

Docker - 3 Tier Architecture Implementation

In this project, created 3 tier architecture using docker. I uploaded all the files (including screenshots file 3-tier-arch.docx) to the github (<https://github.com/sudheerkumar19/Docker-Project.git>). I cloned that file, and I opened that folder and executed all the commands.

1. Creating a network with todo-app

```
PS C:\Users\Sudheerkumar_Koppolu\Desktop\getting-started-master\app> docker run -d --network todo-app --network-alias mysql -v todo-mysql-data:/var/lib/mysql -e MYSQL_ROOT_PASSWORD=secret -e MYSQL_DATABASE=todos mysql:5.7
4aff7be3c09d60696b1e340a2cc2313762a2759f761fed519940db562ec3105b
```

2. To display all containers with container id.

```
PS C:\Users\Sudheerkumar_Koppolu\Desktop\getting-started-master\app> docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
4aff7be3c09d	mysql:5.7	"docker-entrypoint.s..."	3 minutes ago	Exited
(1) 2 minutes ago		quirky_leavitt		
5b4a35615ed0	node:12-alpine	"docker-entrypoint.s..."	15 minutes ago	Up 15 m
inutes	0.0.0.0:3000->3000/tcp	stupefied_poitras		
ed4a63d1a0b8	dockersamples/examplevotingapp_result:before	"node server.js"	16 minutes ago	Up 16 m
inutes	80/tcp	vote_result.1.y3ti3i0wud69vbbujiaxgjoux		
c0329933eae3	mysql:5.7	"docker-entrypoint.s..."	25 minutes ago	Up 25 m
inutes	3306/tcp, 33060/tcp	charming_murdock		
5b37cfe0bb31	dockersamples/examplevotingapp_result:before	"node server.js"	33 minutes ago	Exited
(1) 16 minutes ago		vote_result.1.e55znfx7pudcon57wd6ptn0i4		
4605f1f77288	postgres:9.4	"docker-entrypoint.s..."	33 minutes ago	Up 33 m
inutes	5432/tcp	vote_db.1.7dl3snnei60p5ygix85w1sxn2		
56674fc7fbae	redis:alpine	"docker-entrypoint.s..."	33 minutes ago	Up 33 m
inutes	6379/tcp	vote_redis.1.yyxipe6r4bwn4ot7svbj460sw		
d92a52d49d52	dockersamples/examplevotingapp_vote:before	"gunicorn app:app -b..."	34 minutes ago	Up 34 m
inutes	80/tcp	vote_vote.2.csbcyr3vfslrdte17l2sixov3		
aac3d8b1bc1f	dockersamples/visualizer:stable	"npm start"	34 minutes ago	Up 34 m
inutes	8080/tcp	vote_visualizer.1.u5e8q7y5qus7bp3hej11cz80e		
9bdba649838a	dockersamples/examplevotingapp_vote:before	"gunicorn app:app -b..."	34 minutes ago	Up 34 m
inutes	80/tcp	vote_vote.1.pt7sdwa4x69goqh8yibbl0aoi		
e8181cca0b1e	dockersamples/examplevotingapp_worker:latest	"/bin/sh -c 'dotnet ..."	34 minutes ago	Up 34 m
inutes		vote_worker.1.hy72ogblxf3s4c4fyam14qbi6		

3. To confirm we have the database up and running, connect to the database and verify it connects. When password prompts, enter secret.

```
PS C:\Users\Sudheerkumar_Koppolu\Desktop\getting-started-master\app> docker exec -it c0329933eae3 mysql -u root -p todos
Enter password:
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 5.7.39 MySQL Community Server (GPL)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

4. To see available databases in mysql.

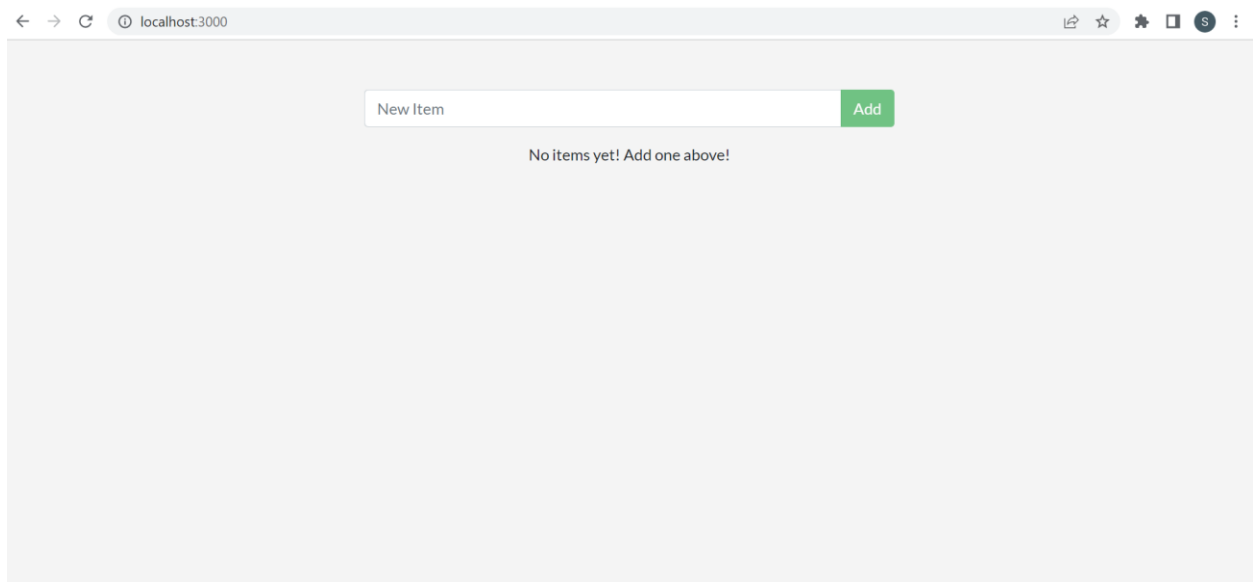
```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| todos |
+-----+
5 rows in set (0.00 sec)

mysql>
```

