

What is NoSQL?

and its benefits

- NoSQL: Not Only SQL
- A Non-Relational database
- Flexible:
 - no pre-defined schema (tables/columns/data type)
 - Insert _id as Primary Key automatically
- Fast
- Suitable for Big Data & Real-time app

Types of NoSQL Databases

- Document Databases [MongoDB, CouchDB]
- Column Databases [Apache Casandra]
- Key-Value Stores [Redis, Couchbase Sever]
- Cache Systems [Redis, Memcache]
- Graph Database [Neo4]

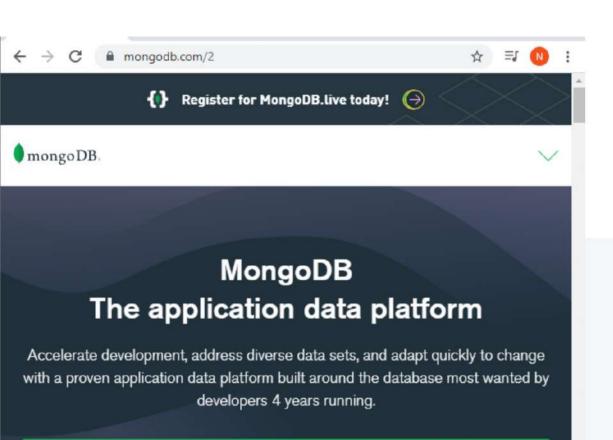
MongoDB [https://www.mongodb.com/]

- Humongous
- Store a lot data and retrieve it fast!
- Store data as BSON: Binary JSON
 - Same format as JSON
 - Binary coded : fast and flexible
 - Embedded document (document inside document)
- No /Few Relations (add manually)





Getting Started with MongoDB



Start free



Choose a path. Adjust anytime.

Available as a fully managed service across 60+ regions on AWS, Azure, and Google Cloud

Dedicated Multi-Cloud & Multi-Region Clusters

For teams developing world-class applications that require multi-region resiliency or ultra-low latency.

- Includes all features from Shared and Dedicated Clusters
- Replicate data scross clouds and regions
- Globally distributed read and write operations
- Control data residency at the document level

Create a cluster

\$0.13/hr*

Dedicated Clusters

For teams building applications that need advanced development and production-ready environments:

- Includes all features from Shared Clusters
- ✓ Auto-scaling
- ✓ Network isolation
- ✓ Realtime performance metrics

Create a cluster

\$0.08/hr*

Shared Clusters

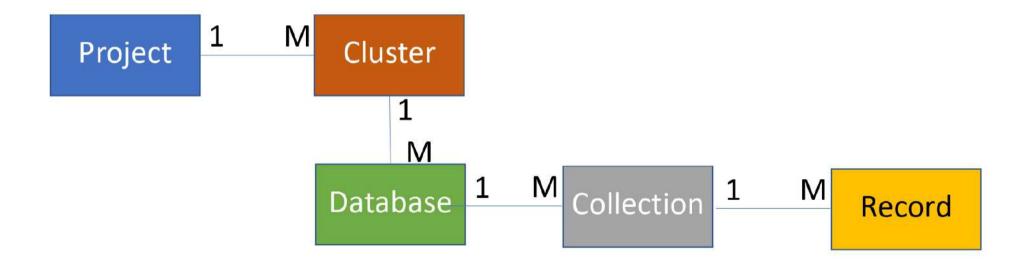
For teams learning MongoDB or developing small applications.

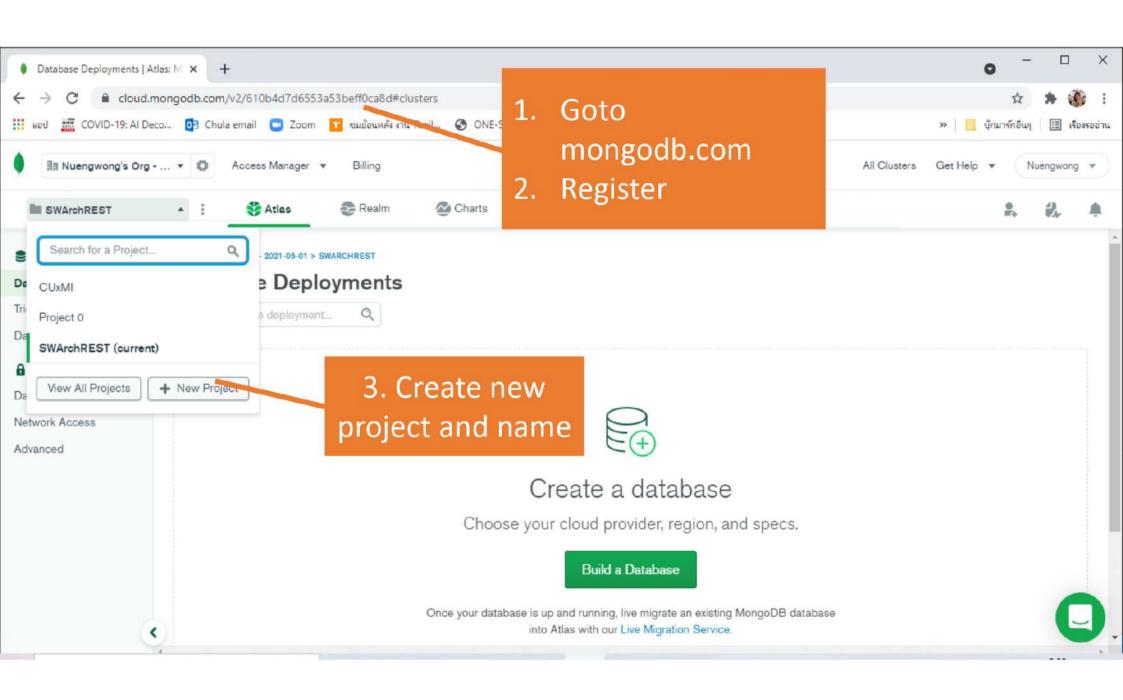
- Highly available autohealing cluster
- ✓ End-to-end encryption
- ✓ Role-based access control

