

## Problem Statement

You are working as a Devops Administrator. You've been tasked to deploy a multi-tier application on Kubernetes Cluster. The application is a NodeJS application available on Docker Hub with the following name:

*devopsedu/employee*

This NodeJS application works with a mongo database. MongoDB image is available on DockerHub with the following name:

*mongo*

You are required to deploy this application on Kubernetes:

- NodeJS is available on port 8888 in the container and will be reaching out to port 27017 for mongo database connection
- MongoDB will be accepting connections on port 27017

You must deploy this application using the CLI.

Once your application is up and running, ensure you can add an employee from the NodeJS application and verify by going to Get Employee page and retrieving your input.

**Hint:** Name the Mongo DB Service and deployment, specifically as "mongo".

```
gcloud config set project edureka-  
handson
```

```
gcloud container clusters create vag-gke-  
cluster --num-nodes=2 --zone=us-  
central1-a
```

```
kubectl create deployment employee-  
app --image=devopsedu/employee
```

```
kubectl create deployment mongo --  
image=mongo
```

```
Firewall - VPC network - Edureka Cloud Shell
shell.cloud.google.com/?hl=en_US&fromcloudshell=true&show=terminal
Cloud Edureka References Accounts

Cloud Shell Editor
(edureka-handson) x +

-rw-r--r-- 1 vagish999 vagish999 647 Mar 12 18:29 nodejs-deployment.yml
drwxr-xr-x 4 vagish999 vagish999 4096 Mar 12 16:58 SubmissionFiles/
vaghish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl create deployment employee-ap
p --image=devopsedu/employee
deployment.apps/employee-app created
vaghish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl create deployment mongo --ima
ge=mongo
deployment.apps/mongo created
vaghish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl get all
NAME READY STATUS RESTARTS AGE
pod/employee-app-7fcd8467b-ldx25 1/1 Running 0 24s
pod/mongo-7fd695869b-242mg 0/1 ContainerCreating 0 7s

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
service/kubernetes ClusterIP 10.72.0.1 <none> 443/TCP 3m53s

NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/employee-app 1/1 1 1 25s
deployment.apps/mongo 0/1 1 0 8s

NAME DESIRED CURRENT READY AGE
replicaset.apps/employee-app-7fcd8467b 1 1 1 25s
replicaset.apps/mongo-7fd695869b 1 1 0 8s
vaghish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl get all
NAME READY STATUS RESTARTS AGE
pod/employee-app-7fcd8467b-ldx25 1/1 Running 0 37s
pod/mongo-7fd695869b-242mg 1/1 Running 0 20s

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
service/kubernetes ClusterIP 10.72.0.1 <none> 443/TCP 4m6s
```

kubectl expose deployment employee-app --type=LoadBalancer --port=8888

```
Firewall - VPC network - Edureka Cloud Shell
shell.cloud.google.com/?hl=en_US&fromcloudshell=true&show=terminal
Cloud Edureka References Accounts

Cloud Shell Editor
(edureka-handson) x +

NAME DESIRED CURRENT READY AGE
replicaset.apps/employee-app-7fcd8467b 1 1 1 38s
replicaset.apps/mongo-7fd695869b 1 1 1 21s
vaghish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl expose deployment employee-ap
p --type=LoadBalancer --port=8888
service/employee-app exposed
vaghish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl get all
NAME READY STATUS RESTARTS AGE
pod/employee-app-7fcd8467b-ldx25 1/1 Running 0 111s
pod/mongo-7fd695869b-242mg 1/1 Running 0 94s

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
service/employee-app LoadBalancer 10.72.15.206 <pending> 8888:31756/TCP 4s
service/kubernetes ClusterIP 10.72.0.1 <none> 443/TCP 5m19s

NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/employee-app 1/1 1 1 112s
deployment.apps/mongo 1/1 1 1 95s

NAME DESIRED CURRENT READY AGE
replicaset.apps/employee-app-7fcd8467b 1 1 1 112s
replicaset.apps/mongo-7fd695869b 1 1 1 95s
vaghish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ minikube service list
|-----|-----|-----|-----|
| NAMESPACE | NAME | TARGET PORT | URL |
|-----|-----|-----|-----|
| default | emp-app-nodeport | 8888 | http://192.168.49.2:32045 |
| default | employee-app | 8888 | http://192.168.49.2:30678 |
| default | kubernetes | No node port |
| default | mongo | No node port |
| kube-system | kube-dns | No node port |
```

```
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shell.cloud.google.com/?hl=en_US&fromcloudshell=true&show=terminal
Cloud Edureka References Accounts
Cloud Shell Editor
(edureka-handson) x +
vagish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl get services -o wide
NAME          TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE    SELECTOR
employee-app   LoadBalancer 10.72.15.206   34.68.94.174   8888:31756/TCP   5m10s   app=employee-app
kubernetes     ClusterIP      10.72.0.1      <none>         443/TCP          10m     <none>
vagish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$
```

