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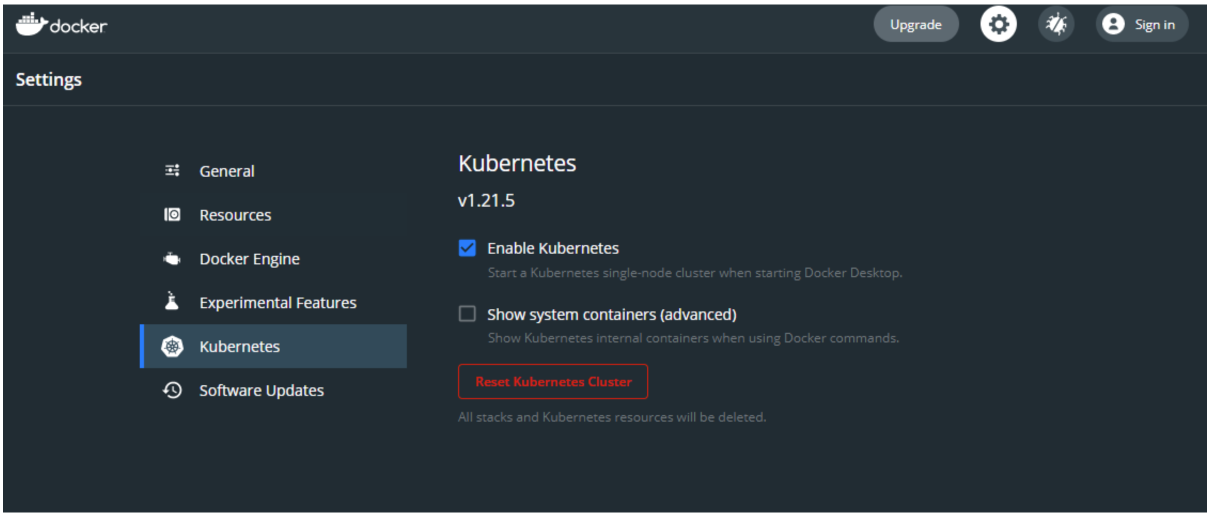
Github Repository: https://github.com/justgnoh/Task-A-CS3219

Instructions

1. Ensure Docker Desktop is running.
2. Ensure Kubernetes is enabled in Docker Desktop settings.



Kubernetes

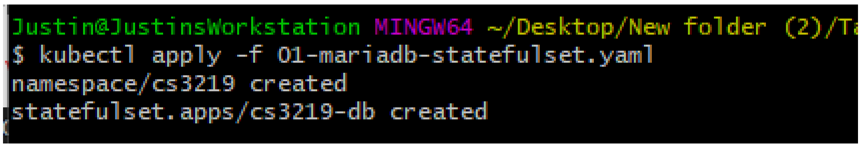
v1.21.5

☑ Enable Kubernetes
Start a Kubernetes single-node cluster when starting Docker Desktop.

☐ Show system containers (advanced)
Show Kubernetes internal containers when using Docker commands.

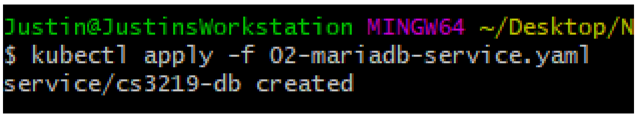
Reset Kubernetes Cluster
All stacks and Kubernetes resources will be deleted.

3. Enter the working directory `**cd OTOT_Task_A2**`
4. Do `**docker-compose build**`
5. Enter the `Kubernetes directory` with `**cd kubernetes**`
6. Run ` **kubectl apply -f 01-mariadb-statefulset.yaml**`



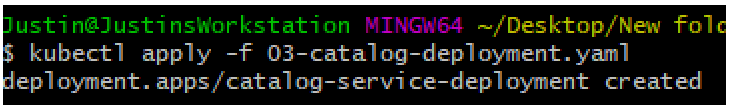
```
Justin@JustinsWorkstation MINGW64 ~/Desktop/New folder (2)/Ta
$ kubectl apply -f 01-mariadb-statefulset.yaml
namespace/cs3219 created
statefulset.apps/cs3219-db created
```

7. Run ` **kubectl apply -f 02-mariadb-service.yaml**`



```
Justin@JustinsWorkstation MINGW64 ~/Desktop/N
$ kubectl apply -f 02-mariadb-service.yaml
service/cs3219-db created
```

