LAB 5

Everything-as-a-Service with CITCloud + Heroku + MongoDB Atlas

Fullname: Nguyen Chi Hoang Minh

Student ID: B1809707

- Note: screenshots need to be clear and good-looking; submissions must be in PDF format.

CITCloud (http://cloud.cit.ctu.edu.vn/horizon) is a private cloud environment providing infrastructure-as-a-service (IaaS) for CIT students and staff. It is implemented using OpenStack (https://www.openstack.org) which is a free open standard cloud computing platform. In this lab, you will learn about creating and managing virtual servers and other resources with CITCloud.

Log in to CITCloud using credentials provided by your instructor.

1. **Ubuntu VM**

   Create an instance:
   + Instance name: <Your student ID>_Ubuntu
   + Source: UServer18-CloudImg; Select boot source: image; Create new Volume: No
   + Flavor: m1.small
   + Security group: default
   + Networks: Net_dtdm
   + Key pair: Create a new key pair, name it <Your student ID>_Ubuntu_Key
   - Launch your VM, then assign it a floating IP.
   - SSH to your VM
       $chmod 600 ./<Your student ID>_Ubuntu_Key.pem
       $ssh -i ./<Your student ID>_Ubuntu_Key.pem ubuntu@<floating IP>
   - Execute "sudo apt update ; uname -a" command (take a screenshot of the console).

2. Deploying a simple NodeJS + MongoDB application on Ubuntu VM

- Install NodeJs, npm and MongoDB

```
$sudo apt update
$sudo apt install nodejs npm mongodb -y
```

- Clone the source of the application

```
$cd ~
$git clone https://github.com/tmtuanctu/Employee_CRUD.git
$cd Employee_CRUD
```

- Install required modules using npm

```
$npm init -y
```

- Modify database configuration

```
$nano models/db.js
#Modify the content of db.js file
...
const url = "mongodb://localhost:27017/EmployeeDB";
...
```
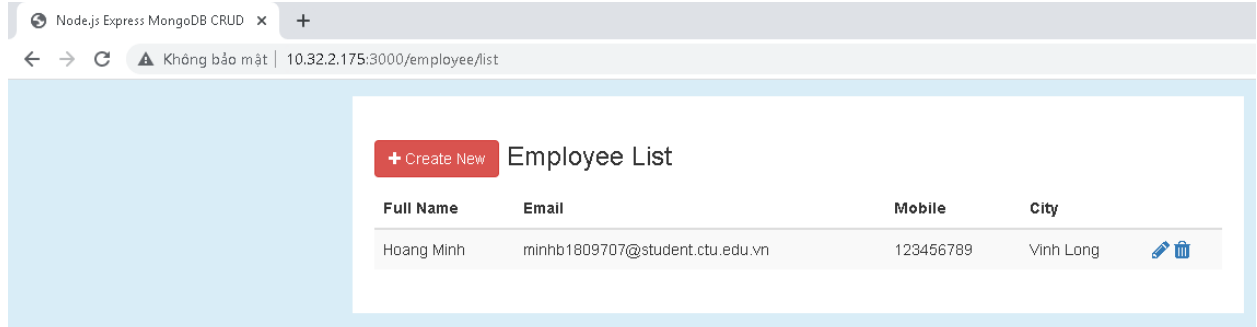
- Start the application

```
$node server.js
```

- Access the website using a web browser:

```
http://<VM_floating_IP>:3000/employee
```

(Take a screenshot of the website homepage)

3. Deploying a simple NodeJS + MongoDB Atlas application on Ubuntu VM

- Install NodeJs, npm and MongoDB

```
$sudo apt update
$sudo apt install nodejs npm mongodb -y
```

- Clone the source of the application

```
$cd ~
$git clone https://github.com/tmtuanctu/Employee_CRUD.git
$cd Employee_CRUD
```

