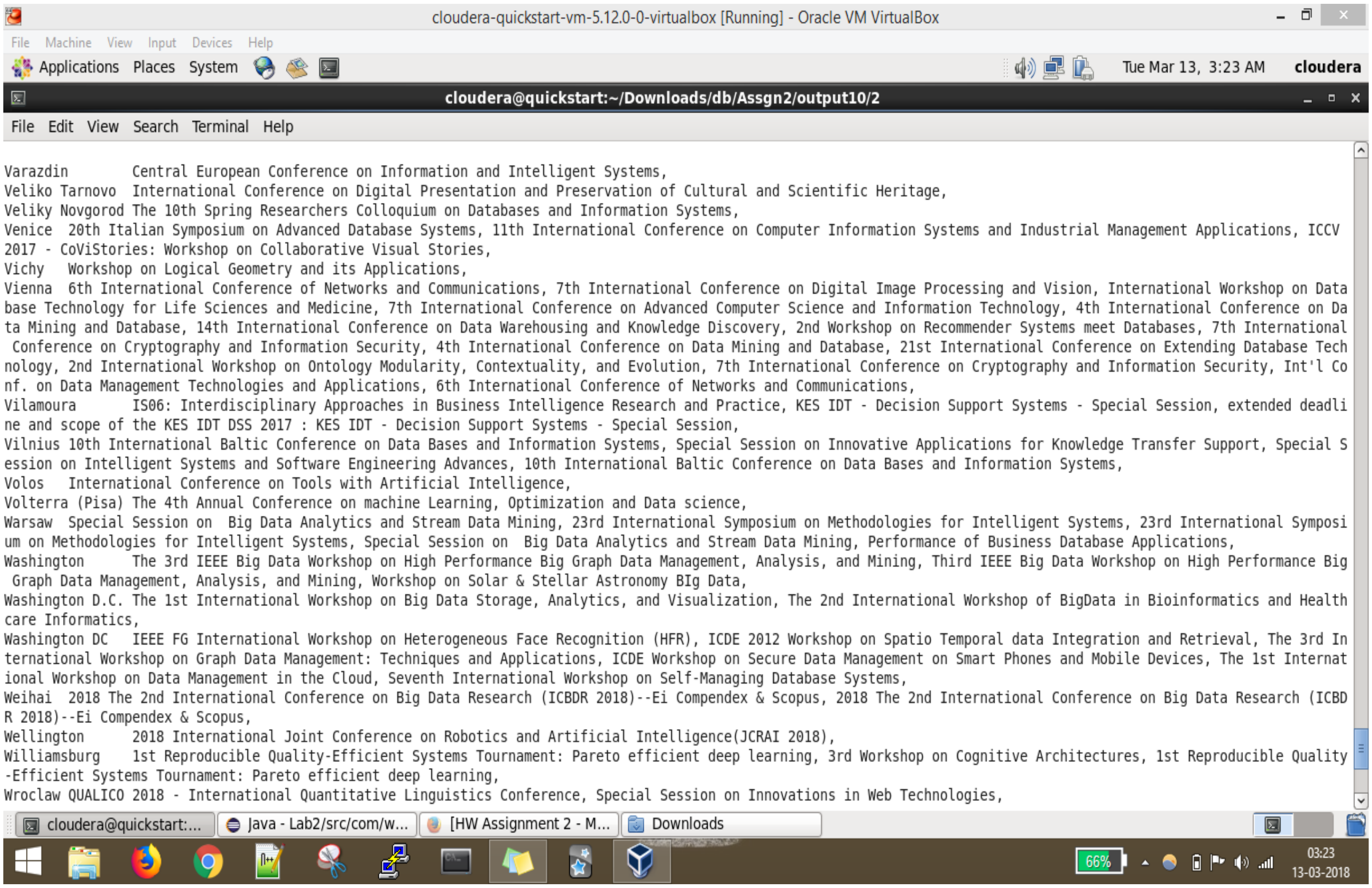
Graph:



Task II: Output the list of conferences per city.

