Sharding: Homework solution
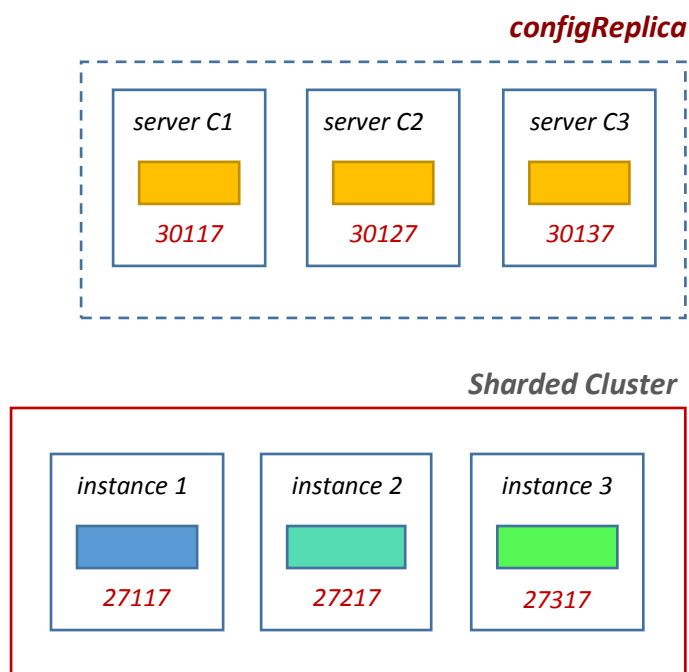
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version: *1.0.0*

Homework

Build a new sharded cluster with three shards.

- use standalone MongoDB instances (not replica sets) as shards
- run these instances on ports 27117, 27217, 27317

- create a replica set for configuration servers
- run MongDB instances for config servers on ports 30117, 30127, 30137
- the name of the replica set should be *configReplica*

configReplica

server C1	server C2	server C3
30117	30127	30137

Sharded Cluster

instance 1	instance 2	instance 3
27117	27217	27317

Solution

1. Prepare directories

Choose any directory. In the directory of your choice, which is called below *homeDir*, create the following subdirectories:

{homeDir}/sharding

{homeDir}/sharding/shard1
{homeDir}/sharding/shard2
{homeDir}/sharding/shard3

{homeDir}/sharding/config

{homeDir}/sharding/config/config1
{homeDir}/sharding/config/config2
{homeDir}/sharding/config/config3
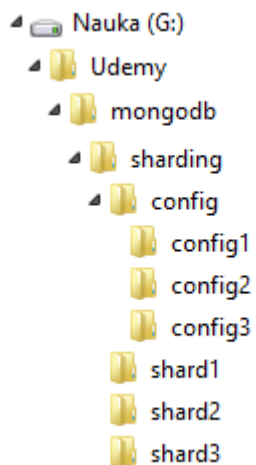
Example:

My *homeDir* is:
G:/Udemy/mongodb

These are my directories:

```
Nauka (G:)
  Udemy
    mongodb
      sharding
        config
          config1
          config2
          config3
        shard1
        shard2
        shard3
```

2. Run shards

Run three MongoDB instances for our shards:

```
mongod -dbpath {homeDir}\sharding\shard1 -port 27117
mongod -dbpath {homeDir}\sharding\shard2 -port 27217
mongod -dbpath {homeDir}\sharding\shard3 -port 27317
```

Example:

```
mongod -dbpath G:\Udemy\mongodb\sharding\shard1 -port 27117
mongod -dbpath G:\Udemy\mongodb\sharding\shard2 -port 27217
mongod -dbpath G:\Udemy\mongodb\sharding\shard3 -port 27317
```

3. Config replica set

3.1.   Run servers

Run three instances of our config servers using *configReplica* as the name for the replica set:

```
mongod -dbpath {homeDir}\sharding\config\config1 -port 30117 -replSet configReplica --configsvr
mongod -dbpath {homeDir}\sharding\config\config2 -port 30127 -replSet configReplica --configsvr
mongod -dbpath {homeDir}\sharding\config\config3 -port 30137 -replSet configReplica --configsvr
```

Example:

```
mongod -dbpath G:\Udemy\mongodb\sharding\config\config1 -port 30117 -replSet configReplica --configsvr

mongod -dbpath G:\Udemy\mongodb\sharding\config\config2 -port 30127 -replSet configReplica --configsvr

mongod -dbpath G:\Udemy\mongodb\sharding\config\config3 -port 30137 -replSet configReplica --configsvr
```

3.2.   Configure the replica set

Connect to any config server and initiate a replica set:

```
mongo -port 30117
```

```
var configuration = {
        _id: 'configReplica',
        configsvr : true,
        members: [
                {_id: 0, host: 'localhost:30117'},
                {_id: 1, host: 'localhost:30127'},
                {_id: 2, host: 'localhost:30137'}
        ]
}

rs.initiate(configuration)
{ "ok" : 1 }
```

4. Run query router

```
mongos -configdb configReplica/localhost:30117,localhost:30127,localhost:30137
```

5. Initialize our sharded cluster

Connect to *mongos*:

mongo

and add three shards:

```
sh.addShard('localhost:27117')
sh.addShard('localhost:27217')
sh.addShard('localhost:27317')
```

Example:

```
mongos> sh.addShard('localhost:27117')
{ "shardAdded" : "shard0000", "ok" : 1 }
mongos>
mongos> sh.addShard('localhost:27217')
{ "shardAdded" : "shard0001", "ok" : 1 }
mongos>
mongos> sh.addShard('localhost:27317')
{ "shardAdded" : "shard0002", "ok" : 1 }
```