

Lesson 7: NoSQL

Cassandra

1. Подключиться к Cassandra

```
$ ssh -i ~/.ssh/id_rsa_el_student_4652746 el_student_4652746@37.139.32.56 -D localhost:8080
$ /cassandra/bin/cqlsh
```

2. Создать таблицы

```
DROP KEYSPACE IF EXISTS el_student_4652746;
CREATE KEYSPACE el_student_4652746
WITH REPLICATION = {
  'class' : 'SimpleStrategy', 'replication_factor' : 1 };
use el_student_4652746;
```

```
drop table if exists animals;
CREATE TABLE animals
(id int,
name text,
size text,
primary key (id));
```

3. Вставить записи

```
insert into animals (id, name, size) values (3, 'Deer', 'Big');
insert into animals (id, name, size) values (1, 'Elephant', 'Very big');
insert into animals (id, name, size) values (2, 'Cat', 'Small');
insert into animals (id, name, size) values (4, 'Dog', 'Various');
insert into animals (id, name, size) values (5, 'Human', 'Medium');
insert into animals (id, name, size) values (6, 'Cockatiel', 'Small');
insert into animals (id, name, size) values (3, 'Horse', 'Big');
```

```
(base) [alina@archiso ~]$ ssh -i ~/.ssh/id_rsa_el_student_4652746 el_student_4652746@37.139.32.56 -D localhost:8080
Last login: Thu Jun 10 13:33:57 2021 from 88.218.251.4
[el_student_4652746@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ /cassandra/bin/cqlsh
Connected to Test cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.11.8 | CQL spec 3.4.4 | Native protocol v4]
Use HELP for help.
cqlsh> DROP KEYSPACE IF EXISTS el_student_4652746;
cqlsh> CREATE KEYSPACE el_student_4652746
... WITH REPLICATION = {
...   'class' : 'SimpleStrategy', 'replication_factor' : 1 };
cqlsh> use el_student_4652746;
cqlsh:el_student_4652746>
cqlsh:el_student_4652746> drop table if exists animals;
cqlsh:el_student_4652746>
cqlsh:el_student_4652746> CREATE TABLE animals
... (id int,
... name text,
... size text,
... primary key (id));
cqlsh:el_student_4652746> DESC tables;

animals

cqlsh:el_student_4652746> insert into animals (id, name, size) values (3, 'Deer', 'Big');
cqlsh:el_student_4652746> insert into animals (id, name, size) values (1, 'Elephant', 'Very big');
cqlsh:el_student_4652746> insert into animals (id, name, size) values (2, 'Cat', 'Small');
cqlsh:el_student_4652746> insert into animals (id, name, size) values (4, 'Dog', 'Various');
cqlsh:el_student_4652746> insert into animals (id, name, size) values (5, 'Human', 'Medium');
cqlsh:el_student_4652746> insert into animals (id, name, size) values (6, 'Cockatiel', 'Small');
cqlsh:el_student_4652746> insert into animals (id, name, size) values (3, 'Horse', 'Big');
cqlsh:el_student_4652746> select
...
... * from animals;

id | name      | size
---+-----+-----
5 | Human     | Medium
1 | Elephant  | Very big
2 | Cat       | Small
4 | Dog       | Various
6 | Cockatiel | Small
3 | Horse     | Big
(6 rows)
```

4. Изучить особенности работы where

```
select * from animals where id = 3 and size = 'Big';
```

```
select * from animals where id = 3 AND size = 'Big' ALLOW FILTERING;
```

```
CREATE INDEX ON animals(size);
```

```
select * from animals where id = 3 and size = 'Big';
```

```
cqlsh:el_student_4652746> select * from animals where id = 3 and size = 'Big';
InvalidRequest: Error from server: code=2200 [Invalid query] message="cannot execute this query as it might involve data filtering and thus may have unpredictable performance. If you want to execute this query despite the performance unpredictability, use ALLOW FILTERING"
cqlsh:el_student_4652746> select * from animals where id = 3 AND size = 'Big' ALLOW FILTERING;
```

```
id | name | size
---+-----+-----
 3 | Horse | Big
```