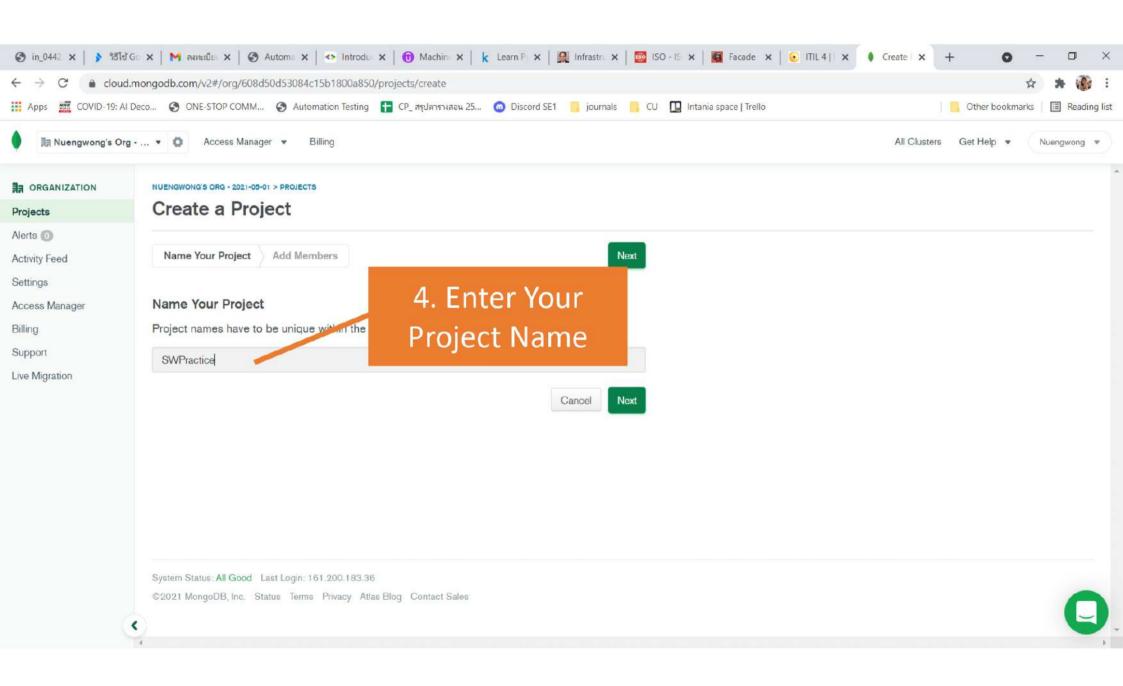
Create a cluster

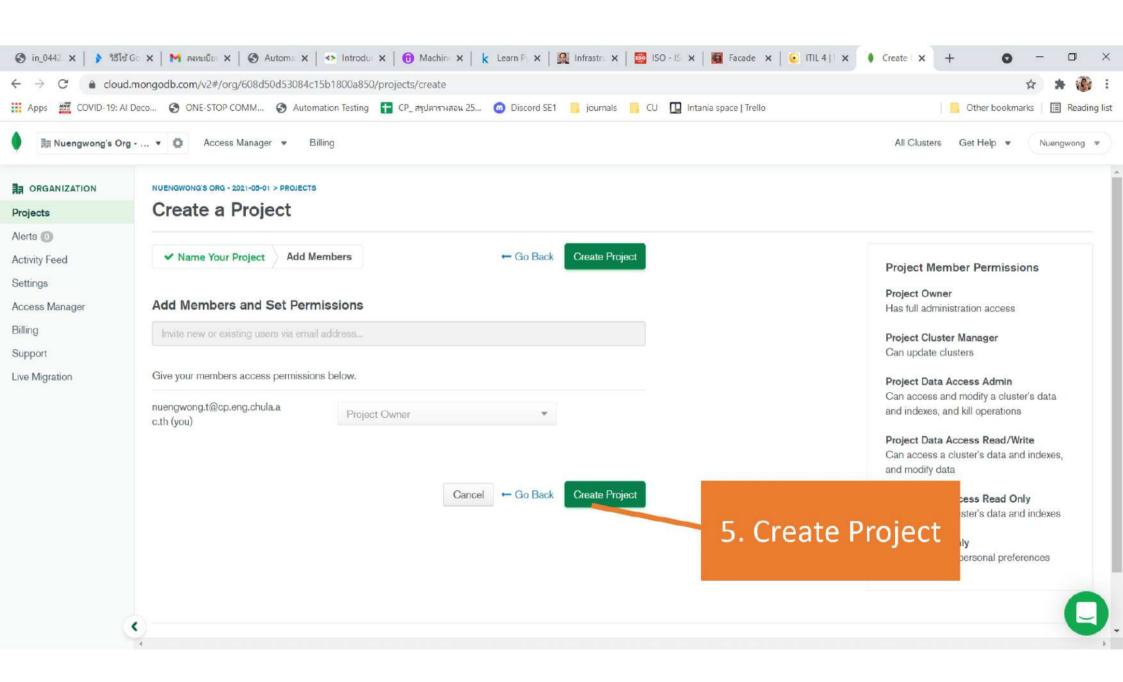
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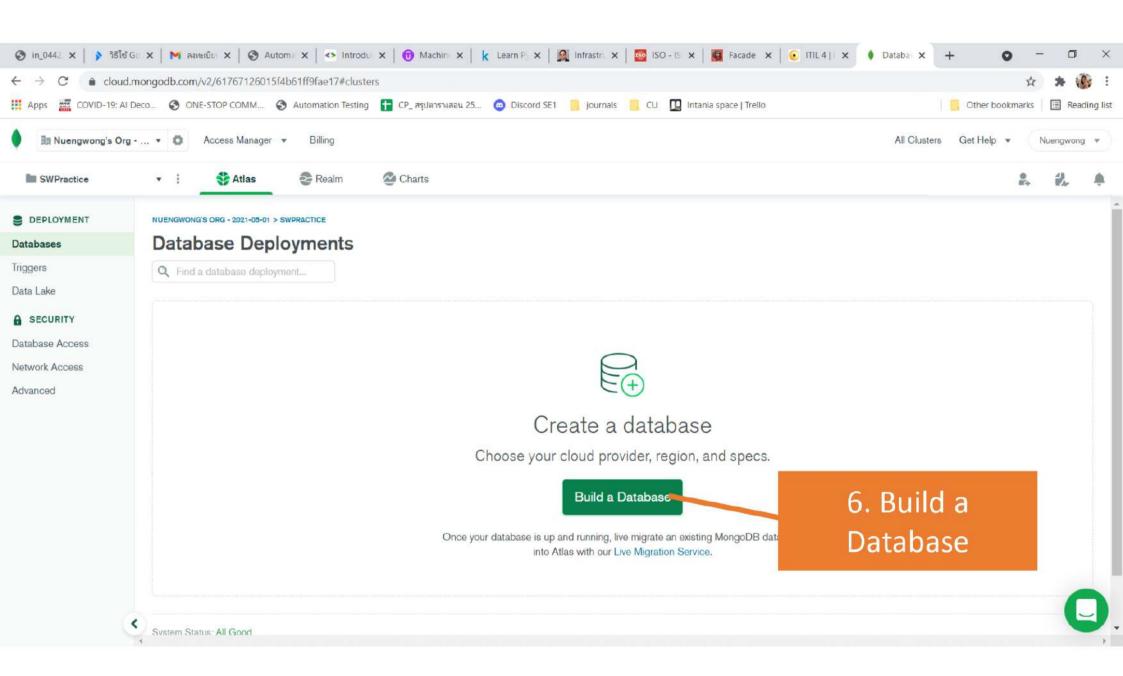
MongoDB Components