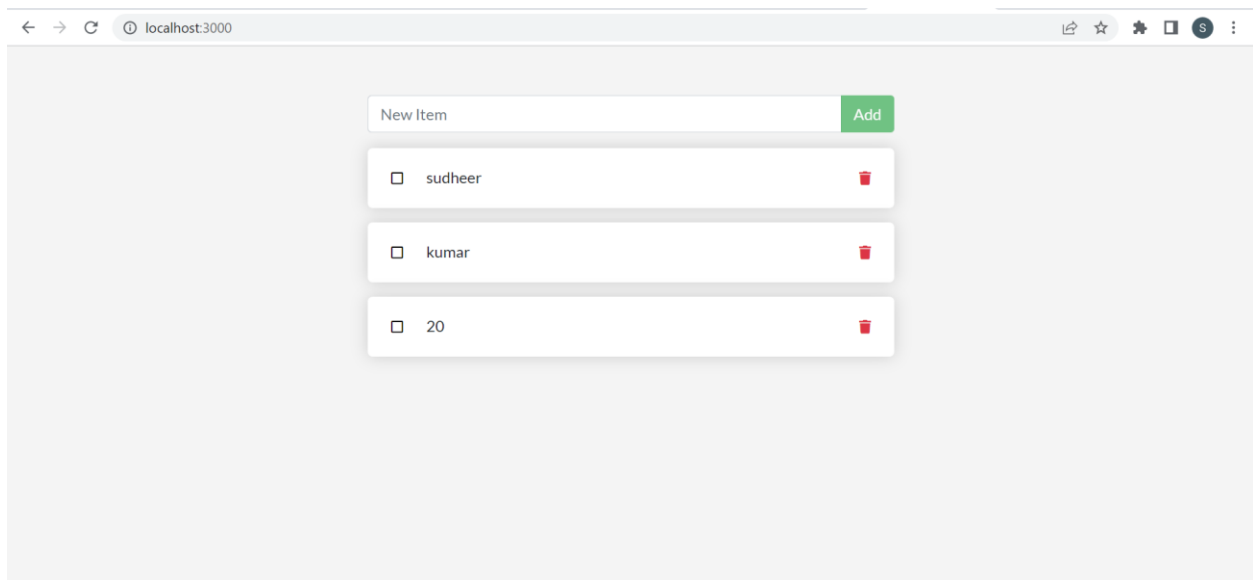
5. Exit from the database.

```
mysql> exit
Bye
PS C:\Users\Sudheerkumar_Koppolu\Desktop\getting-started-master\app> docker run -dp 3000:3000 -w /app -v "$(pwd):/app" --network todo-app -e MYSQL_HOST=mysql -e MYSQL_USER=root -e MYSQL_PASSWORD=secret -e MYSQL_DB=todos node:12-alpine sh -c "yarn install && yarn run dev"
f58c3567f2007397aee550645bf469341ed6fdeeb0839cf9b2e42f64daf59bf3
docker: Error response from daemon: driver failed programming external connectivity on endpoint serene_khayyam (c2a06218ed67da4ce43de9eb967ad2a204f4ac10b82d61c81a0aefed884ce6d9): Bind for 0.0.0.0:3000 failed: port is already allocated.
PS C:\Users\Sudheerkumar_Koppolu\Desktop\getting-started-master\app>
```