(1 rows)

```
cqlsh:el_student_4652746> CREATE INDEX ON animals(size);
```

```
cqlsh:el_student_4652746> select * from animals where id = 3 and size = 'Big';
```

```
id | name | size
---+-----+-----
 3 | Horse | Big
```

(1 rows)

```
drop table if exists animals02;
```

```
CREATE TABLE animals02
```

```
(id int,
```

```
name text,
```

```
size text,
```

```
primary key (id, name, size));
```

```
insert into animals02 (id, name, size) values (3, 'Deer', 'Big');
```

```
insert into animals02 (id, name, size) values (1, 'Elephant', 'Very big');
```

```
insert into animals02 (id, name, size) values (2, 'Cat', 'Small');
```

```
insert into animals02 (id, name, size) values (4, 'Dog', 'Various');
```

```
insert into animals02 (id, name, size) values (5, 'Human', 'Medium');
```

```
insert into animals02 (id, name, size) values (6, 'Cockatiel', 'Small');
```

```
insert into animals02 (id, name, size) values (3, 'Horse', 'Big');
```

```
select * from animals02 where id = 3 and name = 'Deer' and size = 'Big';
```

```
cqlsh:el_student_4652746> select * from animals02 where id = 3 and name = 'Deer' and size = 'Big';
```

```
id | name | size
---+-----+-----
 3 | Deer | Big
```

(1 rows)

-- удаление из таблицы, где primaryKey(id, size)

```
delete from animals where id = 3 and name = 'Deer'; select * from animals;
```

```
delete from animals where id = 3; select * from animals;
```

-- удаление из таблицы, где каждый столбец первичный

```
delete from animals02 where id = 3 and name = 'Deer' and size = 'Big'; select * from animals02;
```

скрин ниже ↓

```

cqlsh:el_student_4652746> -- удаление из таблицы, где primaryKey(id, size)
cqlsh:el_student_4652746> delete from animals where id = 3 and name = 'Deer'; select * from animals;
InvalidRequest: Error from server: code=2200 [Invalid query] message="Non PRIMARY KEY columns found in where clause: name "

  id | name      | size
----+-----+-----
  5 | Human     | Medium
  1 | Elephant  | Very big
  2 | Cat       | Small
  4 | Dog       | Various
  6 | Cockatiel | Small
  3 | Horse     | Big

(6 rows)

cqlsh:el_student_4652746> delete from animals where id = 3; select * from animals;

  id | name      | size
----+-----+-----
  5 | Human     | Medium
  1 | Elephant  | Very big
  2 | Cat       | Small
  4 | Dog       | Various
  6 | Cockatiel | Small

(5 rows)

cqlsh:el_student_4652746> -- удаление из таблицы, где каждый столбец первичный
cqlsh:el_student_4652746> delete from animals02 where id = 3 and name = 'Deer' and size = 'Big'; select * from animals02;

  id | name      | size
----+-----+-----
  5 | Human     | Medium
  1 | Elephant  | Very big
  2 | Cat       | Small
  4 | Dog       | Various
  6 | Cockatiel | Small
  3 | Horse     | Big

(6 rows)

```

HBase

1. Подключиться к HBase

```
$ hbase shell
```

2. Создать таблицы

```
create_namespace 'el_student_4652746'
```

```
team = create 'el_student_4652746:team','personal','professional'
```

3. Вставляем значения:

```
team.put '1', 'personal:name', 'Ivan'
```

```
team.put '1', 'professional:key', 'somekey'
```

```
team.put '2', 'personal:name', 'Tihon'
```

```
team.put '2', 'professional:key', 'somekey'
```

```
team.put '2', 'professional:key', 'somekey'
```