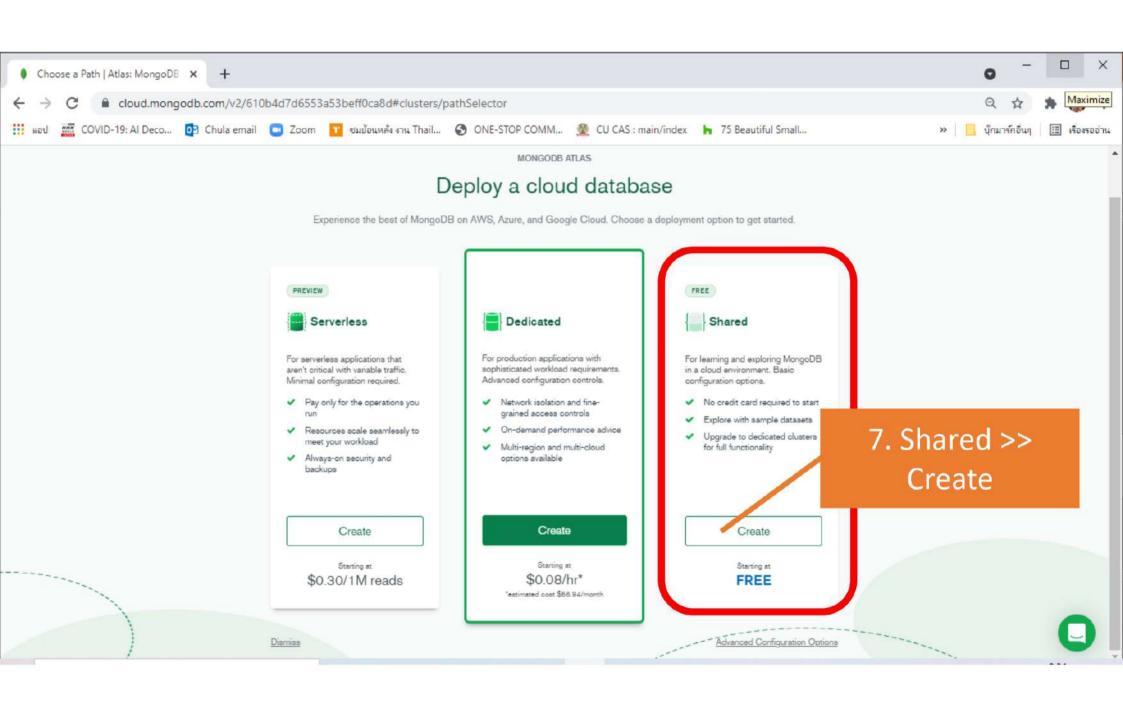


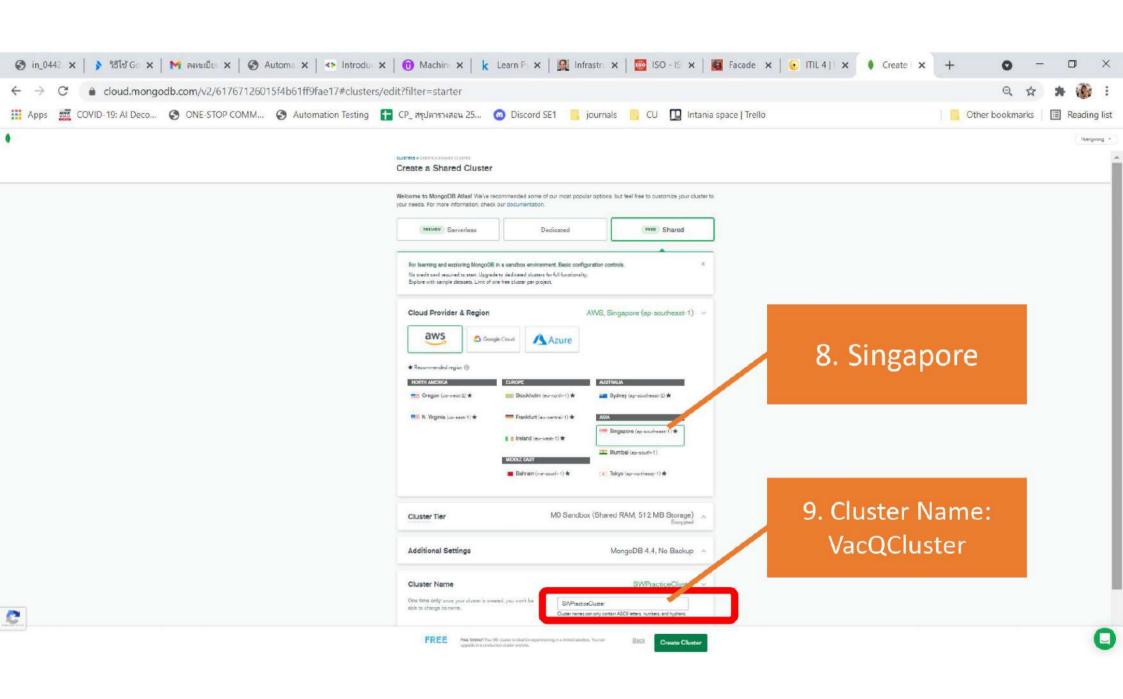


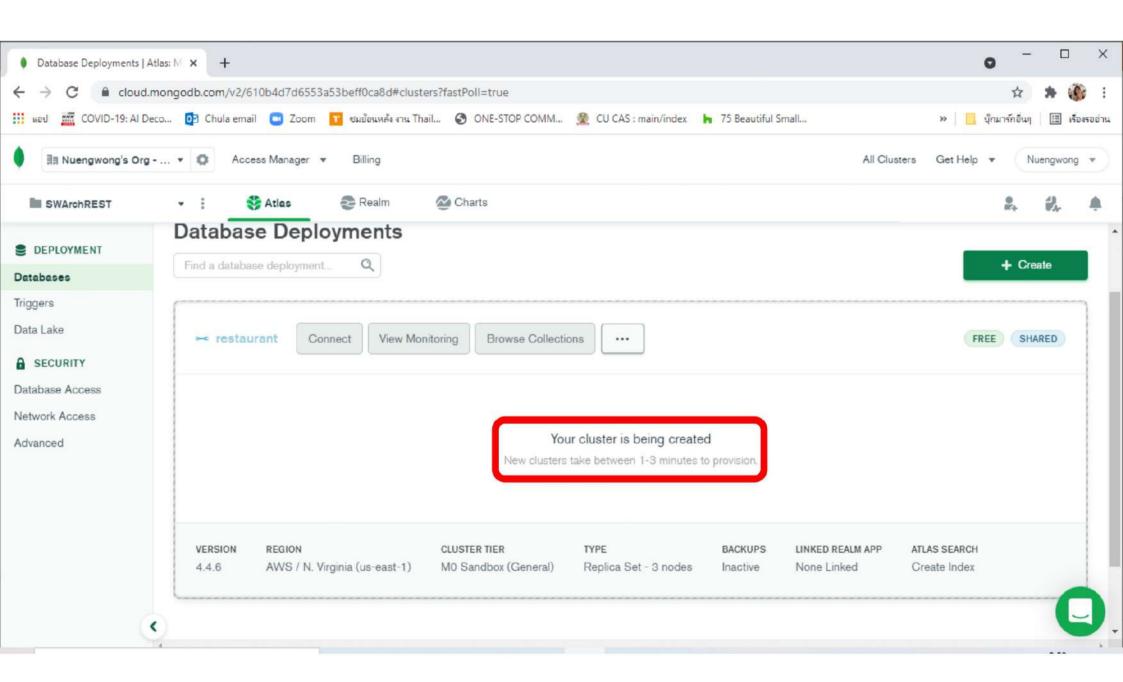






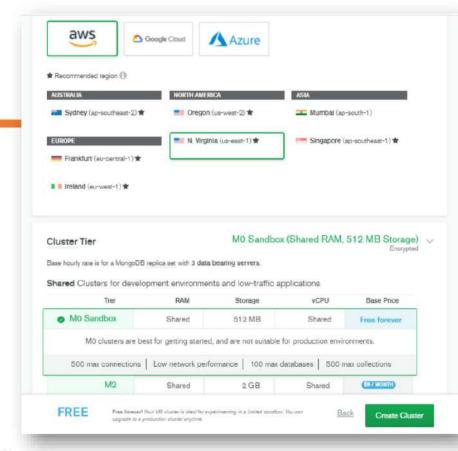


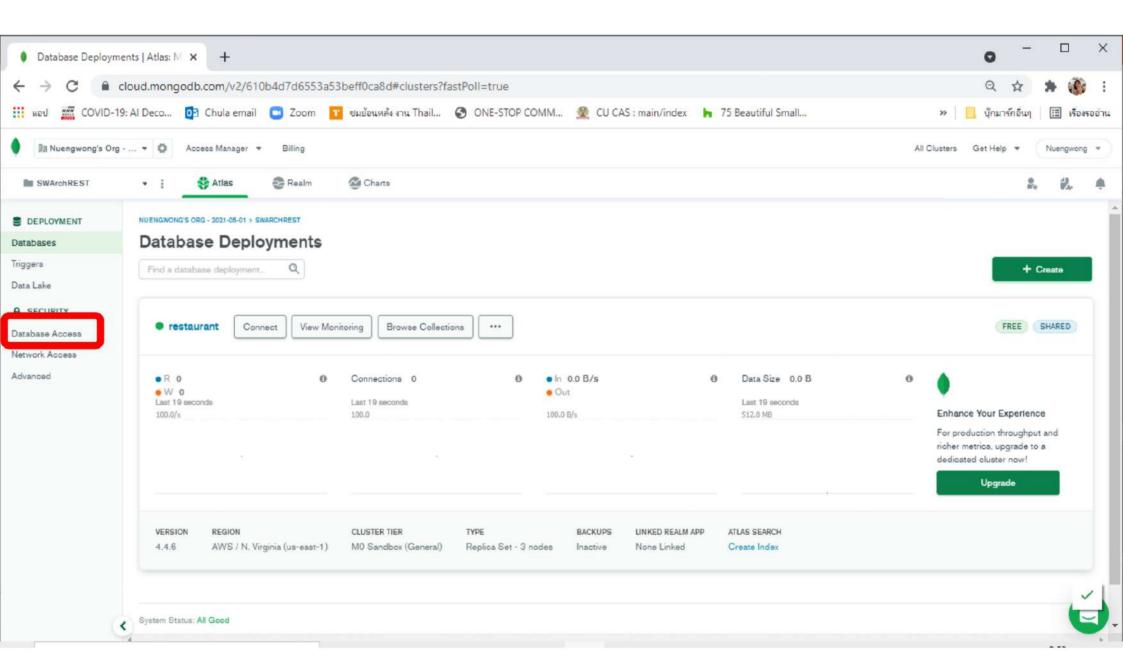


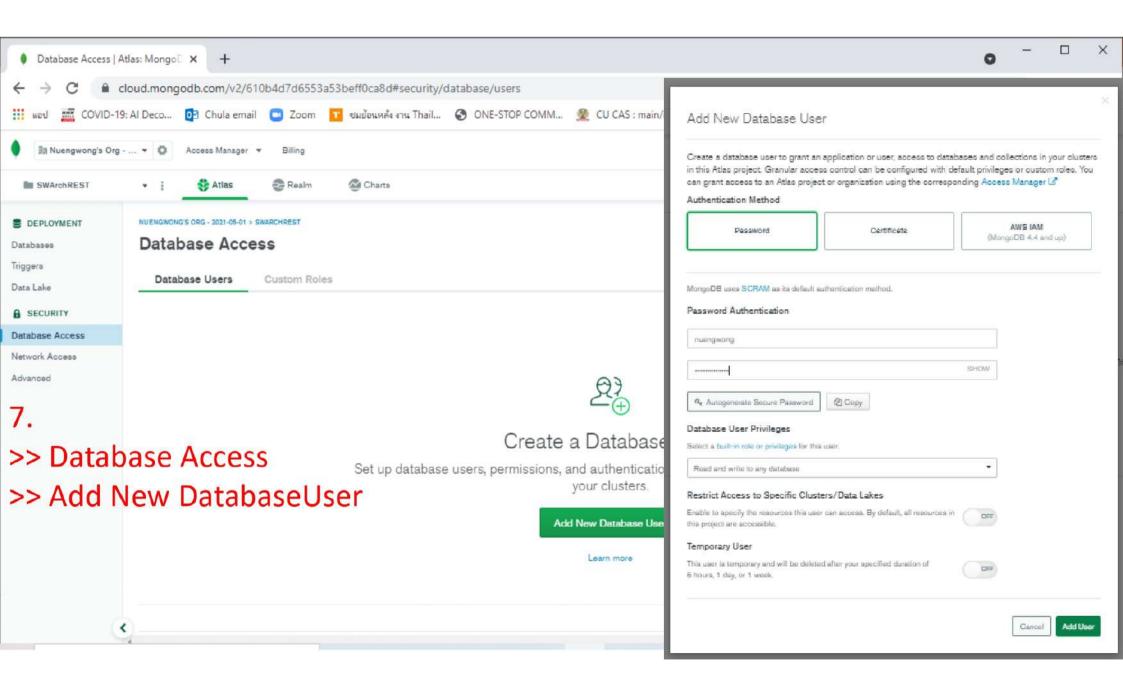