- For this task, I included created another Mapper and Reducer class.
- I created a separate job for these Mapper and Reducer class in the previous driver file itself.
- The Mapper passes each city as the outputKey to the reducer.
- Each conference then, is passes as the outputValue to the reducer, corresponding to its city.
- The reducer, in turn, appends each conference name to its corresponding city in which it happened.

Output: The list of city along with the conferences that took place in those cities.



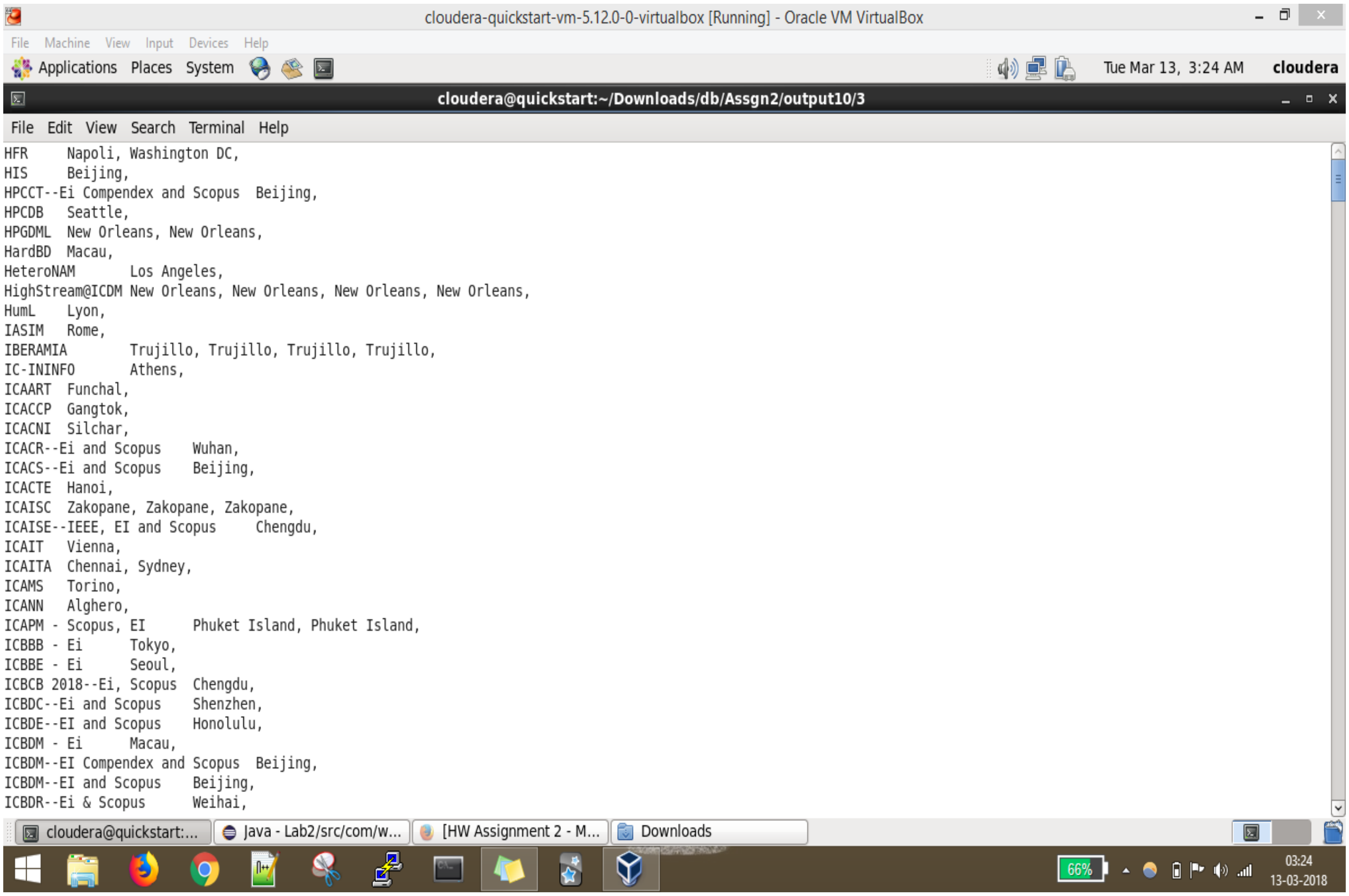
cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Tue Mar 13, 3:23 AM
cloudera
cloudera@quickstart:~/Downloads/db/Assgn2/output10/2
File Edit View Search Terminal Help
cloudera@quickstart:...
Java - Lab2/src/com/w...
[HW Assignment 2 - M...
Downloads
66%
03:23
13-03-2018

```
Varazdin        Central European Conference on Information and Intelligent Systems,
Veliko Tarnovo  International Conference on Digital Presentation and Preservation of Cultural and Scientific Heritage,
Veliky Novgorod The 10th Spring Researchers Colloquium on Databases and Information Systems,
Venice  20th Italian Symposium on Advanced Database Systems, 11th International Conference on Computer Information Systems and Industrial Management Applications, ICCV
2017 - CoViStories: Workshop on Collaborative Visual Stories,
Vichy   Workshop on Logical Geometry and its Applications,
Vienna  6th International Conference of Networks and Communications, 7th International Conference on Digital Image Processing and Vision, International Workshop on Data
base Technology for Life Sciences and Medicine, 7th International Conference on Advanced Computer Science and Information Technology, 4th International Conference on Da
ta Mining and Database, 14th International Conference on Data Warehousing and Knowledge Discovery, 2nd Workshop on Recommender Systems meet Databases, 7th International
 Conference on Cryptography and Information Security, 4th International Conference on Data Mining and Database, 21st International Conference on Extending Database Tech
nology, 2nd International Workshop on Ontology Modularity, Contextuality, and Evolution, 7th International Conference on Cryptography and Information Security, Int'l Co
nf. on Data Management Technologies and Applications, 6th International Conference of Networks and Communications,
Vilamoura       IS06: Interdisciplinary Approaches in Business Intelligence Research and Practice, KES IDT - Decision Support Systems - Special Session, extended deadli