kubectl expose deployment mongo --  
type=ClusterIP --port=27017

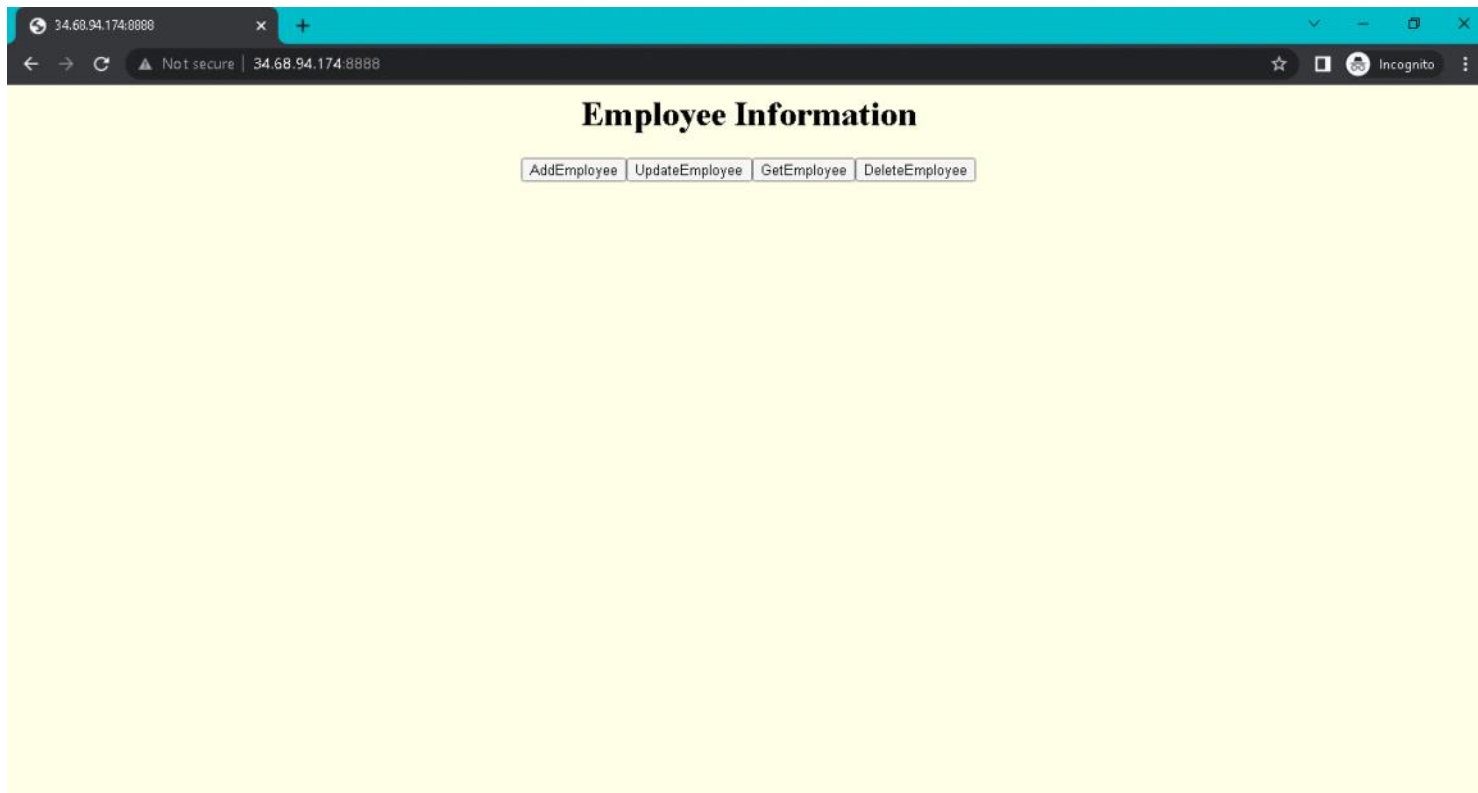
```
Firewall - VPC network - Edureka x Cloud Shell x how to deploy mongodb in x Docker / Kubernetes - Mongo x MongoDB Wire Protocol x +
shell.cloud.google.com/?hl=en_US&fromcloudshell=true&show=terminal
Cloud Edureka References Accounts
Cloud Shell Editor
(edureka-handson) x +
vagish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl expose deployment mongo --typ
e=ClusterIP --port=27017
service/mongo exposed
vagish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl get all
NAME          READY   STATUS    RESTARTS   AGE
pod/employee-app-6f9ff86b6b-kr5th  1/1     Running   0          31m
pod/mongo-7fd695869b-r14cl        1/1     Running   0          6m15s

NAME          TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/employee-app   LoadBalancer 10.72.15.206   34.68.94.174   8888:31756/TCP   58m
service/kubernetes     ClusterIP      10.72.0.1      <none>         443/TCP          63m