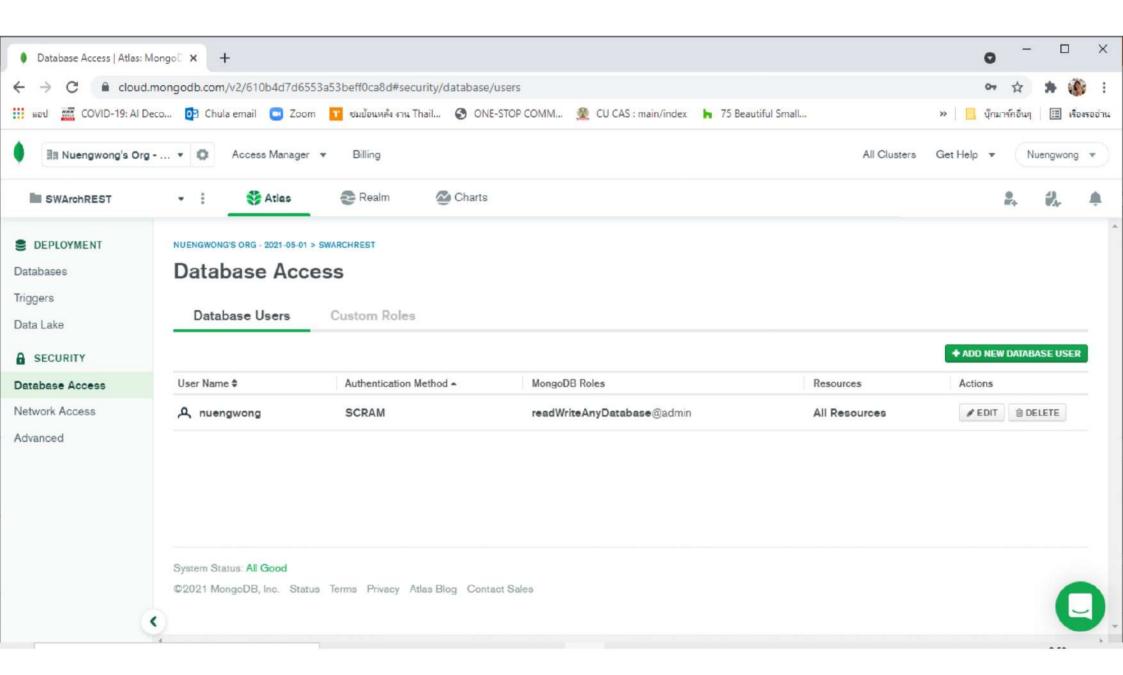
MongoDB Atlas Setup

- goto: cloud.mongodb.com
- 2. Register
- Create a project : VacQ
- 4. build a cluster
- 5. free tier
- 6. Settings
 - a. aws >> Region: North America
 - ы. Cluster Tier: free plan
 - c. cluster name: VacQCluster
 - d. Click 'Create a cluster'
- Database Access >> Add New User
- 8. Network Access >> ADD CURRENT IP ADDRESS
- Clusters >> Collections>>No data
- 10. Clusters >> Connect >> Connect with Compass >> copy the Connection String

