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Link to Github repository:

https://github.com/tanboonji/OTOT_Assignment/tree/main/OTOT_Task_A2

Instructions and `kubectl` commands to deploy image, configure service and access deployed image through the service:

1. On cmd, navigate your directory to the `OTOT_Task_A2` folder.

```
D:\Project Folder\OTOT>cd OTOT_Task_A2
D:\Project Folder\OTOT\OTOT_Task_A2>
```

2. Build the Docker images by using the command `docker-compose build`. Wait for the images to be built before proceeding to the next step.
(Ensure you have docker running on your computer)

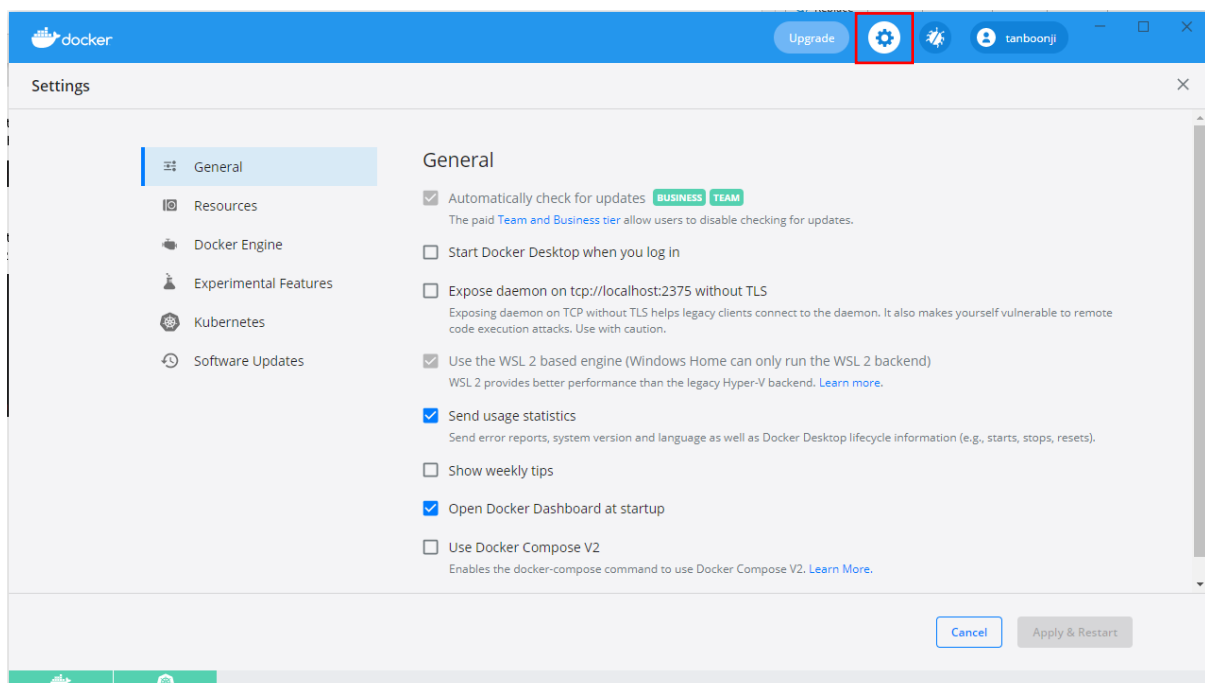
```
D:\Project Folder\OTOT\OTOT_Task_A2>docker-compose build_
```

