STMIK AKAKOM
YOGYAKARTA
Code for Life

STMIK AKAKOM - Yogyakarta

Ujian Tengah Semester
Pengenalan Big Data

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1. Cari dan sebutkan 3 DBMS yang bisa digunakan untuk mengelola big data

berdasarkan tipe

- ✔ key value : Riak, Redis, Couchbase, Dynamodb
- ✔ document : Apache CouchDB, ArangoDB, BaseX, Clusterpoint
- ✔ graph : Neo4J, OrientDB, Virtuoso
- ✔ kolom : Cassandra, Scylla, Apache Druid, HBase

2. Carilah contoh masalah big data yang bisa dikelola menggunakan salah satu DBMS tersebut, jelaskan mulai dari instalasi sampai CRUD untuk data menggunakan DBMS tersebut. Asumsikan anda akan memecahkan masalah big data yang sudah anda cari contoh tadi, jelaskan kira-kira bagaimana arsitektur dari solusi big data menggunakan DBMS tersebut, gambarkan diagramnya

CASSANDRA

INSTALASI

1. cek java dan jdk apakah sudah terinstall

```
mr-robot@mr-robot:~$ java -version
openjdk version "11.0.4" 2019-07-16
OpenJDK Runtime Environment (build 11.0.4+11-post-Ubuntu-1ubuntu218.04.3)
OpenJDK 64-Bit Server VM (build 11.0.4+11-post-Ubuntu-1ubuntu218.04.3, mixed mode, sharing)
```

2. Download package dan ekstrak

Downloading Cassandra

Latest version

Download the latest Apache Cassandra 3.11 release: 3.11.6 (pgp, sha256 and sha512), released on 2020-02-14.

Older supported releases

The following older Cassandra releases are still supported:

- Apache Cassandra 3.0 is supported until **6 months after 4.0 release (date TBD)**. The latest release is 3.0.20 (pgp, sha256 and sha512), released on 2020-02-14.
- Apache Cassandra 2.2 is supported until **4.0 release (date TBD)**. The latest release is 2.2.16 (pgp, sha256 and sha512), released on 2020-02-14.
- Apache Cassandra 2.1 is supported until **4.0 release (date TBD)** with **critical fixes only**. The latest release is 2.1.21 (pgp, sha256 and sha512), released on 2019-02-11.

3. Menambhkan repository cassandra ke `etc/apt/sources.list.d/cassandra.sources.list`

```
echo "deb https://downloads.apache.org/cassandra/debian 311x main" | sudo tee -a /
etc/apt/sources.list.d/cassandra.sources.list
```

4. menambahkan key repository

```
mr-robot@mr-robot:~/Downloads$ curl https://downloads.apache.org/cassandra/KEYS | sudo apt-key add -
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  252k  100  252k    0     0  56517      0  0:00:04  0:00:04 --:--:-- 59182
OK
```

5. Menambahkan public key

```
mr-robot@mr-robot:~/Downloads$ sudo apt-key adv --keyserver pool.sks-keyservers.net --recv-key A278B781FE4B2BDA
Executing: /tmp/apt-key-gpghome.35uZwT48QG/gpg.1.sh --keyserver pool.sks-keyservers.net --recv-key A278B781FE4B2BDA
gpg: key A278B781FE4B2BDA: 28 signatures not checked due to missing keys
gpg: key A278B781FE4B2BDA: "Michael Shuler <michael@pbandjelly.org>" 1 new signature
gpg: Total number processed: 1
gpg:         new signatures: 1
```

6. Install Cassandra

```
mr-robot@mr-robot:~/Downloads$ sudo apt-get install cassandra
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  cassandra-tools
Recommended packages:
  ntp | time-daemon
The following NEW packages will be installed:
  cassandra
0 upgraded, 1 newly installed, 0 to remove and 275 not upgraded.
Need to get 29,9 MB of archives.
After this operation, 39,8 MB of additional disk space will be used.
Get:1 https://dl.bintray.com/apache/cassandra 311x/main amd64 cassandra all 3.11.6 [29,9 MB]
Fetched 29,9 MB in 2min 46s (180 kB/s)
Selecting previously unselected package cassandra.
(Reading database ... 250686 files and directories currently installed.)
Preparing to unpack .../cassandra_3.11.6_all.deb ...
Unpacking cassandra (3.11.6) ...
Setting up cassandra (3.11.6) ...
Adding group `cassandra' (GID 129) ...
Done.
vm.max_map_count = 1048575
net.ipv4.tcp_keepalive_time = 300
update-rc.d: warning: start and stop actions are no longer supported; falling back to defaults
Processing triggers for systemd (237-3ubuntu10.31) ...
Processing triggers for ureadahead (0.100.0-21) ...
ureadahead will be reprofiled on next reboot
```

7. Selesai

untuk menjalankan cassandra `sudo service cassandra start` untuk berhenti `sudo service cassandra stop`.

