**SIT323/SIT737- Cloud Native Application Development**

**Github Link:**

**Steps to Implement MongoDB database into Kubernetes**

**Resources used:**

1. Nodejs
2. Docker
3. Kubernetes
4. MongoDb
5. Visual Studio Code

**Prerequisites:**

1. Docker Desktop installed
2. Kubernetes installed and enabled
3. MongoDB Atlas account created
4. Database on mongoDB is created
5. Mongodb user created with access to read and write.
6. Nodejs installed

**Steps:**

1. Create a nodejs application that connects to the mongodb using the mongoDB uri that has the correct password and username.
2. Create endpoints that makes the database and collection to be interacted using the application.
3. After creating the application, the dockerfile has to be created with the correct commands. The dockerfile is created with the name “dockerfile”
4. Run command **“Docker build -t app .”** to create a docker image of the file as app.
5. Create Docker compose file as “docker-compose.yml” name the container as app and the image name as app to create a container of app image.
6. Run command **“Docker compose up”.** This will create a docker container with the port mentioned in the docker compose file. I chose port 8000.
7. Create a Kubernetes deployment and service. For application to communicate with MongoDB, create a Kubernetes deployment and service. This involves creating a “deployment.yaml” and “service.yaml” file that specifies the MongoDB deployment as the target and the port number. Then run commands **“Kubectl apply -f deployment.yaml”** and **“Kubectl apply -f service.yaml”.**
8. Now, to create a Kubernetes deployment for MongoDB, create a YAML file that specifies the MongoDB Docker image, the number of replicas, and any configuration settings save it as “mongodb-deployment.yaml”.
9. Create a secret key with username and password for mongodb deployment. Run command **“Kubectl create secret generic mongodb-secret --from-literal=username=user --from-literal=password=123”.** This will create a secret key named as mongodb-secret and the mongodb username and password that will allow to access the database.
10. Add this secret key to the env part in the mongodb-deployment.yaml file.
11. Run command **“Kubectl apply -f mongodb-deployment.yaml”.** this will apply the mongodb-deployment configuration and deploy the application to Kubernetes.
12. Run localhost://8000 to view the deployed application and to interact with the container run index.html and perform operations on the database.