6. Open the todo app in the browser with port – 3000.



7. Enter some data into the fields.



8. Now, again connect to the database

```
PS C:\Users\Sudheerkumar_Koppolu\Desktop\getting-started-master\app> docker exec -it c0329933eae3 mysql -u root -p todos
Enter password:
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 5.7.39 MySQL Community Server (GPL)

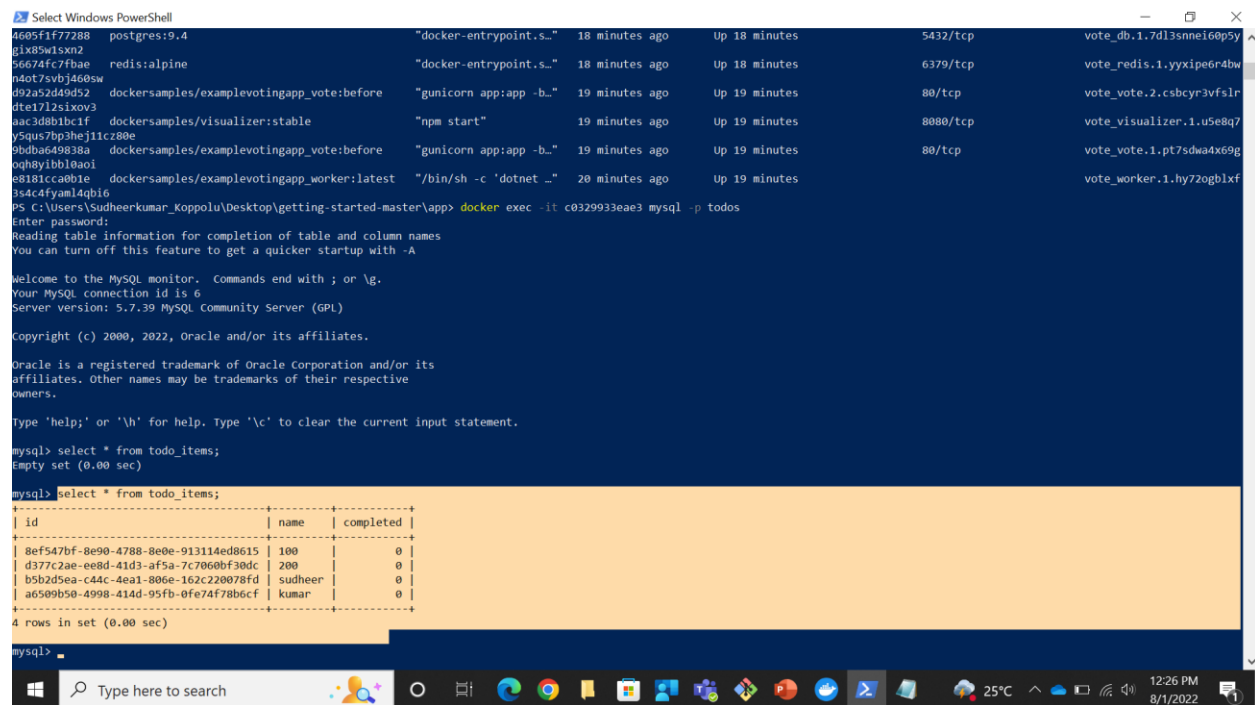
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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

9. To see the data available in the todo database. (Which we entered in the browser that should be displayed here.)



The screenshot shows a Windows PowerShell terminal window. The top part displays the output of the `docker ps` command, listing several containers. The bottom part shows the execution of a MySQL query to retrieve data from the `todo_items` table.

Docker Containers:

Container ID	Name	Image	Command	Created	Up	Port(s)	Network
4605f1f77288	postgres:9.4	postgres:9.4	"docker-entrypoint.s..."	18 minutes ago	Up 18 minutes	5432/tcp	vote_db.1.7d13snei60p5y
g1x85w1sxn2	redis:alpine	redis:alpine	"docker-entrypoint.s..."	18 minutes ago	Up 18 minutes	6379/tcp	vote_redis.1.yyxipe6r4bw
nd0t7svbj460sw	dockersamples/examplevotingapp_vote:before	gunicorn app:app	"gunicorn app:app -b..."	19 minutes ago	Up 19 minutes	80/tcp	vote_vote.2.csbcyr3vflr
d92a52d4d9d52	dockersamples/visualizer:stable	npm start	"npm start"	19 minutes ago	Up 19 minutes	8080/tcp	vote_visualizer.1.u5e8q7
dte1712s1xov2	dockersamples/examplevotingapp_vote:before	gunicorn app:app	"gunicorn app:app -b..."	19 minutes ago	Up 19 minutes	80/tcp	vote_vote.1.pt7sdwa4x69g
aac3d8b1bc1f	dockersamples/examplevotingapp_worker:latest	"/bin/sh -c 'dotnet ..."	"/bin/sh -c 'dotnet ..."	20 minutes ago	Up 19 minutes		vote_worker.1.hy72ogblxf

MySQL Query Result:

```
mysql> select * from todo_items;
Empty set (0.00 sec)

mysql> select * from todo_items;
+----+-----+-----+
| id | name | completed |
+----+-----+-----+
| 8ef547bf-8e90-4788-8e0e-913114ed8615 | 100 | 0 |
| d377c2ae-ee8d-41d3-af5a-7c7060bf30dc | 200 | 0 |
| b5b2d5ea-c44c-4ea1-806e-162c220078fd | sudheer | 0 |
| a6509b50-4998-414d-95fb-0fe74f78b6cf | kumar | 0 |
+----+-----+-----+
4 rows in set (0.00 sec)
```