3. Navigate your directory to the `kubernetes` folder.

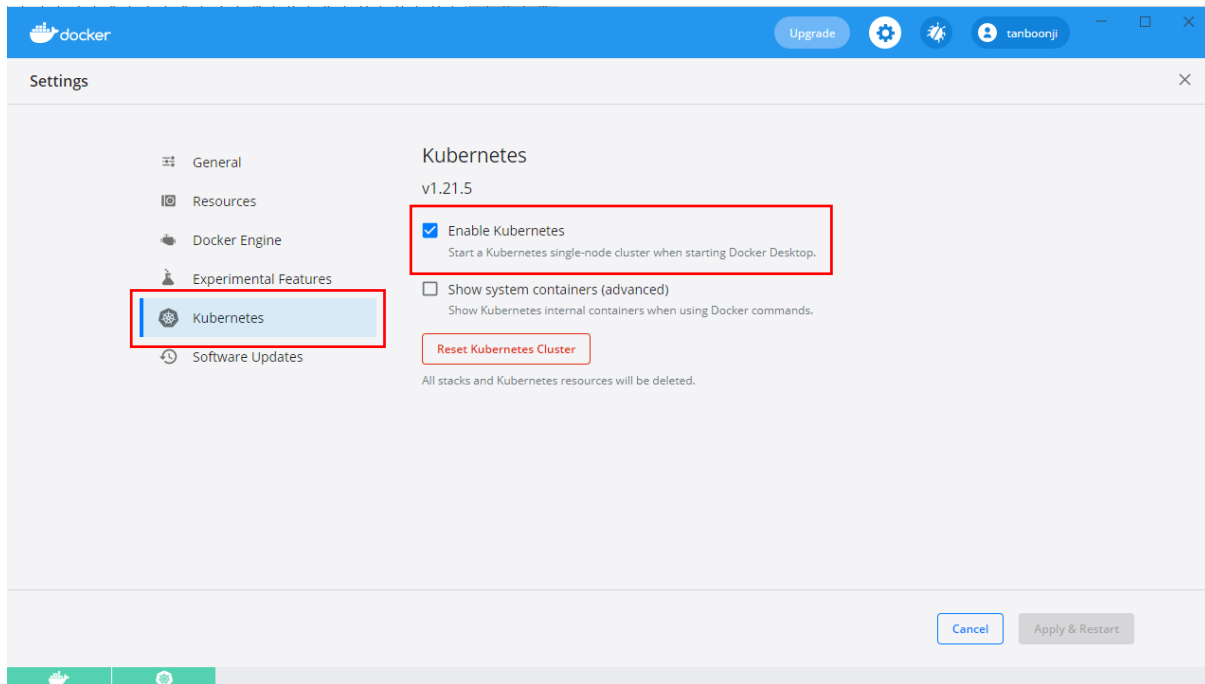
```
D:\Project Folder\OTOT\OTOT_Task_A3>cd kubernetes
D:\Project Folder\OTOT\OTOT_Task_A3\kubernetes>
```

4. Ensure you have Kubernetes enabled and running on docker.

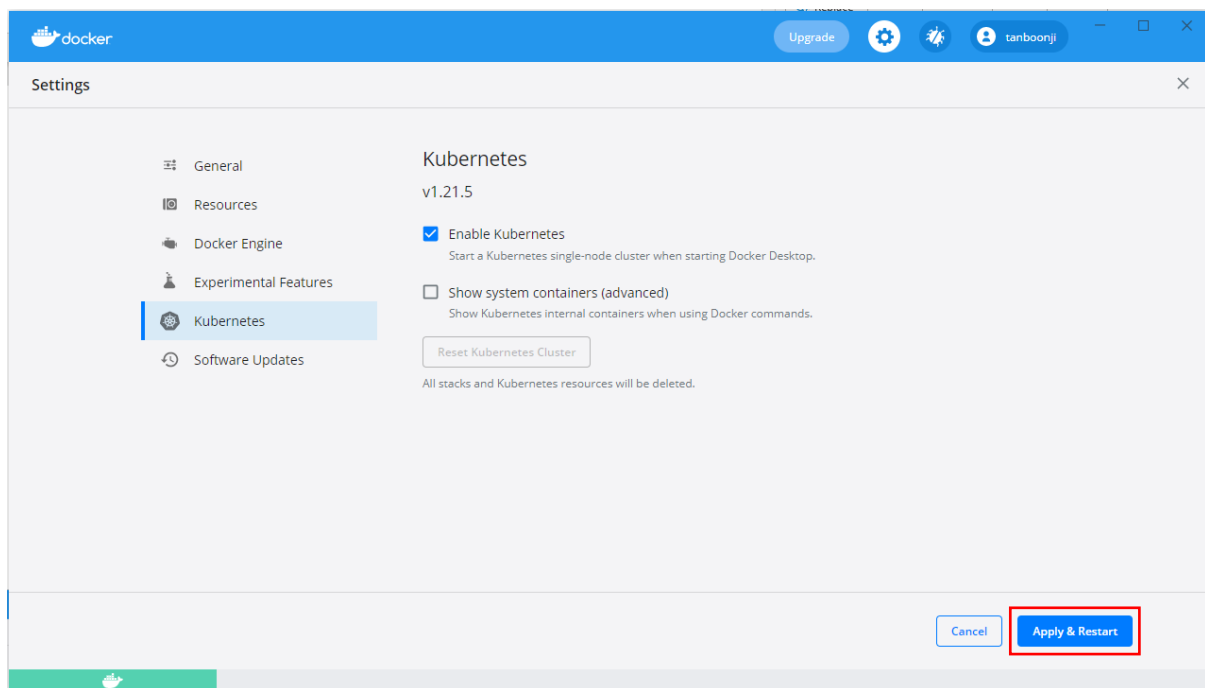
- a. On docker, click on the `Settings` button (top right).