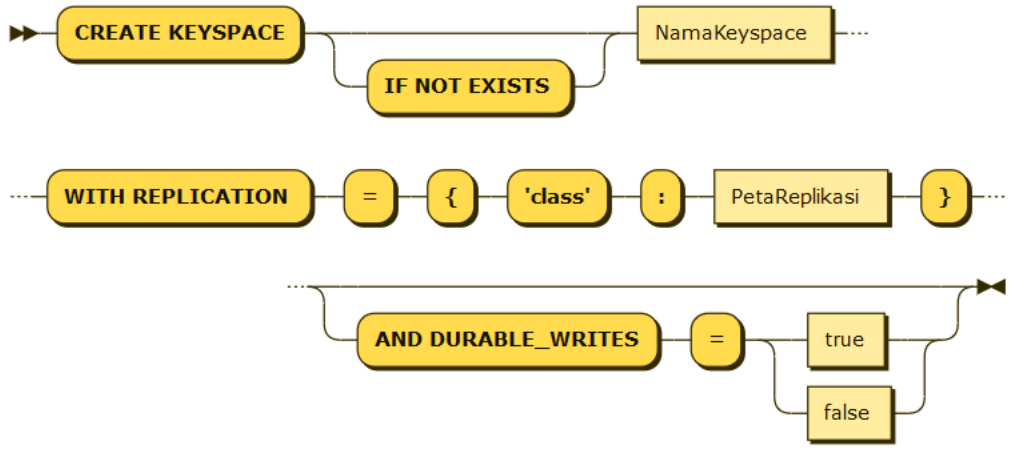
CRUD CASSNDRA

1. menjalankan cql

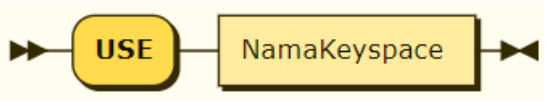
```
cqlsh
Connected to Test Cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.11.6 | CQL spec 3.4.4 | Native protocol v4]
Use HELP for help.
cqlsh>
```

2. membuat keyspace

```
cqlsh> CREATE KEYSPACE IF NOT EXISTS akademik
   ...   WITH REPLICATION = {
   ...    'class' : 'SimpleStrategy',
   ...    'replication_factor' : 1
   ...   };
```



3. menggunakan keyspace akademik dan membuat table mahasiswa (create)




```
cqlsh> use akademik;
cqlsh:akademik> CREATE TABLE IF NOT EXISTS mahasiswa(
            ...    NIM      ascii PRIMARY KEY,
            ...    nama     varchar,
            ...    noHP     set<text>,
            ...    tglLahir date,
            ...    anakKe   tinyint,
            ...    IPK      float,
            ...    bekerja  boolean
            ... );
```

4. menginput data/insert into table mahasiswa (create)

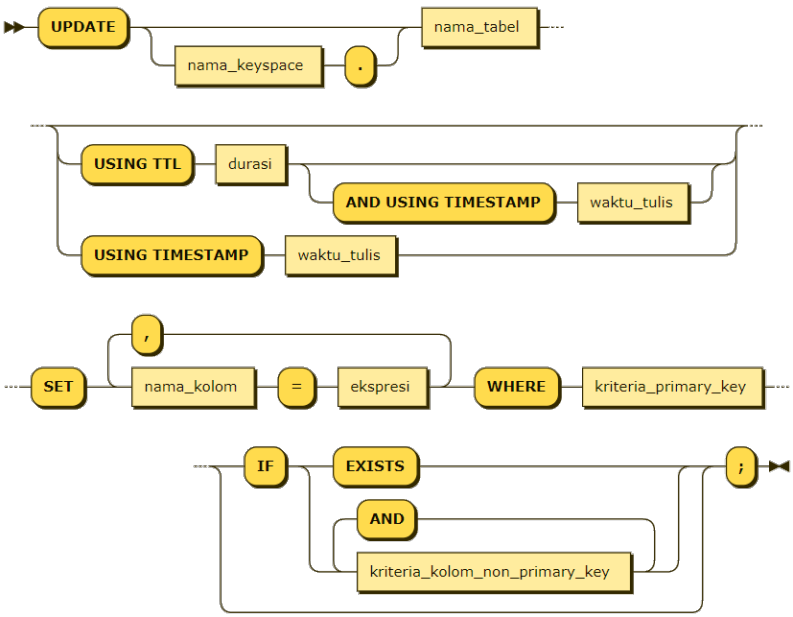
```
cqlsh:akademik> INSERT INTO mahasiswa (nim,nama,tgllahir,bekerja)
           ... VALUES ('185410172','Muansyah Alami Robbi','2001-11-12',true) IF NOT EXISTS
;

 [applied]
-----------
      True

cqlsh:akademik> INSERT INTO mahasiswa (nim,nama,anakke,nohp)
           ... VALUES ('185410234','Oryza Sativa Sekar Sari',3,{'08123456789','0897654321'
});
cqlsh:akademik> INSERT INTO mahasiswa (nim,nama,bekerja,nohp)
           ... VALUES ('175410043',' Zeamrud Wedi Prabowo',false,{'0811223344'}) IF NOT EX
ISTS;

 [applied]
-----------
      True
```

5. membaca isi table (read)

```
cqlsh:akademik> select*from mahasiswa;

 nim       | anakke | bekerja | ipk  | nama                   | nohp                                | tgllahir
-----------+--------+---------+------+------------------------+-------------------------------------+------------
 175410043 |   null |   False | null |    Zeamrud Wedi Prabowo |                {'0811223344'} |       null
 185410172 |   null |    True | null |    Muansyah Alami Robbi |                        null | 2001-11-12
 185410234 |      3 |    null | null | Oryza Sativa Sekar Sari | {'08123456789', '0897654321'} |       null

(3 rows)
```

6. mengupdate data (update)

```
cqlsh:akademik> UPDATE mahasiswa SET ipk=3.98, anakke=5    WHERE nim='185410172';
cqlsh:akademik> select*from mahasiswa;

 nim       | anakke | bekerja | ipk  | nama                   | nohp                                | tgllahir
-----------+--------+---------+------+------------------------+-------------------------------------+------------
 175410043 |   null |   False | null |    Zeamrud Wedi Prabowo |                {'0811223344'} |       null
 185410172 |      5 |    True | 3.98 |    Muansyah Alami Robbi |                        null | 2001-11-12
 185410234 |      3 |    null | null | Oryza Sativa Sekar Sari | {'08123456789', '0897654321'} |       null
```



7. menghapus data(delete)