

Nosql-riak-MapReduce

Please do exercises -

Section 2.1 - Population of buckets:

The four objects with the text “pizza”:

```
tdend2:~/riak-1.2.1/dev$  
tdend2:~/riak-1.2.1/dev$ curl -XPUT http://localhost:8091/buckets/training/keys/  
/bar -H 'Content-Type: text/plain' -d 'pizza pizza pizza pizza'  
tdend2:~/riak-1.2.1/dev$ curl -XPUT http://localhost:8091/buckets/training/keys/  
/baz -H 'Content-Type: text/plain' -d 'nothing to see here'  
tdend2:~/riak-1.2.1/dev$ curl -XPUT http://localhost:8091/buckets/training/keys/  
/bam -H 'Content-Type: text/plain' -d 'pizza pizza pizza'  
tdend2:~/riak-1.2.1/dev$ curl -XPUT http://localhost:8091/buckets/training/keys/  
/foo -H 'Content-Type: text/plain' -d 'pizza data goes here'
```

Section 2.2 - the MapReduce script:

```
tdend2:~/riak-1.2.1/dev$ curl -XPOST http://localhost:8091/mapred -H 'Content-Ty  
pe: application/json' -d '{"inputs":"training",  
"query":[{"map":{"language":"javascript",  
"source":"function(riakObject) {  
    var m = riakObject.values[0].data.match(/pizza/g);  
    return [[riakObject.key, (m ? m.length : 0 )]];  
}"}]]}'  
[["baz",0],["foo",1],["bar",4],["bam",3]]tdend2:~/riak-1.2.1/dev$  
tdend2:~/riak-1.2.1/dev$
```

Run above Queries 1 - 5 in Section 5.

```
tdend2:~/riak-1.2.1/dev$ curl -X POST http://127.0.0.1:8091/mapred -H "Content-Type: application/json" -d @-
{"inputs": "goog",
 "query": [{"map": {"language": "javascript",
                    "name": "Riak.MapValuesJson",
                    "keep": true}}
           ]
}
```

Result:

```
student@student-virtual-machine: ~/riak-1.2.1/dev
v":295.6,"Close":297.3,"Volume":5930600,"Adj. Close":297.3},{ "Date":"2007-07-06"
,"Open":541.25,"High":543.87,"Low":538.73,"Close":539.4,"Volume":2747000,"Adj. C
Close":539.4},{ "Date":"2007-08-31","Open":513.1,"High":516.5,"Low":511.47,"Close"
:515.25,"Volume":2977600,"Adj. Close":515.25},{ "Date":"2010-01-28","Open":544.49
,"High":547,"Low":530.6,"Close":534.29,"Volume":3229100,"Adj. Close":534.29},{ "D
ate":"2008-01-03","Open":685.26,"High":686.85,"Low":676.52,"Close":685.33,"Volum
e":3252500,"Adj. Close":685.33},{ "Date":"2008-09-22","Open":454.13,"High":454.13
,"Low":429,"Close":430.14,"Volume":4407300,"Adj. Close":430.14},{ "Date":"2008-01
-15","Open":645.9,"High":649.05,"Low":635.38,"Close":637.65,"Volume":5568200,"Ad
j. Close":637.65},{ "Date":"2007-04-20","Open":490.52,"High":492.5,"Low":482.02,"
Close":482.48,"Volume":12161500,"Adj. Close":482.48},{ "Date":"2006-02-14","Open"
:345.33,"High":351.69,"Low":342.4,"Close":343.32,"Volume":14654000,"Adj. Close":
343.32},{ "Date":"2006-12-07","Open":490.23,"High":491.8,"Low":482.42,"Close":482
.64,"Volume":4664300,"Adj. Close":482.64},{ "Date":"2008-01-29","Open":560.47,"Hi
gh":561.33,"Low":540.67,"Close":550.52,"Volume":6283000,"Adj. Close":550.52},{
"Date":"2005-05-05","Open":228.62,"High":228.62,"Low":225.88,"Close":226.98,"Volum
e":7509600,"Adj. Close":226.98},{ "Date":"2008-11-11","Open":308.69,"High":316.3
,"Low":300.52,"Close":311.46,"Volume":10146600,"Adj. Close":311.46},{ "Date":"2009
-05-15","Open":391.1,"High":394.11,"Low":389.09,"Close":390,"Volume":3008700,"Ad
j. Close":390},{ "Date":"2005-11-15","Open":394.38,"High":397,"Low":390.95,"Close
":392.8,"Volume":8624900,"Adj. Close":392.8},{ "Date":"2008-02-28","Open":470.5,"
High":479.09,"Low":467.36,"Close":475.39,"Volume":6586900,"Adj. Close":475.39},{
"Date":"2005-01-28","Open":190.02,"High":194.7,"Low":186.34,"Close":190.34,"Volum
e":12208200,"Adj. Close":190.34},{ "Date":"2010-04-14","Open":590.06,"High":592.
84,"Low":584.01,"Close":589,"Volume":3402700,"Adj. Close":589},{ "Date":"2008-02-
01","Open":528.67,"High":536.67,"Low":510,"Close":515.9,"Volume":17600500,"Adj.
Close":515.9},{ "Date":"2004-08-26","Open":104.95,"High":107.95,"Low":104.66,"Clo
se":107.91,"Volume":3551000,"Adj. Close":107.91},{ "Date":"2005-10-07","Open":314
.79,"High":316.67,"Low":310.54,"Close":312.99,"Volume":6770300,"Adj. Close":312.
99}]tdend2:~/riak-1.2.1/dev$
```