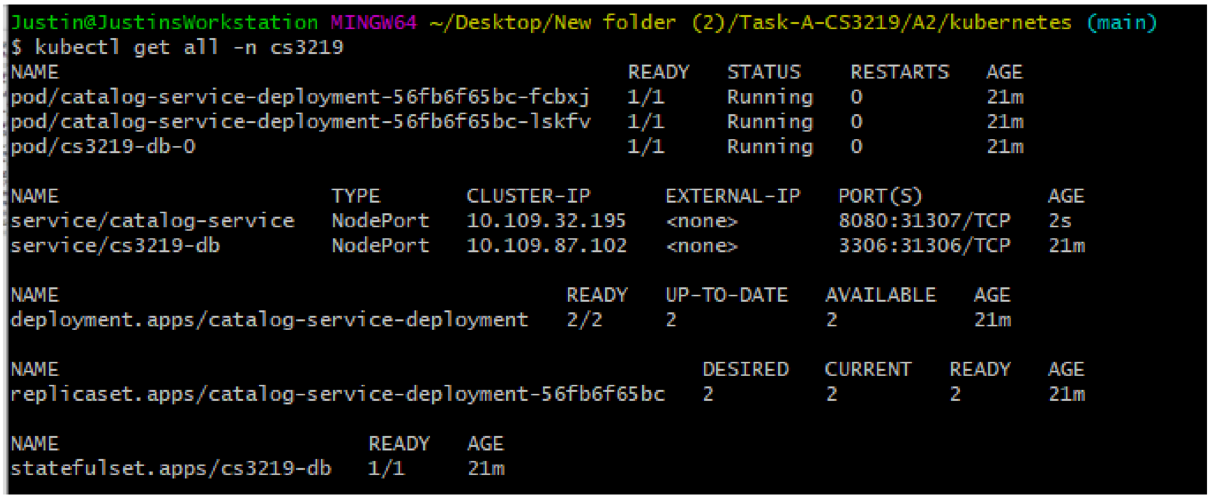
8. Run `**kubectl apply -f 03-catalog-deployment.yaml**`



```
Justin@JustinsWorkstation MINGW64 ~/Desktop/New fold
$ kubectl apply -f 03-catalog-deployment.yaml
deployment.apps/catalog-service-deployment created
```

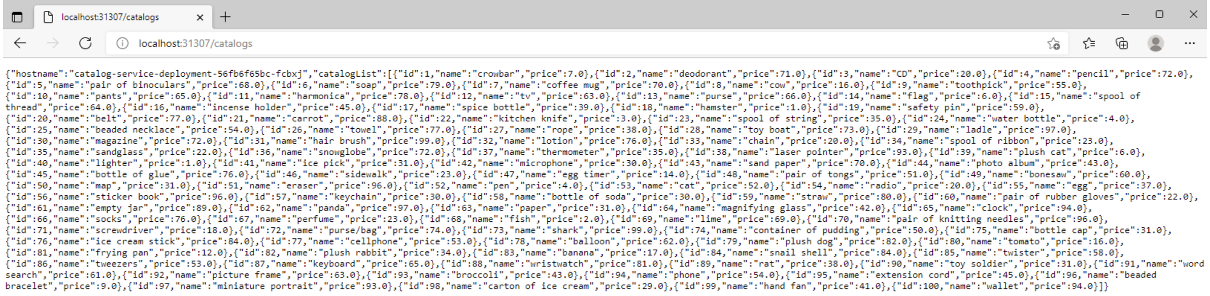
9. Run `**kubectl get all -n cs3219**`

10. Check if all deployments are in RUNNING status.



```
Justin@JustinsWorkstation MINGW64 ~/Desktop/New folder (2)/Task-A-CS3219/A2/kubernetes (main)
$ kubectl get all -n cs3219
NAME                                              READY   STATUS    RESTARTS   AGE
pod/catalog-service-deployment-56fb6f65bc-fcbxj   1/1     Running   0          21m
pod/catalog-service-deployment-56fb6f65bc-lskfv   1/1     Running   0          21m
pod/cs3219-db-0                                   1/1     Running   0          21m

NAME                      TYPE       CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
service/catalog-service   NodePort   10.109.32.195   <none>        8080:31307/TCP   2s
service/cs3219-db         NodePort   10.109.87.102   <none>        3306:31306/TCP   21m

NAME                                         READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/catalog-service-deployment   2/2     2            2           21m

NAME                                                    DESIRED   CURRENT   READY   AGE
replicaset.apps/catalog-service-deployment-56fb6f65bc   2         2         2       21m

NAME                         READY   AGE
statefulset.apps/cs3219-db   1/1     21m
```