ne and scope of the KES IDT DSS 2017 : KES IDT - Decision Support Systems - Special Session,
Vilnius 10th International Baltic Conference on Data Bases and Information Systems, Special Session on Innovative Applications for Knowledge Transfer Support, Special S
ession on Intelligent Systems and Software Engineering Advances, 10th International Baltic Conference on Data Bases and Information Systems,
Volos   International Conference on Tools with Artificial Intelligence,
Volterra (Pisa) The 4th Annual Conference on machine Learning, Optimization and Data science,
Warsaw  Special Session on  Big Data Analytics and Stream Data Mining, 23rd International Symposium on Methodologies for Intelligent Systems, 23rd International Symposi
um on Methodologies for Intelligent Systems, Special Session on  Big Data Analytics and Stream Data Mining, Performance of Business Database Applications,
Washington      The 3rd IEEE Big Data Workshop on High Performance Big Graph Data Management, Analysis, and Mining, Third IEEE Big Data Workshop on High Performance Big
 Graph Data Management, Analysis, and Mining, Workshop on Solar & Stellar Astronomy BIg Data,
Washington D.C. The 1st International Workshop on Big Data Storage, Analytics, and Visualization, The 2nd International Workshop of BigData in Bioinformatics and Health
care Informatics,
Washington DC   IEEE FG International Workshop on Heterogeneous Face Recognition (HFR), ICDE 2012 Workshop on Spatio Temporal data Integration and Retrieval, The 3rd In
ternational Workshop on Graph Data Management: Techniques and Applications, ICDE Workshop on Secure Data Management on Smart Phones and Mobile Devices, The 1st Internat
ional Workshop on Data Management in the Cloud, Seventh International Workshop on Self-Managing Database Systems,
Weihai  2018 The 2nd International Conference on Big Data Research (ICBDR 2018)--Ei Compendex & Scopus, 2018 The 2nd International Conference on Big Data Research (ICBD
R 2018)--Ei Compendex & Scopus,
Wellington      2018 International Joint Conference on Robotics and Artificial Intelligence(JCRAI 2018),
Williamsburg    1st Reproducible Quality-Efficient Systems Tournament: Pareto efficient deep learning, 3rd Workshop on Cognitive Architectures, 1st Reproducible Quality
-Efficient Systems Tournament: Pareto efficient deep learning,
Wroclaw QUALICO 2018 - International Quantitative Linguistics Conference, Special Session on Innovations in Web Technologies,
```