скрин ниже ↓

```
[el_student_4652746@bigdataanalytics2-head-shdpt-v31-1-0 ~]$ hbase shell
SLF4J: Class path contains multiple SLF4J bindings.
SLF4J: Found binding in [jar:file:/usr/hdp/3.1.4.0-315/phoenix/phoenix-5.0.0.3.1.4.0-315-server.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: Found binding in [jar:file:/usr/hdp/3.1.4.0-315/hadoop/lib/slf4j-log4j12-1.7.25.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation.
SLF4J: Actual binding is of type [org.slf4j.impl.Log4jLoggerFactory]
HBase Shell
Use "help" to get list of supported commands.
Use "exit" to quit this interactive shell.
For Reference, please visit: http://hbase.apache.org/2.0/book.html#shell
Version 2.0.2.3.1.4.0-315, r, Fri Aug 23 05:15:48 UTC 2019
Took 0.0018 seconds
hbase(main):001:0> create_namespace 'el_student_4652746'
Took 0.6542 seconds
hbase(main):002:0> team = create 'el_student_4652746:team','personal', 'professional'
Created table el_student_4652746:team
Took 0.7692 seconds
=> Hbase::Table - el_student_4652746:team
hbase(main):003:0> team.put '1', 'personal:name', 'Ivan'
Took 0.1725 seconds
hbase(main):004:0> team.put '1', 'professional:key', 'somekey'
Took 0.0045 seconds
hbase(main):005:0> team.put '2', 'personal:name', 'Tihon'
Took 0.0053 seconds
hbase(main):006:0> team.put '2', 'professional:key', 'somekey'
Took 0.0061 seconds
hbase(main):007:0> team.put '2', 'professional:key', 'somekey'
Took 0.0045 seconds
```

4. Изучить особенности хранения данных

```
alter 'el_student_4652746:team', {NAME => 'professional', VERSIONS => '3'}
team.put '2', 'professional:key', 'newkey'
```

```
scan 'el_student_4652746:team',{VERSIONS=>3}
```

```
team.get '2'
team.get '2', 'personal:name'
team.count
team.deleteall '1'
team.scan
team.disable
team.drop
drop_namespace 'el_student_4652746'
```

скрин ниже ↓

```

hbase(main):008:0> alter 'el_student_4652746:team', {NAME => 'professional',VERSIONS => '3'}
Updating all regions with the new schema...
1/1 regions updated.
Done.
Took 2.1544 seconds
hbase(main):009:0> team.put '2', 'professional:key', 'newkey'
Took 0.0043 seconds
hbase(main):010:0> scan 'el_student_4652746:team',{VERSIONS=>3}
ROW COLUMN+CELL
1 column=personal:name, timestamp=1623376079870, value=Ivan
1 column=professional:key, timestamp=1623376079905, value=somekey
2 column=personal:name, timestamp=1623376079940, value=Tihon
2 column=professional:key, timestamp=1623376086689, value=newkey
2 column=professional:key, timestamp=1623376080010, value=somekey
2 row(s)
Took 0.0358 seconds
hbase(main):011:0> team.get '2'
COLUMN CELL
personal:name timestamp=1623376079940, value=Tihon
professional:key timestamp=1623376086689, value=newkey
1 row(s)
Took 0.0116 seconds
hbase(main):012:0> team.get '2', 'personal:name'
COLUMN CELL
personal:name timestamp=1623376079940, value=Tihon
1 row(s)
Took 0.0088 seconds
hbase(main):013:0> team.count
2 row(s)
Took 0.0140 seconds
=> 2
hbase(main):014:0> team.deleteall '1'
Took 0.0185 seconds
hbase(main):015:0> team.scan
ROW COLUMN+CELL
2 column=personal:name, timestamp=1623376079940, value=Tihon
2 column=professional:key, timestamp=1623376086689, value=newkey
1 row(s)
Took 0.0056 seconds
hbase(main):016:0> team.disable
Took 0.7528 seconds
hbase(main):017:0> team.drop
Took 0.2391 seconds
hbase(main):018:0> drop_namespace 'el_student_4652746'
Took 0.2453 seconds
hbase(main):019:0> 

```