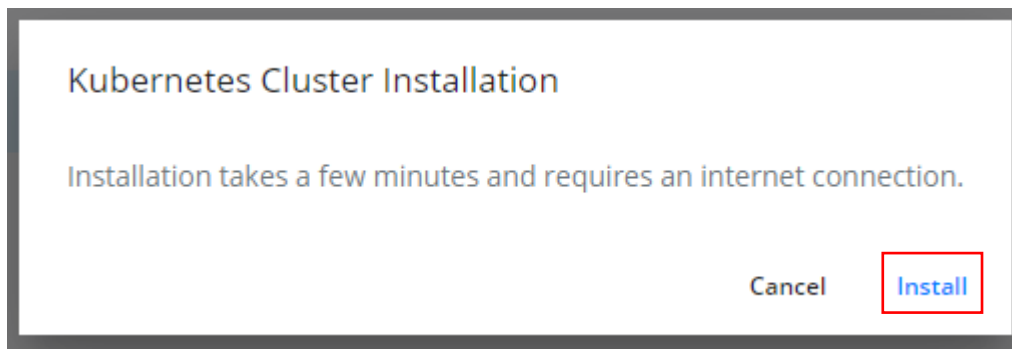
b. Click on `Kubernetes` in the menu in settings, then make sure `Enable Kubernetes` is checked.



c. If your `Enable Kubernetes` is not checked, check it, then click on the `Apply & Restart` button at the bottom right.



d. If the prompt below pops out, click on `Install` to continue.



5. Run the following commands in order:

a. `kubectl apply -f 01-mariadb-statefulset.yaml`

```
D:\Project Folder\OTOT\OTOT_Task_A2\kubernetes>kubectl apply -f 01-mariadb-statefulset.yaml
namespace/cs3219 created
statefulset.apps/cs3219-db created
```

b. `kubectl apply -f 02-mariadb-service.yaml`

```
D:\Project Folder\OTOT\OTOT_Task_A2\kubernetes>kubectl apply -f 02-mariadb-service.yaml
service/cs3219-db created
```

c. `kubectl apply -f 03-catalog-deployment.yaml`

```
D:\Project Folder\OTOT\OTOT_Task_A2\kubernetes>kubectl apply -f 03-catalog-deployment.yaml
deployment.apps/catalog-service-deployment created
```

d. `kubectl apply -f 04-catalog-service.yaml`

```
D:\Project Folder\OTOT\OTOT_Task_A2\kubernetes>kubectl apply -f 04-catalog-service.yaml
service/catalog-service created
```

6. Run the command `'kubectl get all -n cs3219'` and ensure that all your deployments are running.

```
D:\Project Folder\OTOT\OTOT_Task_A2\kubernetes>kubectl get all -n cs3219
```

NAME	READY	STATUS	RESTARTS	AGE
pod/catalog-service-deployment-d645b6cc5-gfvjc	1/1	Running	0	3m21s
pod/catalog-service-deployment-d645b6cc5-hqsd1	1/1	Running	0	3m21s
pod/catalog-service-deployment-d645b6cc5-tbww5	1/1	Running	0	3m21s
pod/cs3219-db-0	1/1	Running	0	4m15s

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
service/catalog-service	NodePort	10.102.50.220	<none>	8080:31307/TCP	3m16s
service/cs3219-db	NodePort	10.107.253.217	<none>	3306:31306/TCP	3m26s

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
deployment.apps/catalog-service-deployment	3/3	3	3	3m21s

NAME	DESIRED	CURRENT	READY	AGE
replicaset.apps/catalog-service-deployment-d645b6cc5	3	3	3	3m21s

NAME	READY	AGE
statefulset.apps/cs3219-db	1/1	4m15s

7. Open your web browser and go to <http://localhost:31307/catalogs>. If you receive the following data shown below on your web browser, that means your Kubernetes has been successfully set up.



The screenshot shows a web browser window with the address bar displaying `localhost:31307/catalogs`. The page content is a large JSON array representing a catalog of items. Each item is an object with an `id` and a `name`, and each object is enclosed in its own array. The items include various household and outdoor objects like crowbars, deodorants, binoculars, soap, coffee mugs, cows, toothpicks, pants, harmonicas, TVs, purses, flags, spools of thread, incense holders, spice bottles, hamsters, safety pins, belts, carrots, kitchen knives, spools of string, water bottles, beaded necklaces, towels, ropes, toy boats, ladles, magazines, hair brushes, lotions, chains, spools of ribbon, sandglasses, snowglobes, thermometers, laser pointers, plush cats, lighters, ice picks, microphones, sand paper, photo albums, bottles of glue, sidewalks, egg timers, pairs of tongs, bonesaws, maps, erasers, pens, cats, radios, eggs, sticker books, keychains, straws, pairs of rubber gloves, empty jars, pandas, papers, magnifying glasses, clocks, socks, perfumes, fish, limes, pairs of knitting needles, screwdrivers, purses/bags, shanks, containers of pudding, bottle caps, ice cream sticks, cellphones, balloons, plush dogs, tomatoes, frying pans, plush rabbits, bananas, snail shells, twisters, tweezers, wristwatches, rats, toy soldiers, keyboards, picture frames, broccolis, phones, extension cords, beaded bracelets, miniature portraits, and hand fans.

```
{
  "hostname": "catalog-service-deployment-d645b6cc5-tbw5",
  "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": "shank", "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}]
  ]
}
```