Task III: For each conference regardless of the year (e.g., KDD), output the list of cities.

- I split the data that was the input for the mapper with regards to tabs.
- The conference name (event) was in the column 1 of my wifi_crawl data file.
- This I passed as the outputKey to the reducer.
- Then I passed the city name, which was column 4 of my data file, as outputValue to the reducer.
- The reducer then appended each of the conference name to its corresponding city.

Output: Conference with a list of cities in which they were held.



cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Tue Mar 13, 3:24 AM
cloudera
cloudera@quickstart:~/Downloads/db/Assgn2/output10/3
File Edit View Search Terminal Help
cloudera@quickstart:...
Java - Lab2/src/com/w...
[HW Assignment 2 - M...
Downloads
66%
03:24
13-03-2018

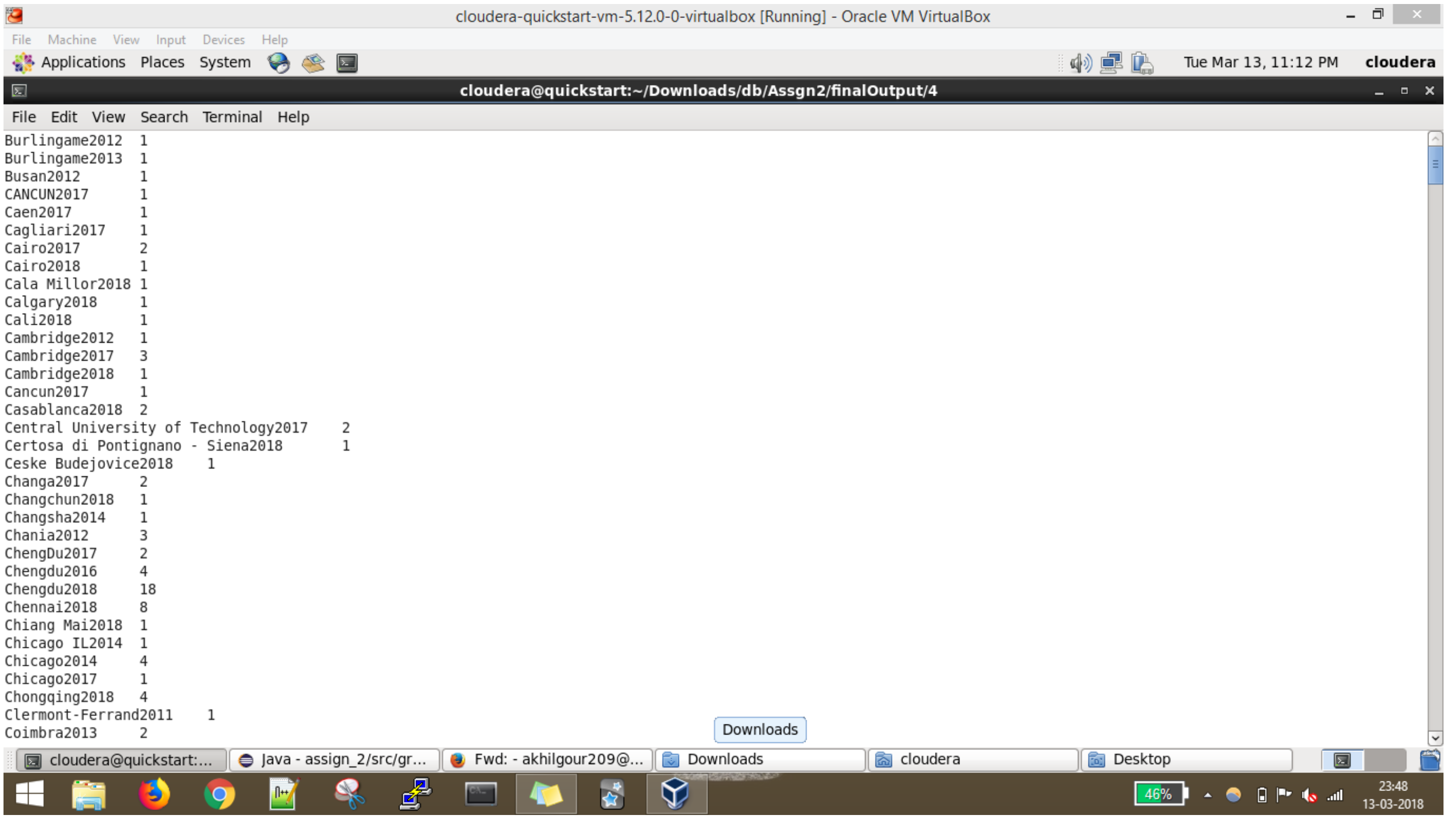
```
HFR     Napoli, Washington DC,
HIS     Beijing,
HPCCT--Ei Compendex and Scopus  Beijing,
HPCDB   Seattle,
