

Bloom Filter Implementation for two remote machine (Java)

Structure

Master Node : *Table1(Id, ZipCode)*
Client Node : *Table2(Id, PhoneNumber)*

Sample Case of Presentation

For Sample Case with 50000 Records in Table1 and Table 2 each and performing a join operation.

Amount of Data Transmitted (using bloom filter)

[Master->Client] : 31251 bytes (Size of BloomFilter)
[Client -> Master] : 5132 Records

Amount of extra data transmitted based on false positive

[Client->Master] : (5132-5013) = 119 Records

Final Join Size

[Master] : 5013 Records

Runtime

On Master Node

```
scopeinfinit@Gagan:~/BloomFilterImplementation/dist/Master$ ll
total 736
drwxrwxr-x 2 scopeinfinit scopeinfinit 4096 Sep 26 23:26 ./
drwxrwxr-x 4 scopeinfinit scopeinfinit 4096 Sep 26 23:24 ../
-rw-rw-r-- 1 scopeinfinit scopeinfinit 13722 Sep 26 23:19 BloomFilterImplementation.jar
-rw-rw-r-- 1 scopeinfinit scopeinfinit 134139 Sep 26 23:22 output.txt
-rw-rw-r-- 1 scopeinfinit scopeinfinit 593293 Sep 26 23:22 zip.txt
scopeinfinit@Gagan:~/BloomFilterImplementation/dist/Master$ java -jar BloomFilterImplementation.jar
Zip : Master Node
Zip File Loaded!

Waiting for Client...

Client Connected
> No of ZIPs : 50000

Bloom Filter Send
> BloomFilter Size(bytes) : 31251

Getting IDS
Getting Phone Number
> Recieved After Filter
> Recieved No. Of Ids : 5132

Performing Intersection

After Filtering
Rows after Join : 5013
scopeinfinit@Gagan:~/BloomFilterImplementation/dist/Master$
```

Client Side

```
scopeinfinity@Gagan:~/BloomFilterImplementation/dist/Client$ java -jar BloomFilterImplementation.jar
Phone : Client Node
Phone File Loaded! (50000)
Master IP : ^Cscopeinfinity@Gagan:~/BloomFilterImplementation/dist/Client$ ll
total 1096
drwxrwxr-x 4 scopeinfinity scopeinfinity 4096 Sep 26 23:21 ./
drwxrwxr-x 4 scopeinfinity scopeinfinity 4096 Sep 26 23:24 ../
-rw-rw-r-- 1 scopeinfinity scopeinfinity 13722 Sep 26 23:19 BloomFilterImplementation.jar
drwxrwxr-x 2 scopeinfinity scopeinfinity 4096 Sep 26 23:21 Client/
drwxrwxr-x 2 scopeinfinity scopeinfinity 4096 Sep 26 23:21 Master/
-rw-rw-r-- 1 scopeinfinity scopeinfinity 1088894 Sep 26 23:19 phone.txt
scopeinfinity@Gagan:~/BloomFilterImplementation/dist/Client$ java -jar BloomFilterImplementation.jar
Phone : Client Node
Phone File Loaded! (50000)
Master IP : 127.0.0.1
Connected

Bloom Filter Recieved
> BloomFilter Size(bytes) : 31251
> No of Phone Record : 50000
Filtering using Bloom Filter
> No of Phone Record(Filterd) : 5132
Sending Filtered Records
Sending Phone Numbers
Sending Data Done
scopeinfinity@Gagan:~/BloomFilterImplementation/dist/Client$
scopeinfinity@Gagan:~/BloomFilterImplementation/dist/Client$
```

Data (Top Few Records)

Final Join in Master

```
scopeinfinity@Gagan:~/BloomFilterImplementation/dist/Master$ cat output.txt | head
5      5950      (08) 9064 3669
8      5374      (03) 5343 7563
13     5431      (03) 5337 1464
37     4165      (07) 4084 7682
47     4275      (07) 4577 5319
53     2849      (02) 6725 5196
59     2441      (02) 9960 1699
72     2320      (02) 4921 0803
90     3480      (02) 4921 7279
99     6728      (07) 4037 8925
```

Zip List in Master

```
scopeinfinity@Gagan:~/BloomFilterImplementation/dist/Master$ cat zip.txt | head
100001 2804
100002 2539
100003 7330
100004 4820
5      5950
100006 2753
100007 4352
8      5374
100009 7255
100010 2300
```

Phone list in Client

```
scopeinfinity@Gagan:~/BloomFilterImplementation/dist/Client$ cat phone.txt | head
1      (07) 4546 6384
2      (08) 9009 9589
3      (08) 8223 3247
4      (03) 5321 3481
5      (08) 9064 3669
6      (03) 5335 4282
7      (08) 8795 9772
8      (03) 5343 7563
9      (03) 6285 4763
10     (07) 3756 8989
```