5.2.Query 2: simple subset A simple map-only job returns the values for the first week of January 2010.


```
tdend2:~/riak-1.2.1/dev$ curl -X POST http://127.0.0.1:8091/mapred -H "Content-Type: application/json" -d @-
{"inputs":[["goog","2010-01-04" ],
           ["goog","2010-01-05" ],
           ["goog","2010-01-06" ],
           ["goog","2010-01-07" ],
           ["goog","2010-01-08" ]],
 "query":[{"map":{"language":"javascript",
                  "name":"Riak.mapValuesJson",
                  "keep":true}}
        ]
}

[{"Date":"2010-01-04","Open":626.95,"High":629.51,"Low":624.24,"Close":626.75,"Volume":1956200,"Adj. Close":626.75},{"Date":"2010-01-05","Open":627.18,"High":627.84,"Low":621.54,"Close":623.99,"Volume":3004700,"Adj. Close":623.99},{"Date":"2010-01-06","Open":625.86,"High":625.86,"Low":606.36,"Close":608.26,"Volume":3978700,"Adj. Close":608.26},{"Date":"2010-01-07","Open":609.4,"High":610,"Low":592.65,"Close":594.1,"Volume":6414300,"Adj. Close":594.1},{"Date":"2010-01-08","Open":592,"High":603.25,"Low":589.11,"Close":602.02,"Volume":4724300,"Adj. Close":602.02}]
tdend2:~/riak-1.2.1/dev$
```

5.3.Query 3: map subset A map-only job that returns the “High” sell values for the first week of January 2010.

```
tdend2:~/riak-1.2.1/dev$ curl -X POST http://127.0.0.1:8091/mapred -H "Content-Type: application/json" -d @-
{"inputs":[["goog","2010-01-04" ],
           ["goog","2010-01-05" ],
           ["goog","2010-01-06" ],
           ["goog","2010-01-07" ],
           ["goog","2010-01-08" ]],
 "query":[{"map":{"language":"javascript",
                  "source":"function(value,keyData,arg){
                        var data = Riak.mapValuesJson(value)[0];
                        return [data.High];
                      }"
                ,"keep":true}}}
}

[629.51,625.86,627.84,610,603.25]tdend2:~/riak-1.2.1/dev$
```

5.4.Query 4: A MapReduce query: the highest “High” value by adding reduce to create a job that returns the maximum high sell value in the first week of January.

```
tdend2:~/riak-1.2.1/dev$ curl -X POST http://127.0.0.1:8091/mapred -H "Content-Type: application/json" -d @-
{"inputs":[["goog","2010-01-04"],
           ["goog","2010-01-05"],
           ["goog","2010-01-06"],
           ["goog","2010-01-07"],
           ["goog","2010-01-08"]],
 "query":[{"map":{"language":"javascript",
 "source":"function(value,keyData,arg){
                var data = Riak.mapValuesJson(value)[0];
                return [data.High];
            }}],
 {"reduce":{"language":"javascript","name":"Riak.reduceMax",
 "keep":true}}]
}

[629.51]tdend2:~/riak-1.2.1/dev$
```

Hence, 629.51 is the highest value.