HPGDML  New Orleans, New Orleans,
HardBD  Macau,
HeteroNAM       Los Angeles,
HighStream@ICDM New Orleans, New Orleans, New Orleans, New Orleans,
HumL    Lyon,
IASIM   Rome,
IBERAMIA        Trujillo, Trujillo, Trujillo, Trujillo,
IC-ININFO       Athens,
ICAART  Funchal,
ICACCP  Gangtok,
ICACNI  Silchar,
ICACR--Ei and Scopus    Wuhan,
ICACS--Ei and Scopus    Beijing,
ICACTE  Hanoi,
ICAISC  Zakopane, Zakopane, Zakopane,
ICAISE--IEEE, EI and Scopus     Chengdu,
ICAIT   Vienna,
ICAITA  Chennai, Sydney,
ICAMS   Torino,
ICANN   Alghero,
ICAPM - Scopus, EI      Phuket Island, Phuket Island,
ICBBB - Ei      Tokyo,
ICBBE - Ei      Seoul,
ICBCB 2018--Ei, Scopus  Chengdu,
ICBDC--Ei and Scopus    Shenzhen,
ICBDE--EI and Scopus    Honolulu,
ICBDM - Ei      Macau,
ICBDM--EI Compendex and Scopus  Beijing,
ICBDM--EI and Scopus    Beijing,
ICBDR--Ei & Scopus      Weihai,
```

Task IV: For each city compute and plot a time series of number of conferences per year.