- Install required modules using npm

```
$npm init -y
```

- Login into MongoDB Atlas using your CTU email address
- Create a database, then get it URL
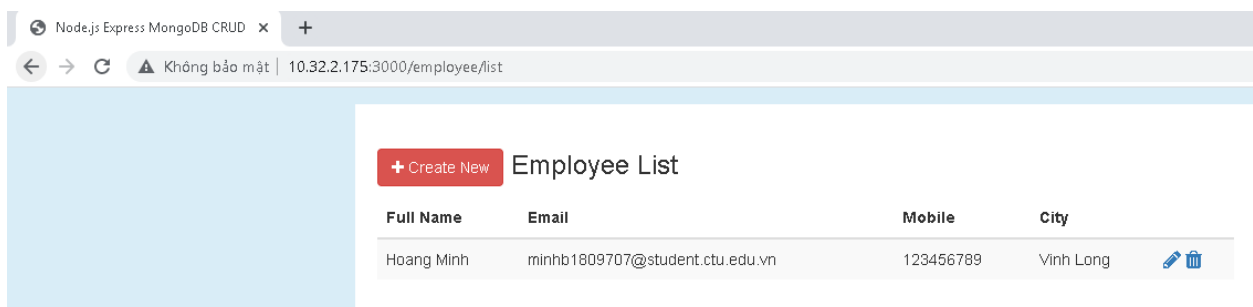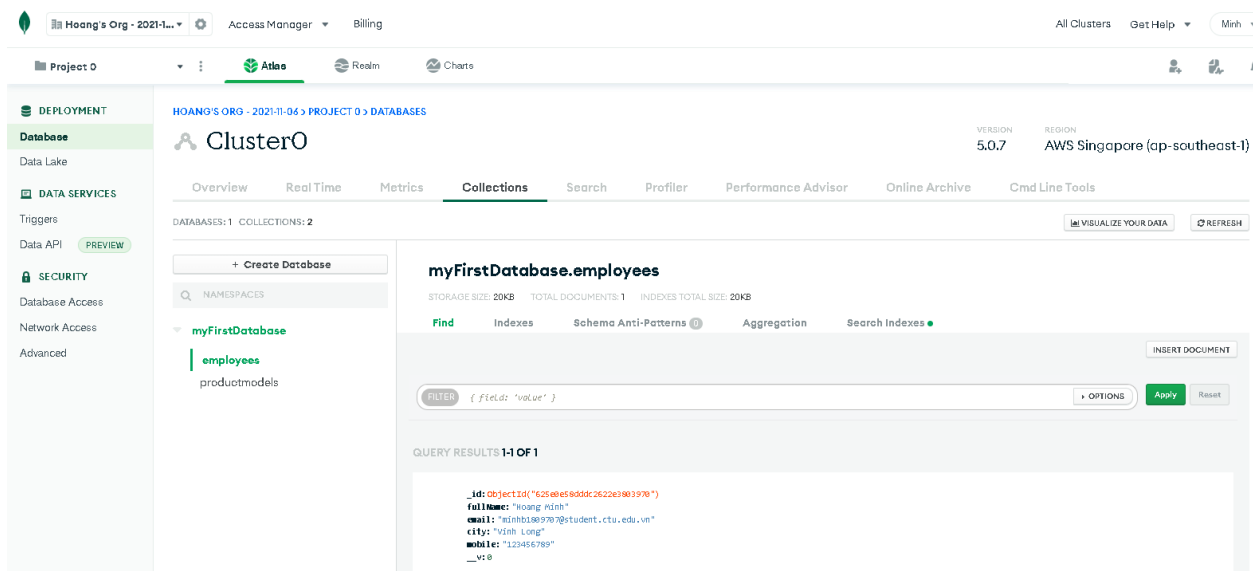
- Modify database configuration

```
$nano models/db.js
#Modify the content of db.js file
...
const url = "[Your MongoDB Atlas database URL]";
...
```

- Start the application

```
$node server.js
```

- Access the website using a web browser:

```
http://<VM_floating_IP>:3000/employee
```


4. Deploying a simple NodeJS + MongoDB Atlas application to Heroku

- Create a Heroku account
- Create a Heroku application

```
$sudo snap install --classic heroku
$cd Employee_CRUD
$heroku login
```

if the web browser cannot open automatically, please run it manually; then copy the log in link to the address bar.

```
$heroku create app[mssv]
```

- Create Heroku application

```
$nano Procfile
#The Procfile in the example app you deployed looks like this:
web: npm start
```
- Push the source code to heroku
```
$git add .
$git commit -m "Modify file Procfile" # Cẩn thận lỗi dấu nháy
$git push heroku
```
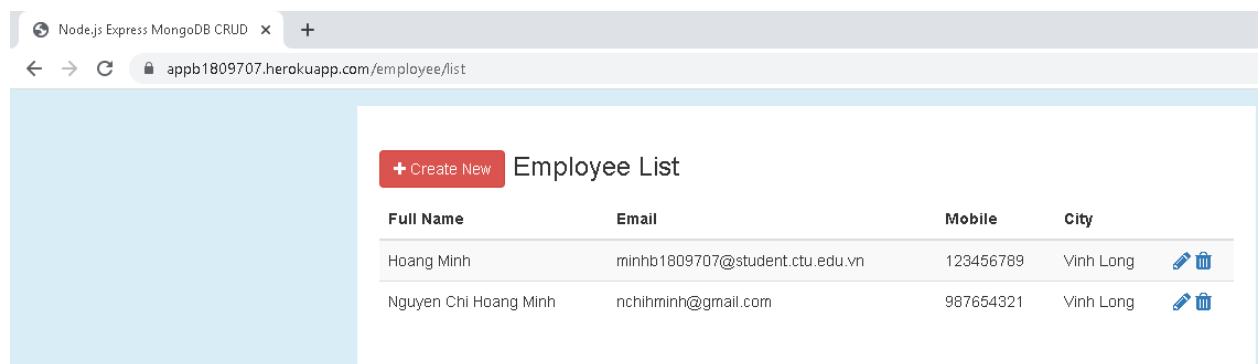- Launch your application
```
$heroku open
```
(Take a screenshot of your website homepage + and add your website URL here)
Link heroku: https://appb1809707.herokuapp.com/employee

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