5.5- query to collect the maximum highs by month.

```
v$
tdend2:~/riak-1.2.1/dev$ curl -X POST http://127.0.0.1:8091/mapred -H "Content-Type: application/json" -d @-
{ "inputs":"goog",
 "query":[{"map":{"language":"javascript",
 "source":"function(value, keyData, arg){
var data = Riak.mapValuesJson(value)[0];
var month = value.key.split('-').slice(0,2).join('-');
var obj = {};
obj[month] = data.High; return [obj];}}}],
 {"reduce":{"language":"javascript",
 "source":"function(values, arg){
return [ values.reduce(function(acc, item){
for(var month in item){
if(acc[month]) {
acc[month] = (acc[month] < item[month]) ? item[month] : acc[month]; }
else { acc[month] = item[month]; }
}
return acc; }));}], "keep":true}}]
}
[{"2009-04":403.75,"2007-03":466,"2006-06":419.33,"2008-07":555.68,"2004-11":201.6,
"2006-01":475.11,"2007-05":508.78,"2009-07":452.7,"2007-12":724.8,"2005-02":216.8,
"2009-03":359.16,"2008-10":416.98,"2009-06":447.34,"2005-03":189.85,"2008-09":482.18,
"2008-02":541.04,"2004-09":135.02,"2010-02":547.5,"2008-06":588.04,"2005-09":320.95,
"2007-02":506.01,"2008-04":584.86,"2008-11":372.36,"2007-08":526.82,"2007-09":571.79,
"2008-08":510.66,"2006-08":390,"2007-10":707,"2007-04":492.5,"2009-11":587.06,
"2004-12":199.88,"2005-08":299.72,"2006-02":406.5,"2006-12":492.4,"2006-05":419.44,
"2006-07":427.89,"2005-10":374.75,"2005-01":205.3,"2010-04":597.84,"2006-11":513,
"2009-08":474.35,"2009-10":561.64,"2005-12":446.21,"2007-06":534.99,
"2008-12":329.5,"2008-05":602.45,"2010-01":629.51,"2006-09":418.69,"2010-05":532.92,
"2009-02":381,"2009-12":625.99,"2010-03":588.28,"2007-11":747.24,"2007-01":513
```

Result:


```
return acc, []], [], keep : true]]]
[{"2009-04":403.75,"2007-03":466,"2006-06":419.33,"2008-07":555.68,"2004-11":201.6,"2006-01":475.11,"2007-05":508.78,"2009-07":452.7,"2007-12":724.8,"2005-02":216.8,"2009-03":359.16,"2008-10":416.98,"2009-06":447.34,"2005-03":189.85,"2008-09":482.18,"2008-02":541.04,"2004-09":135.02,"2010-02":547.5,"2008-06":588.04,"2005-09":320.95,"2007-02":506.01,"2008-04":584.86,"2008-11":372.36,"2007-08":526.82,"2007-09":571.79,"2008-08":510.66,"2006-08":390,"2007-10":707,"2007-04":492.5,"2009-11":587.06,"2004-12":199.88,"2005-08":299.72,"2006-02":406.5,"2006-12":492.4,"2006-05":419.44,"2006-07":427.89,"2005-10":374.75,"2005-01":205.3,"2010-04":597.84,"2006-11":513,"2009-08":474.35,"2009-10":561.64,"2005-12":446.21,"2007-06":534.99,"2008-12":329.5,"2008-05":602.45,"2010-01":629.51,"2006-09":418.69,"2010-05":532.92,"2009-02":381,"2009-12":625.99,"2010-03":588.28,"2007-11":747.24,"2007-01":513,"2005-04":224.74,"2009-05":417.23,"2009-09":507,"2009-01":352.33,"2006-04":450.72,"2007-07":558.58,"2006-03":399,"2005-05":278.4,"2004-10":199.95,"2005-06":309.25,"2005-11":431.24,"2008-03":472.72,"2005-07":317.8,"2008-01":697.37,"2006-10":491.96,"2004-08":113.48}]tdend2:~/riak-1.2.1/dev$
```

Write and run a map-only query for our Google data that finds all the days where the low was less than \$500.00. The map phase function you are going to use is shown below:

Query with first half of the result is provided below:

```
@student-virtual-machine: ~/riak-1.2.1/dev 5:04 PM student
...}]tdend2:~/riak-1.2.1/dev$ curl -X POST http://127.0.0.1:8091/mapred -H "Content-type: application/json" -d @-
{"inputs":"goog",
 "query":[{"map":{"language":"javascript",
 "source":"function(value,keyData,arg){
    var data = Riak.mapValuesJson(value)[0];
    if (data.Low && data.Low < 500.0)
      return [value.key];
    else
      return [];
  }"}],
 "keep":true}}]
["2009-03-18","2004-09-22","2009-01-12","2009-04-29","2004-12-01","2008-11-13","2005-03-22","2006-02-02","2006-03-27","2008-08-06","2007-08-15","2005-11-18","2006-03-23","2005-02-24","2005-02-25","2008-04-02","2007-03-14","2006-08-11","2004-12-23","2005-03-10","2006-02-27","2006-06-20","2008-12-03","2007-05-14","2005-07-28","2006-12-13","2007-03-26","2007-04-03","2006-05-31","2008-09-02","2005-01-28","2004-12-13","2005-11-17","2004-10-01","2006-11-29","2006-04-24","2005-10-03","2007-06-04","2005-05-04","2005-09-26","2005-04-27","2008-10-13","2005-05-17","2007-04-11","2008-02-26","2005-01-07","2005-11-03","2009-03-24","2005-06-20","2009-02-24","2007-02-07","2008-10-15","2006-05-09","2008-03-12","2007-04-25","2007-01-25","2006-11-01","2004-11-30","2004-11-08","2007-02-28","2005-12-21","2005-10-24","2006-08-16","2007-04-23","2009-02-03","2005-02-17","2008-09-30","2008-09-04","2007-08-17","2006-07-07","2005-12-01","2009-06-19","2006-03-21","2008-11-18","2008-09-24","2008-10-14","2005-12-30","2008-02-22","2004-12-03","2005-03-03","2006-09-15","2006-10-20","2005-06-21","2009-08-10","2006-07-17","2009-09-17","2008-12-11","2009-06-18","2009-02-02","2006-08-08","2005-01-19","2006-05-15","2006-08-24","2004-12-02","2008-08-12","2005-10-21","2009-01-07","2004-11-09","2005-08-10","2008-03-14","2009-04-22","2009-02-23","2005-07-29","2007-02-02","2005-07-05","2006-06-14","2004-11-10","2005-08-04","2006-08-29","2006-09-11","2005-02-01","2009-01-30","2005-09-22","2005-07-13","2004-12-27","2005-10-27","2009-07-15","2007-04-16","200
```

Last portion of the result of the above query:

```
@student-virtual-machine: ~/riak-1.2.1/dev 5:03 PM student
07-05-03", "2008-03-19", "2005-10-10", "2005-08-15", "2006-01-23", "2009-02-04", "2006-
09-18", "2006-03-03", "2005-08-30", "2005-12-19", "2008-07-31", "2006-07-25", "2008-12-
02", "2005-11-30", "2005-11-21", "2005-03-29", "2005-11-11", "2005-04-20", "2005-09-28",
"2008-12-18", "2005-04-13", "2006-08-15", "2005-03-09", "2004-12-30", "2007-08-16", "2
008-09-23", "2006-07-26", "2008-10-20", "2005-10-28", "2005-03-15", "2008-08-04", "2008
-08-22", "2008-03-11", "2005-03-18", "2008-07-24", "2007-04-20", "2005-12-22", "2009-07
-14", "2004-12-10", "2007-03-28", "2008-08-29", "2009-03-17", "2008-08-11", "2005-03-01
", "2004-11-26", "2005-07-14", "2007-04-04", "2005-12-15", "2005-05-05", "2006-02-28", "
2006-09-14", "2005-07-08", "2004-12-06", "2009-07-31", "2007-05-08", "2004-11-01", "200
5-12-08", "2006-01-05", "2004-11-23", "2005-09-16", "2006-06-26", "2005-06-23", "2005-0
6-07", "2006-05-25", "2006-03-29", "2005-03-28", "2004-09-20", "2006-10-12", "2009-07-2
9", "2008-10-28", "2004-10-22", "2004-08-31", "2004-10-28", "2006-11-08", "2009-10-01",
"2006-05-05", "2009-04-30", "2004-10-19", "2005-01-11", "2009-09-01", "2009-01-16", "20
05-07-26", "2009-08-20", "2006-01-10", "2004-08-24", "2005-05-19", "2008-03-26", "2005-
01-21", "2008-04-17", "2005-11-08", "2008-03-13", "2004-12-20", "2006-01-11", "2005-08-
01", "2008-08-05", "2009-01-06", "2009-02-18", "2006-04-12", "2005-08-12", "2005-11-07",
"2009-01-28", "2006-09-05", "2007-03-21", "2009-04-06", "2005-11-04", "2009-05-06", "2
005-10-11", "2009-06-12", "2008-09-29", "2009-07-28", "2009-05-29", "2005-06-29", "2005
-05-18", "2006-03-15", "2004-08-25", "2008-12-01", "2006-07-13", "2007-05-15", "2009-03
-05", "2006-04-06", "2009-04-21", "2006-11-20", "2009-03-12", "2006-04-20", "2008-11-20
", "2005-08-17", "2005-01-05", "2006-09-22", "2009-09-11", "2007-03-02", "2005-04-26", "
2004-09-27", "2009-05-14", "2006-07-28", "2006-04-19", "2009-03-13", "2005-12-05", "200
8-03-18", "2006-03-20", "2004-12-17", "2005-01-25", "2005-04-07", "2008-09-11", "2009-0
7-06", "2005-06-13", "2006-06-19", "2005-08-05", "2006-05-19", "2008-11-07", "2006-07-0
3", "2005-03-23", "2009-04-17", "2006-09-13", "2005-05-13", "2009-08-07", "2009-03-11",
"2008-10-23", "2004-09-03", "2005-08-23", "2009-07-07", "2009-10-05", "2006-08-25", "20
04-10-21", "2008-12-09", "2008-03-03", "2005-08-11", "2004-11-16", "2009-08-03", "2009-
04-24", "2008-11-21", "2007-05-31", "2008-11-11", "2004-08-26", "2008-02-28", "2008-10-
29", "2005-10-07", "2008-09-18", "2008-11-06", "2004-11-03", "2006-10-13", "2004-10-07",
"2007-03-09", "2006-01-20", "2007-03-15", "2005-07-07", "2005-12-14"]tdend2:~/riak-1
.2.1/dev$
```

