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3. Understanding HBase (NoSQL) database basics in 7 steps

Posted on June 18, 2016 by Arulkumaran Kumaraswamipillai



Extends Getting started with HBase. HBase is a NoSQL database. HBase is a columnar database.

#1. In HBase, you create the Table & column-families

"create" command to create a table with column families. You can later on use "alter" to add more column families.

```
1
2 hbase(main):006:0>create 'eai_systems', 'i', 'a'
3
```

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Add column family "m" to the table "eai_systems"

```
1
2 hbase(main):053:0> alter 'eai_systems', NAME => '
3
```

table name is "eai_systems"

Column-families are "i" and "a", it is a best practice to keep the column-family & column qualifier names as short as possible.

#2. Each column family can have variable number of column qualifiers or columns

Columns are basically name/value pairs grouped as "column families". HBase is a columnar database, where you can have variable number of columns. If your application has a variable schema where each row is slightly different, then you should look at a columnar database like HBase. **Table** "eai_systems" with a **row-key** of "222" has variable columns as shown below. "**put**" command insert records.

```
put 'eai_systems', '222', 'i:target_system', 'Pay
put 'eai_systems', '222', 'i:request_destination'
put 'eai_systems', '222', 'i:request_path', '/mya
put 'eai_systems', '222', 'a:time_to_live_in_days
```

-column qualifiers or columns under column family "i" are:

target_system, request_destination, and request_path.

-qualifiers or column names under column family "a" is:

time to live

#3. Each table must contain a "row key" as a primary key

```
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```
1
2 --row key 222
3 put 'eai_systems', '222', 'i:target_system', 'Pa
4 put 'eai_systems', '222', 'i:request_destination
5 put 'eai_systems', '222', 'i:request_path', '/my
6 put 'eai_systems', '222', 'a:time_to_live_in_day
7
8 -row key 555
9 put 'eai_systems', '555', 'i:target_system', 'In
10 put 'eai_systems', '555', 'i:request_destination
11 put 'eai_systems', '555', 'i:request_path', '/my
12 put 'eai_systems', '555', 'i:invoice_id', 'INV23-
13 put 'eai_systems', '555', 'i:customer_id', 'CUST
```

#4. You can view your records via "get" commands

Each column will have a timestamp.

```
hbase(main):020:0> get 'eai_systems', '222'
3
4
  COLUMN
5
                               timestamp=1465341958
  a:time_to_live_in_days
                               timestamp=1465341941
6
  i:request_destination
                               timestamp=1465341949
  i:request_path
8
                               timestamp=1465341933
  i:target_system
10 4 row(s) in 0.0600 seconds
```

```
hbase(main):028:0> get 'eai_systems', '555'
4
   COLUMN
5
   i:customer_id
                                timestamp=1465342001
   i:invoice_id
                                timestamp=1465341992
                                timestamp=1465341973
   i:request_destination
  i:request_path
                                timestamp=1465341983
9
                                timestamp=1465341964
  i:target_system
10
11 5 row(s) in 0.0180 seconds
12
```

Get only specific columns

```
1
2 hbase(main):037:0> get 'eai_systems', '222', {COL
3
4 COLUMN
5 i:target_system
6
7 1 row(s) in 0.0190 seconds
8
```

```
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#5. You can view your records via "scan" commands

The "get" command uses a "scan" command under the covers. To get a range of rows

```
hbase(main):015:0> scan 'eai_systems', { STARTRO
4
  ROW
                                 COLUMN+CELL
5
   555
                                column=i:customer_id
6
  555
                                column=i:invoice_id,
7
   555
                                column=i:request_des
8
  555
                                column=i:request_pat
9
  555
                                column=i:target_syst
10 555
                                column=m:count, time
11
12 1 row(s) in 0.0260 seconds
```

you can specify range. The scan ranges are not inclusive, and the logic is start <= **row key** < end.

```
1
2 hbase(main):015:0> scan 'eai_systems', { STARTROW
3
```

To scan the whole table

```
hbase(main):016:0> scan 'eai_systems'
3
4
  ROW
                                 COLUMN+CELL
5
  222
                                column=a:time_to_liv
6
  222
                                column=i:request_des
  222
                                column=i:request_pat
8
  222
                                column=i:target_syst
9
  222
                                column=m:count, time
10
11
                                column=i:customer_id
12
   555
                                column=i:invoice_id,
                                column=i:request_des
```

```
14 555

15 555

16 555

17

18 2 row(s) in 0.0500 seconds

19

column=i:request_pat

column=i:target_syst

column=m:count, time
```

Scan for specific columns

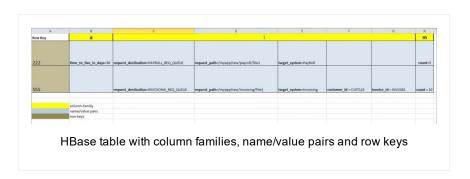
```
hbase(main):011:0> scan 'eai_systems', {COLUMNS
   ROW
                                 COLUMN+CELL
5
   222
                                column=i:request_pat
6
  222
                                column=i:target_syst
7
   555
                                column=i:request_pat
8
  555
                                column=i:target_syst
9
10 2 row(s) in 0.3000 seconds
```

#6. You can filter by column values

```
hbase(main):010:0> scan 'eai_systems', {COLUMNS
3
4
  ROW
                                 COLUMN+CELL
5
   555
                                column=i:request_pat
   555
6
                                column=i:target_syst
   555
                                column=m:count, time
8
9
  1 row(s) in 0.0280 seconds
10
```

There are other commands like "count" to count the records that you can refer to HBase shell reference documentation.

#7. Represents the above columnar table in excel



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