service/mongo          ClusterIP      10.72.13.65    <none>         27017/TCP        5s

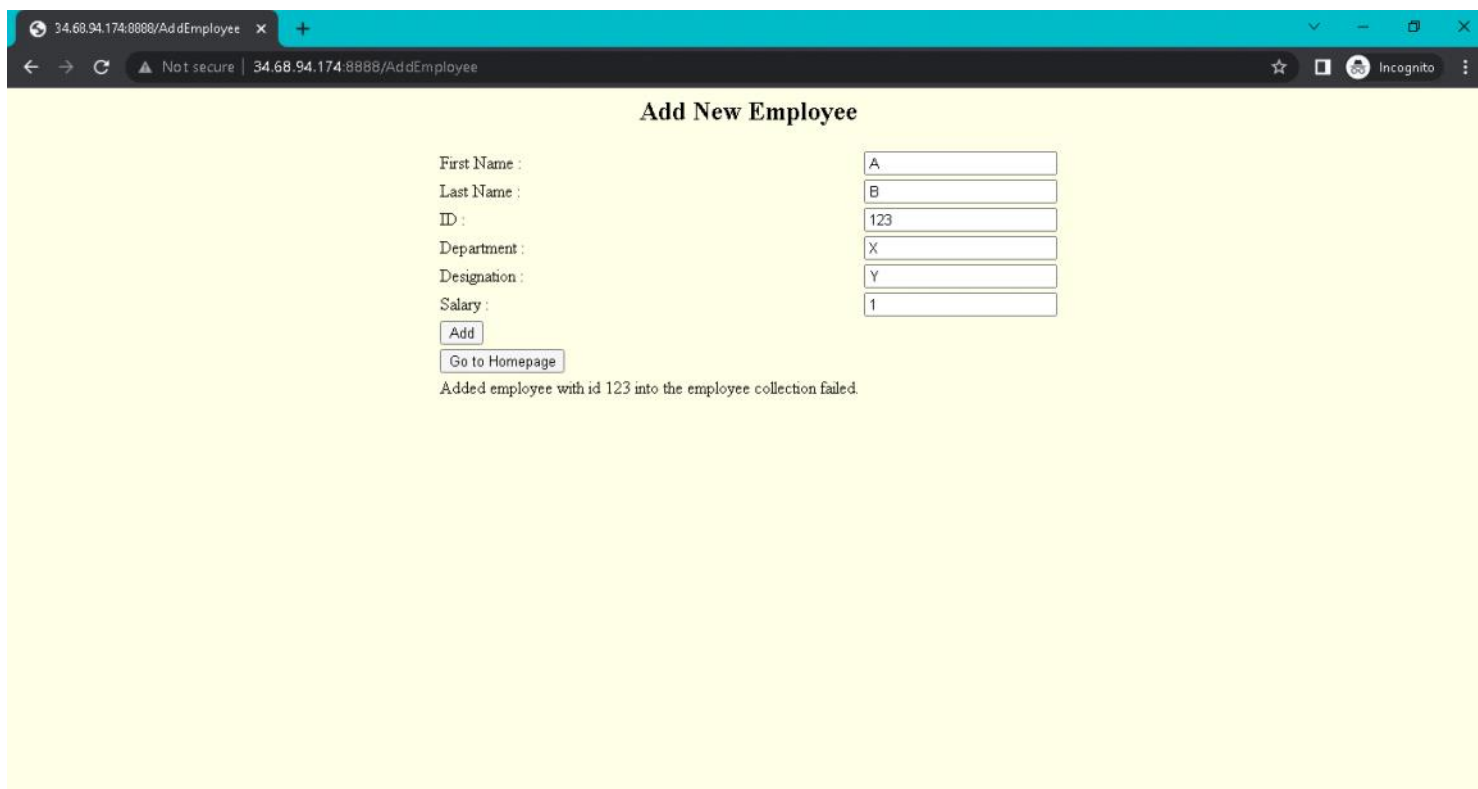
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/employee-app  1/1     1            1           31m
deployment.apps/mongo        1/1     1            1           6m16s

NAME          DESIRED   CURRENT   READY   AGE
replicaset.apps/employee-app-6f9ff86b6b  1         1         1       31m
replicaset.apps/mongo-7fd695869b         1         1         1       6m17s
vagish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ minikube service list
|-----|
| NAMESPACE | NAME          | TARGET PORT | URL |
|-----|
| default   | emp-app-nodeport | 8888        | http://192.168.49.2:32045 |
| default   | employee-app   | 8888        | http://192.168.49.2:30678 |
| default   | kubernetes     | No node port |
| default   | mongo          | No node port |
| kube-system | kube-dns      | No node port |
|-----|
vagish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$
```