Write and run a map-only query for our Google data that finds all of the days where the open was lower than the close. You will need to write your map phase function. You may modify and reuse the one given above.

The below function used in the map phase:

```
function(value, keyData, arg) {
    var data = Riak.mapValuesJson(value)[0];
    if (data.Open && data.Close && data.Open < data.Close) {
        return [value.key];
    } else {
        return [];
    }
}
```

Query and results are contd. In next page

Query and the results:

The query with first half of the result:

```
tdend2:~/riak-1.2.1/dev$ curl -X POST http://127.0.0.1:8091/mapred -H "Content-Type: application/json" -d @-
{"inputs":"goog",
 "query":[{"map":{"language":"javascript",
 "source":"function(value,keyData,arg){
    var data = Riak.mapValuesJson(value)[0];
    if (data.Open && data.Close && data.Open < data.Close)
      return [value.key];
    else
      return [];
  }"}
,"keep":true}}]}
["2010-03-05","2006-01-05","2009-06-19","2005-04-27","2007-09-19","2008-11-13","2009-04-29","2008-05-30","2010-03-18","2008-06-10","2007-10-09","2007-10-29","2004-09-15","2008-10-08","2010-02-08","2005-09-12","2008-12-03","2006-03-28","2005-08-04","2008-08-15","2007-09-14","2007-03-14","2008-02-13","2005-02-28","2007-03-12","2005-03-07","2008-08-11","2007-09-18","2009-08-20","2007-08-22","2007-04-16","2009-04-22","2005-01-07","2008-03-12","2006-09-11","2009-03-24","2008-03-20","2005-04-04","2006-10-25","2009-07-15","2007-12-10","2004-12-23","2005-08-01","2006-06-28","2005-10-31","2009-11-10","2009-05-08","2009-11-27","2007-05-09","2007-09-13","2007-04-03","2005-01-28","2009-02-02","2006-09-15","2005-09-01","2005-05-13","2008-02-15","2008-05-15","2004-09-22","2008-02-22","2006-05-09","2009-05-28","2009-05-26","2010-02-16","2009-07-10","2008-02-26","2006-03-17","2008-09-24","2007-10-02","2008-01-10","2004-12-03","2008-01-14","2009-10-12","2007-06-04","2004-10-25","2009-10-06","2004-11-22","2009-12-23","2005-11-21","2007-08-21","2007-10-24","2008-04-29","2009-09-28","2005-06-23","2005-01-20","2010-04-20","2005-03-03","2005-12-14","2007-12-19","2008-05-29","2009-08-10","2008-04-04","2006-02-08","2006-10-03","2008-06-13","2007-01-10","2005-05-02","2005-08-24","2004-09-17","2007-04
```

Last half of the result:

```
student@student-virtual-machine: ~/riak-1.2.1/dev 5:15 PM student
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=====THE END=====