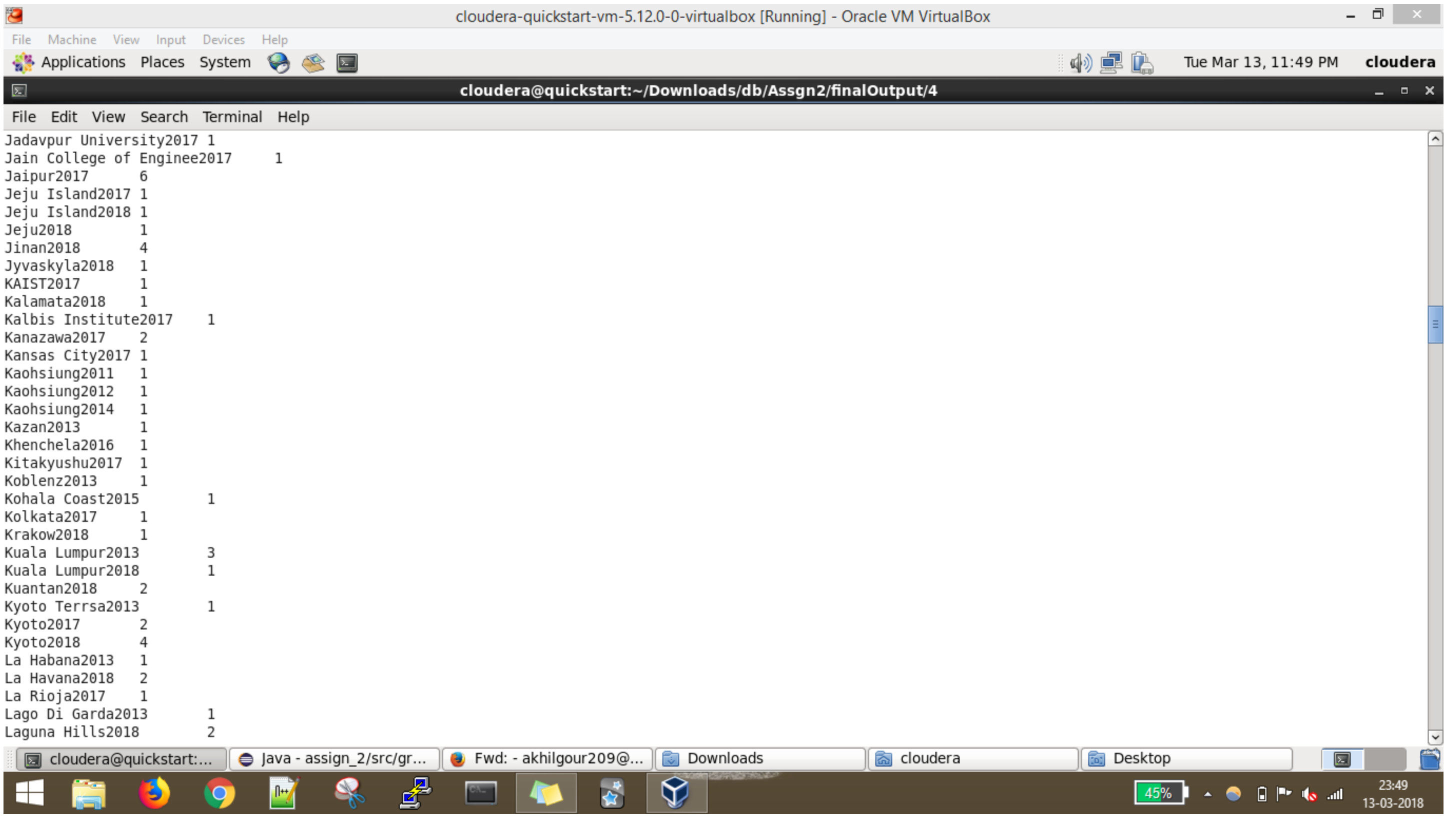
- For this task, I created 2 Mappers and 2 Reducers.
- The first mapper takes the event column, concatenates it with the year column value, and pass this new string as the outputValue.
- The city column is passed to the reducer as the ouputKey.
- The first reducer appends the list of events that happened in a year corresponding to the city.
- The second mapper then concatenates city with the year and passes it on as the outputKey.
- The outputValue is an IntWritable(1), which is used to increase the total count of each event that happened in that year in that particular city.

Output:

Number of conferences per year that happened in a particular city.