Able to Access Node JS Application



Adding Employee Failed as code used in image Node JS application in devopsedu/employee has older Query Syntax which is deprecated from MongoDB



```
kr5th
-bash: lubecl: command not found
vagish999@cloudshell:~/ExternalFiles/GIT/Edureka-Assignment/CaseStudy7-Kubernetes/Edureka-DevOps-Assignments (edureka-handson)$ kubectl logs employee-app-6f9ff86b6b-kr5th
npm info it worked if it ends with ok
npm info using npm@2.15.8
npm info using node@v4.4.7
npm info prestart insert-title-here@1.0.0
npm info start insert-title-here@1.0.0

> insert-title-here@1.0.0 start /opt/sample/Employee
> node app.js

Server running at http://127.0.0.1:8080
{ fname: 'Q',
  lname: 'W',
  empid: '1',
  dept: '2',
  dsgn: '3',
  sal: '4' }
Connection established to mongodb://10.72.11.164:27017/employee
[MongoError: Unsupported OP_QUERY command: insert. The client driver may require an upgrade. For more details see https://dochub.mongodb.org/core/legacy-opcode-removal]
  name: 'MongoError',
  message: 'Unsupported OP_QUERY command: insert. The client driver may require an upgrade. For more details see https://dochub.mongodb.org/core/legacy-opcode-removal',
  ok: 0,
  errmsg: 'Unsupported OP_QUERY command: insert. The client driver may require an upgrade. For more details see https://dochub.mongodb.org/core/legacy-opcode-removal',
  code: 352,
  codeName: 'UnsupportedOpQueryCommand' }
```

Firewall - VPC network - Ed | Cloud Shell | how to deploy mongodb in | Docker / Kubernetes - Mon | MongoDB Wire Protocol |

mongodb.com/docs/manual/reference/mongodb-wire-protocol/#request-opcodes

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**MongoDB Manual**

5.0 (current)

- Introduction
- Installation
- MongoDB Shell (mongosh)
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- Aggregation Operations
- Data Models
- Indexes
- Security
- Replication

| OP_CODE  | OP_NUMBER | DESCRIPTION                              |
|--|-----------|--|
| OP_UPDATE  | 2001      | Update document.                         |
| Deprecated in MongoDB 5.0. Removed in MongoDB 5.1. |           |  |
| OP_INSERT  | 2002      | Insert new document.                     |
| Deprecated in MongoDB 5.0. Removed in MongoDB 5.1. |           |  |
| RESERVED   | 2003      | Formerly used for OP_GET_BY_OID.         |
| OP_QUERY   | 2004      | Query a collection.                      |
| Deprecated in MongoDB 5.0. Removed in MongoDB 5.1. |           |  |
| OP_GET_MORE  | 2005      | Get more data from a query. See Cursors. |
| Deprecated in MongoDB 5.0. Removed in MongoDB 5.1. |           |  |
| OP_DELETE  | 2006      | Delete documents.                        |

On this page

- Introduction
- TCP/IP Socket
- Messages Types and Formats**
- Standard Message Header
- Opcodes
- Opcode Considerations

Share Feedback

Uploaded PDF with consolidated Screenshots.  
Below tasks are performed:

1. nodeJs deployed using given Employee Image
2. Mongo DB deployed using Mongo Image
3. Exposed Ports to access the application
4. Checked Connectivity between NodeJS & Mongo DB: worked fine.
5. Accessed Web page from Public IP.