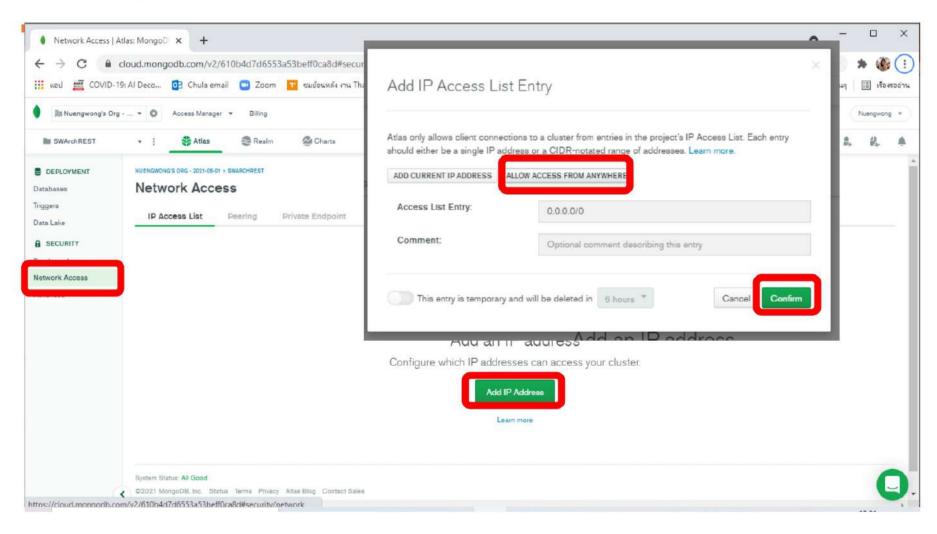


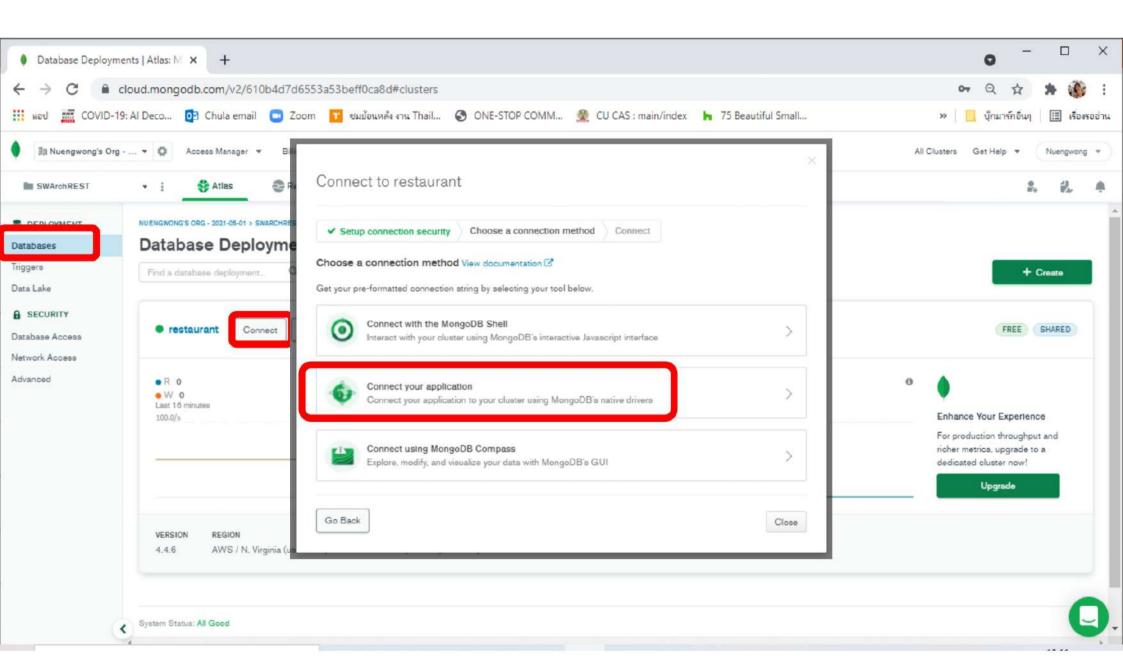


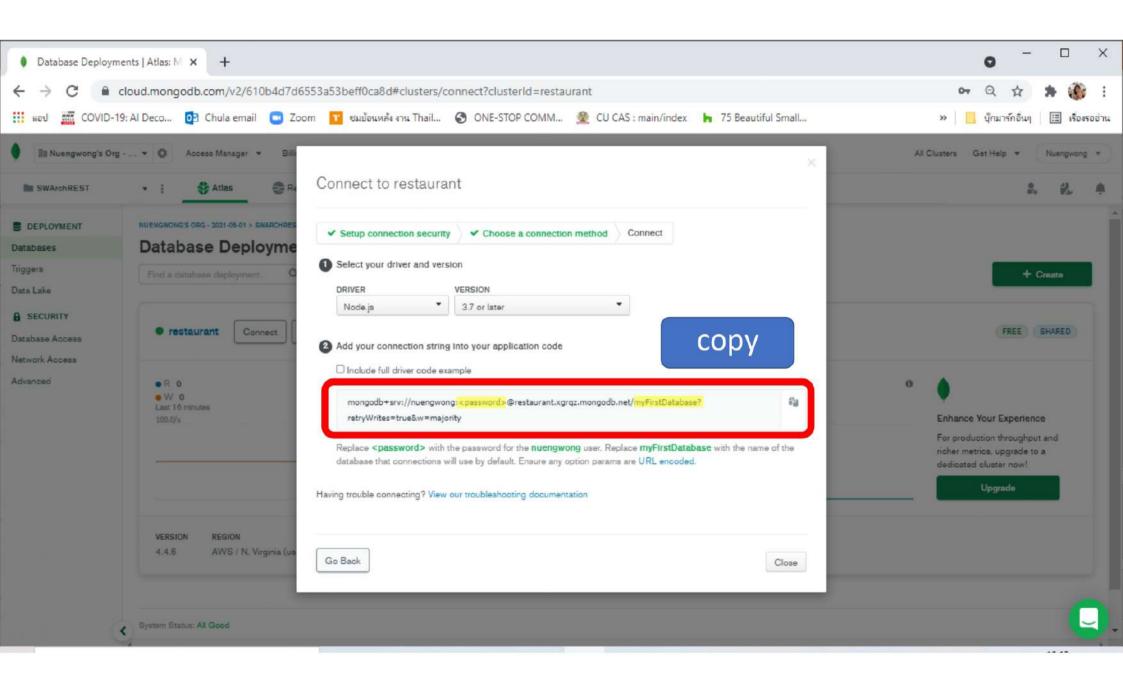


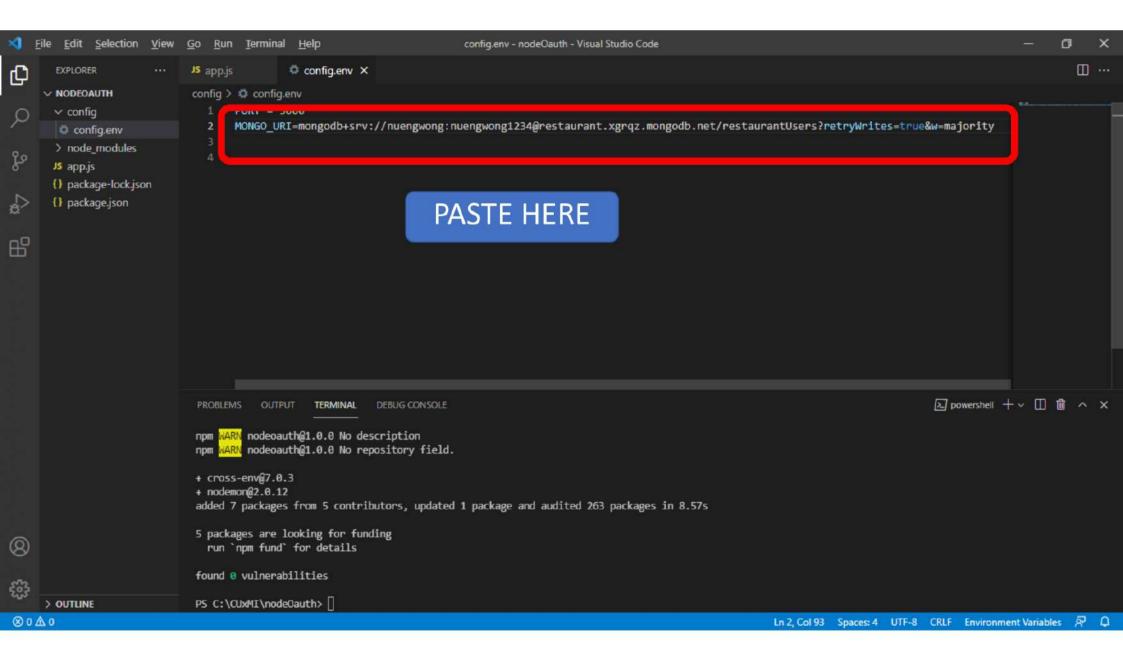


8. Network Access >> ADD CURRENT IP ADDRESS



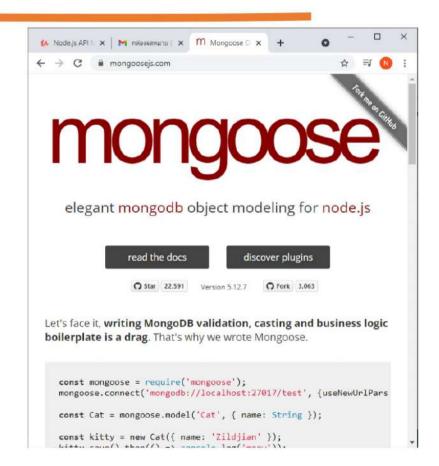


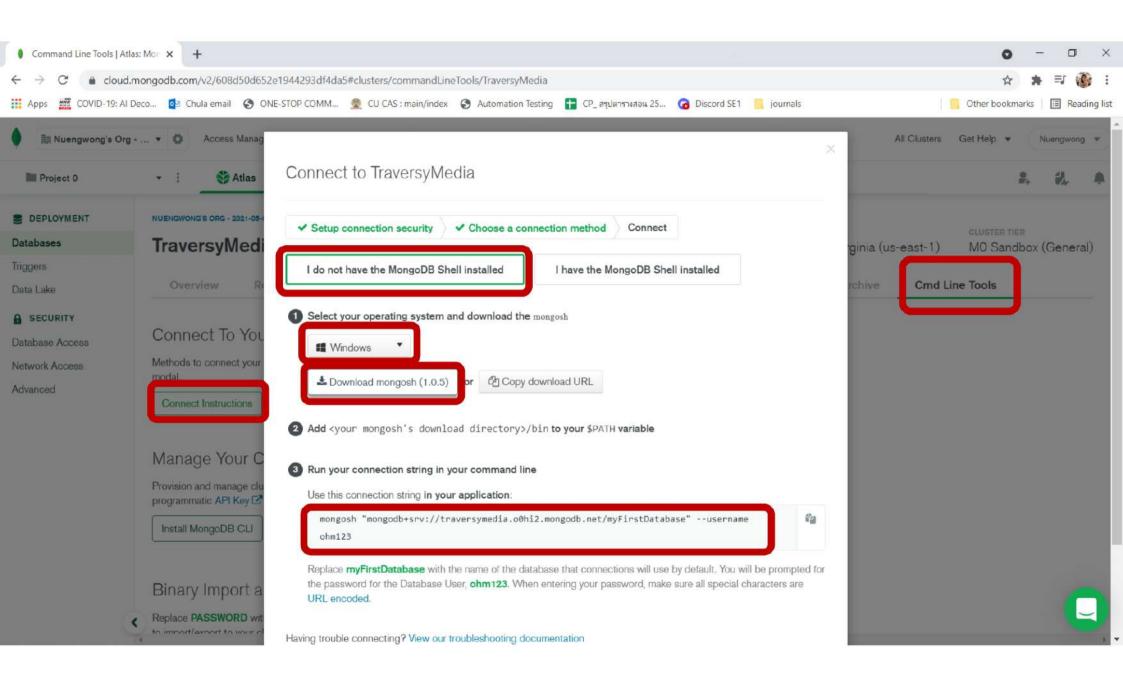




Connecting to Database With Mongoose

- 1. > npm i mongoose
- 2. > npm run dev
- 3. Connect Your Application
- 4. Add code to server.js to connect to database







MongoDB commands

Ref:

https://developer.mongodb.com/quickstart/cheat-sheet/

MongoDB Shell installation and setup

- Install mongoDB Shell
 - https://www.mongodb.com/try/download/shell
- (optional) Set \$PATH variable to mongoDBShell/bin folder
 - Or Go to your mongoDBShell/bin directory
- Type this command in your prompt (in one line)

```
New version uses "mongosh"!
mongosh
"mongodb+srv://cuxmi.trks8.mongodb.net/sa
mple_restaurants" --username mi
```

Password: 25052564

All in **ONE** line!

MongoDB create/show/delete database

```
#1. show all database that have tables show dbs#2. create a database use <database name>
```

#3. show your used/current database db

#4. delete the used database db.dropDatabase()

use DBtrainingXXX

Create a collection and show collections

```
#1. create a collection/table
db.createCollection("students");

#2. show all collections/tables
show collections

#3. insert a record
db.students.insertOne({first_name: "John", last_name: "Doe"});

#4. show all records
db.students.find();
```

Insert many & Show Pretty

Insert complex JSON structure

```
db.students.insertOne({
    first_name: "Jack",
    last_name: "Dawson",
    memberships: ["mem1","mem2"],
    address: {
        street: "4 main st",