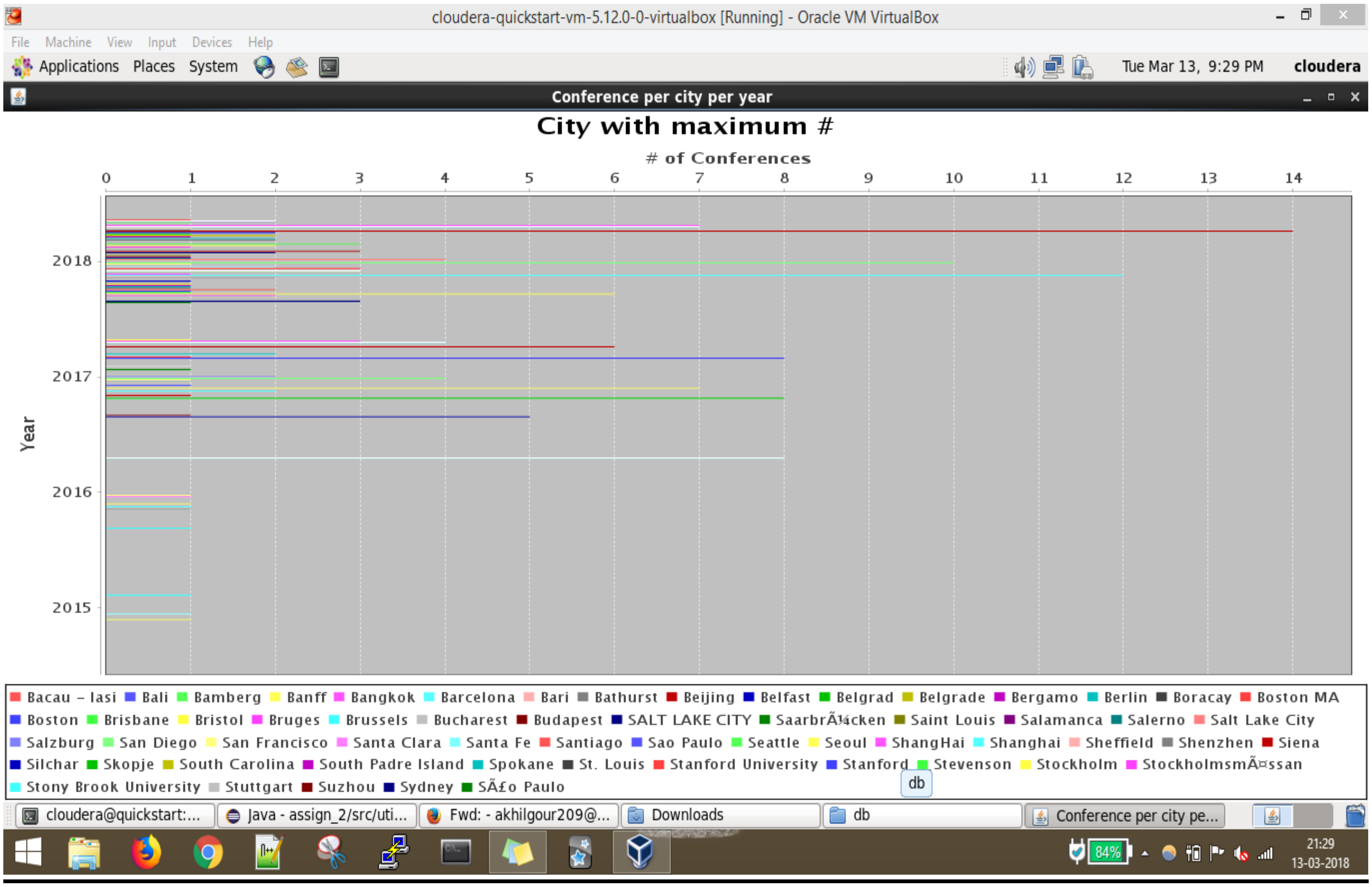

cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Tue Mar 13, 11:12 PM
cloudera
cloudera@quickstart:~/Downloads/db/Assgn2/finalOutput/4
File Edit View Search Terminal Help
Downloads
cloudera@quickstart:...
Java - assign_2/src/gr...
Fwd: - akhilgour209@...
Downloads
cloudera
Desktop
46%
23:48
13-03-2018

```
Burlingame2012  1
Burlingame2013  1
Busan2012       1
CANCUN2017      1
Caen2017        1
Cagliari2017    1
Cairo2017       2
Cairo2018       1
Cala Millor2018 1
Calgary2018     1
Cali2018        1
Cambridge2012   1
Cambridge2017   3
Cambridge2018   1
Cancun2017      1
Casablanca2018  2
Central University of Technology2017    2
Certosa di Pontignano - Siena2018       1
Ceske Budejovice2018    1
Changa2017      2
Changchun2018   1
Changsha2014    1
Chania2012      3
ChengDu2017     2
Chengdu2016     4
Chengdu2018     18
Chennai2018     8
Chiang Mai2018  1
Chicago IL2014  1
Chicago2014     4
Chicago2017     1
Chongqing2018   4
Clermont-Ferrand2011    1
Coimbra2013     2
```


cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Tue Mar 13, 11:49 PM
cloudera
cloudera@quickstart:~/Downloads/db/Assgn2/finalOutput/4
File Edit View Search Terminal Help
cloudera@quickstart:...
Java - assign_2/src/gr...
Fwd: - akhilgour209@...
Downloads
cloudera
Desktop
45%
23:49
13-03-2018

```
Jadavpur University2017 1
Jain College of Enginee2017     1
Jaipur2017      6
Jeju Island2017 1
Jeju Island2018 1
Jeju2018        1
Jinan2018       4
Jyvaskyla2018   1
KAIST2017       1
Kalamata2018    1
Kalbis Institute2017    1
Kanazawa2017    2
Kansas City2017 1
Kaohsiung2011   1
Kaohsiung2012   1
Kaohsiung2014   1
Kazan2013       1
Khenchela2016   1
Kitakyushu2017  1
Koblenz2013     1
Kohala Coast2015        1
Kolkata2017     1
Krakow2018      1
Kuala Lumpur2013        3
Kuala Lumpur2018        1
Kuantan2018     2
Kyoto Tersa2013         1
Kyoto2017       2
Kyoto2018       4
La Habana2013   1
La Havana2018   2
La Rioja2017    1
Lago Di Garda2013       1
Laguna Hills2018        2
```

Graph:


cloudera-quickstart-vm-5.12.0-0-virtualbox [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Tue Mar 13, 9:29 PM
cloudera
Conference per city per year
City with maximum #
# of Conferences
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Year
2018
2017
2016
2015
🟥 Bacau – Iasi 🟦 Bali 🟩 Bamberg 🟨 Banff 🟪 Bangkok 🟦 Barcelona 🟥 Bari ⬛ Bathurst 🟥 Beijing 🟦 Belfast 🟩 Belgrad 🟨 Belgrade 🟪 Bergamo 🟦 Berlin ⬛ Boracay 🟥 Boston MA
🟦 Boston 🟩 Brisbane 🟨 Bristol 🟪 Bruges 🟦 Brussels ⬜ Bucharest 🟥 Budapest 🟦 SALT LAKE CITY 🟩 SaarbrÃ¼cken 🟨 Saint Louis 🟪 Salamanca 🟦 Salerno 🟥 Salt Lake City
🟦 Salzburg 🟩 San Diego 🟨 San Francisco 🟪 Santa Clara 🟦 Santa Fe 🟥 Santiago 🟦 Sao Paulo 🟩 Seattle 🟨 Seoul 🟪 ShangHai 🟦 Shanghai 🟥 Sheffield ⬛ Shenzhen 🟥 Siena
🟦 Silchar 🟩 Skopje 🟨 South Carolina 🟪 South Padre Island 🟦 Spokane ⬛ St. Louis 🟥 Stanford University 🟦 Stanford 🟩 Stevenson 🟨 Stockholm 🟪 StockholmsmÃ¤ssan
🟦 Stony Brook University ⬜ Stuttgart 🟥 Suzhou 🟦 Sydney 🟩 SÃ£o Paulo
db
cloudera@quickstart:...
Java - assign_2/src/uti...
Fwd: - akhilgour209@...
Downloads
db
Conference per city pe...
84%
21:29
13-03-2018

Lessons learnt:

- How to use multiple Mapper/Reducer.
- Plotting instances of the output to a graph.
- How to include multiple Mapper/Reducer jobs within a java application.