

Building MongoDB Environment

Infrastructure:

Task 1. MongoDB sharding

Task 2. Import and balance data

Task 3. Generate more data

Task 4. Analyse more data

Task 5. Visualize data (bonus task)

Task 1. MongoDB sharding

Prerequisites:

Install docker and docker-compose.

Links:

<https://docs.docker.com/compose/compose-file/>

https://hub.docker.com/_/mongo

Description:

Pull docker image “mongo”.

Create docker-compose.yaml for containers:

- mongo (one port forwarding, with mongos main process)
- mongo (no port forwarding, config servers process)
- mongo (no port forwarding, data servers process)
- mongo (no port forwarding, data replica servers process)

Scale “mongo config server” containers up to 3.

Scale “mongo data server containers” up to 4.

Scale “mongo data replica server” 2 for each “mongo config server”.

Make a secure connection between all “mongo server’s”.

Deploy containers and test the result.

Goals:

- Setup configuration for docker-compose file
- Make sure the configuration is correct
- Become experience with mongo cli and mongo configuration

Task 2. Import and balance data

Prerequisites:

Done task 1.

Links:

https://www.doogal.co.uk/london_postcodes.php

<https://data.london.gov.uk/dataset/postcode-directory-for-london>

Description:

Import London addresses.

Test the result.

Goals:

- Become experience with mongo connection.

Task 3. Generate more data

Prerequisites:

Done task 2.

Description:

Use London addresses for simulations below.

Simulate taxi orders and store in base (with custom intensity).

Simulate taxi movement tracking and store in base (up to 10GB data).

Taxi without order are moving at nearest area.

Simulate taxi drive feedback and store in base.

Test the result.

Goals:

- Become experience with mongo CRUD.

Task 4. Analyse more data

Prerequisites:

Done task 3.

Description:

Analyse drives and feedbacks according to variant in Lab 5.

Goals:

- Become experience with mongo map-reduce operations

Task 5. Visualize data (bonus task)

Prerequisites:

Done task 3.

Description:

Visualize taxi movement using map API.

Goals:

- Become experience with map API