        city: "Boston"
    },
    contacts: [
        {name: "Brad", relationship: "friend"}
    ]
});
```

Update

```
#1. update an entire record
db.students.updateOne({first_name:"John"},{$set:{first_name:"John",last_name:"Doe",gender:"male"}});
db.students.inid().pretty();

#2. update only a field in a record
db.students.updateOne({first_name:"Steven"},{$set:{gender:"male"}});
db.students.updateOne({first_name:"Steven"},{$set:{age:45}});

#3. increment a field
db.students.updateOne({first_name:"Steven"},{$inc:{age:5}});

#4. delete a field
db.students.updateOne({first_name:"Steven"},{$unset:{"age":1}});
```

"update" is deprecated. Use "updateOne" instead.

Update a sub record

```
db.students.updateOne({first_name:"Steven"},
            $set: {
                   certificates:[
                                 {name: "Web Dev1"},
                                 {name: "Web Dev2"},
                                 {name: "Flutter"},
                                      db.students.find({
                                            certificates:{
                                                   $elemMatch:{ name: "Web Dev2"}
                                      })
```

Upsert & Delete

Show Specific Records

```
#1. show only specific records
db.students.find({first_name:"John"});
db.students.find({$or:[{first_name:"John"},{first_name:"Joan"}]});
db.students.find({gender:"male"});
db.students.findOne({gender:"male"});
#3. show by sub-field condition
db.students.find({"certificates.name":"Flutter"});
db.students.update({first_name:"Steven"},{$set:{age:45}});
db.students.find({age:{$lt:50}});
```

#4. show by condition with arr member comparison db.students.find({memberships:"mem1"});

Text search