11. Enter `**localhost:31307/catalogs**` into your browser
12. Observe the results returned



```
{"hostname":"catalog-service-deployment-56fb6f65bc-fcbxj","catalogList":[{"id":1,"name":"crowbar","price":7.0},{"id":2,"name":"deodorant","price":71.0},{"id":3,"name":"CD","price":20.0},{"id":4,"name":"pencil","price":72.0},
{"id":5,"name":"pair of binoculars","price":68.0},{"id":6,"name":"soap","price":79.0},{"id":7,"name":"coffee mug","price":70.0},{"id":8,"name":"cow","price":16.0},{"id":9,"name":"toothpick","price":55.0},
{"id":10,"name":"pants","price":65.0},{"id":11,"name":"harmonica","price":78.0},{"id":12,"name":"tv","price":63.0},{"id":13,"name":"purse","price":66.0},{"id":14,"name":"flag","price":6.0},{"id":15,"name":"spool of
thread","price":64.0},{"id":16,"name":"incense holder","price":45.0},{"id":17,"name":"spice bottle","price":39.0},{"id":18,"name":"hamster","price":1.0},{"id":19,"name":"safety pin","price":59.0},
{"id":20,"name":"belt","price":77.0},{"id":21,"name":"carrot","price":88.0},{"id":22,"name":"kitchen knife","price":3.0},{"id":23,"name":"spool of string","price":35.0},{"id":24,"name":"water bottle","price":4.0},
{"id":25,"name":"beaded necklace","price":54.0},{"id":26,"name":"towel","price":77.0},{"id":27,"name":"rope","price":38.0},{"id":28,"name":"toy boat","price":73.0},{"id":29,"name":"ladle","price":97.0},
{"id":30,"name":"magazine","price":72.0},{"id":31,"name":"hair brush","price":99.0},{"id":32,"name":"lotion","price":76.0},{"id":33,"name":"chain","price":20.0},{"id":34,"name":"spool of ribbon","price":23.0},
{"id":35,"name":"sandglass","price":22.0},{"id":36,"name":"snowglobe","price":72.0},{"id":37,"name":"thermometer","price":35.0},{"id":38,"name":"laser pointer","price":93.0},{"id":39,"name":"plush cat","price":6.0},
{"id":40,"name":"lighter","price":1.0},{"id":41,"name":"ice pick","price":31.0},{"id":42,"name":"microphone","price":30.0},{"id":43,"name":"sand paper","price":70.0},{"id":44,"name":"photo album","price":43.0},
{"id":45,"name":"bottle of glue","price":76.0},{"id":46,"name":"sidewalk","price":23.0},{"id":47,"name":"egg timer","price":14.0},{"id":48,"name":"pair of tongs","price":51.0},{"id":49,"name":"bonesaw","price":60.0},
{"id":50,"name":"map","price":31.0},{"id":51,"name":"eraser","price":96.0},{"id":52,"name":"pen","price":4.0},{"id":53,"name":"cat","price":52.0},{"id":54,"name":"radio","price":20.0},{"id":55,"name":"egg","price":37.0},
{"id":56,"name":"sticker book","price":96.0},{"id":57,"name":"keychain","price":30.0},{"id":58,"name":"bottle of soda","price":30.0},{"id":59,"name":"straw","price":80.0},{"id":60,"name":"pair of rubber gloves","price":22.0},
{"id":61,"name":"empty jar","price":89.0},{"id":62,"name":"panda","price":97.0},{"id":63,"name":"paper","price":31.0},{"id":64,"name":"magnifying glass","price":42.0},{"id":65,"name":"clock","price":94.0},
{"id":66,"name":"socks","price":76.0},{"id":67,"name":"perfume","price":23.0},{"id":68,"name":"fish","price":2.0},{"id":69,"name":"lime","price":69.0},{"id":70,"name":"pair of knitting needles","price":96.0},
{"id":71,"name":"screwdriver","price":18.0},{"id":72,"name":"purse/bag","price":74.0},{"id":73,"name":"shark","price":99.0},{"id":74,"name":"container of pudding","price":50.0},{"id":75,"name":"bottle cap","price":31.0},
{"id":76,"name":"ice cream stick","price":84.0},{"id":77,"name":"cellphone","price":53.0},{"id":78,"name":"balloon","price":62.0},{"id":79,"name":"plush dog","price":82.0},{"id":80,"name":"tomato","price":16.0},
{"id":81,"name":"frying pan","price":12.0},{"id":82,"name":"plush rabbit","price":34.0},{"id":83,"name":"banana","price":17.0},{"id":84,"name":"snail shell","price":84.0},{"id":85,"name":"twister","price":58.0},
{"id":86,"name":"tweezers","price":53.0},{"id":87,"name":"keyboard","price":65.0},{"id":88,"name":"wristwatch","price":81.0},{"id":89,"name":"rat","price":38.0},{"id":90,"name":"toy soldier","price":31.0},{"id":91,"name":"word
search","price":61.0},{"id":92,"name":"picture frame","price":63.0},{"id":93,"name":"broccoli","price":43.0},{"id":94,"name":"phone","price":54.0},{"id":95,"name":"extension cord","price":45.0},{"id":96,"name":"beaded
bracelet","price":9.0},{"id":97,"name":"miniature portrait","price":93.0},{"id":98,"name":"carton of ice cream","price":29.0},{"id":99,"name":"hand fan","price":41.0},{"id":100,"name":"wallet","price":94.0}]}
```

Additional Learning

The initial setup for Kubernetes was confusing and difficult at first, especially with need to redeploy Kubernetes after making changes.

A point to propagate new changes is that:

1. Reset Kubernetes from Docker Desktop
2. Delete all images that need to be rebuilt
3. (IMPORTANT) Restart Docker Desktop [Not performing this step will lead to Kubernetes hanging when making requests]
4. Rerun `**docker-compose build**` when necessary
5. Rerun all Kubernetes commands
6. Observe that new changes are propagated to Kubernetes