Show with Sort, Count, Limit, and selected field

```
#1. show with sorting (1: ascending, -1: descending)
db.students.find().sort({last_name:1});

#2. count the records
db.students.find().count();
db.students.find({gender:"male"}).count();

#3. show only the first 4 items
db.students.find().limit(4);
db.students.find().limit(4);

#4. show only a selected field of all records
db.students.find().forEach(function(doc){print("Student Name: " + doc.first_name)});
```



MongoDB Database Tools

bsondump.exe	10/8/2564 19:25	Application	18,700 KB
hospital.csv	27/8/2564 14:46	Microsoft Excel Co	57 KB
mongodump.exe	10/8/2564 19:25	Application	22,366 KB
mongoexport.exe	10/8/2564 19:25	Application	21,933 KB
mongofiles.exe	10/8/2564 19:25	Application	23,113 KB
mongoimport.exe	10/8/2564 19:25	Application	22,275 KB
mongorestore.exe	10/8/2564 19:25	Application	22,822 KB
mongostat.exe	10/8/2564 19:25	Application	21,595 KB
mongotop.exe	10/8/2564 19:25	Application	21,208 KB

- Download & Extract the zip file:
 - https://www.mongodb.com/try/download/databasetools?tck=docs databasetools
- > mongoimport --uri mongodb+srv://ohm123:ohm123@traversymedia.o0hi2.mongodb.ne t/VacQ --collection hospitals --type csv --file hospital.csv --headerline

```
C:\CU\mongodb-database-tools-windows-x86_64-100.5.0\bin>mongoimport --uri mongodb+srv://ohm123:ohm123@traversymedia.o0hi
2.mongodb.net/VacQ --collection hospitals --type csv --file hospital.csv --headerline
2021-08-27T16:02:55.806+0700 connected to: mongodb+srv://[**REDACTED**]@traversymedia.o0hi2.mongodb.net/VacQ
2021-08-27T16:02:57.417+0700 255 document(s) imported successfully. 0 document(s) failed to import.

C:\CU\mongodb-database-tools-windows-x86_64-100.5.0\bin>
```

