

## ENPM631: FINAL

Submitted By: -

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### INTRODUCTION

My project consists of two (2) Docker containers. The first container is deployed as a custom-made DNS server. The DNS server is configured with one (1) domain: *project.com*, and the following names: -

1. *server1.project.com*: 10.128.10.11
2. *host1.project.com*: 10.128.100.101
3. *host2.project.com*: 10.128.200.102

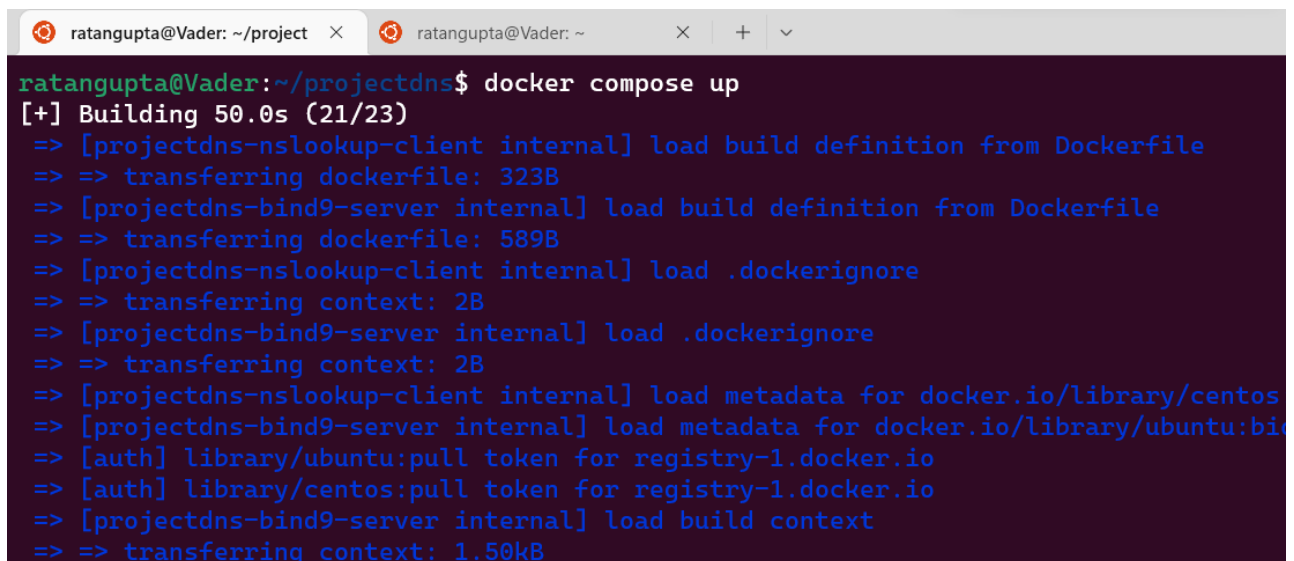
The second container is deployed to act as a client. Its main function is to run *nslookup* on the above-mentioned names to resolve them to their corresponding IP addresses.

The container acting as a DNS server can be accessed from the host machine as it is exposed using port-forwarding. The user can run *nslookup server1.project.com bind9-server* to resolve the name.

### WALKTHROUGH

Traverse into the directory *projectdns* which contains the two (2) more directories: *server*, and *client*, and the *docker-compose.yml* file.

Once in the directory, run the command *docker compose up*.

A terminal window screenshot showing the execution of the 'docker compose up' command. The prompt is 'ratangupta@Vader: ~/projectdns\$'. The output shows the process of building and starting containers. It includes messages like '[+] Building 50.0s (21/23)', 'load build definition from Dockerfile', 'transferring dockerfile: 323B', 'load build definition from Dockerfile', 'transferring dockerfile: 589B', 'load .dockerignore', 'transferring context: 2B', 'load metadata for docker.io/library/centos', 'load metadata for docker.io/library/ubuntu:bi', 'pull token for registry-1.docker.io', and 'transferring context: 1.50kB'.

```
ratangupta@Vader: ~/project X ratangupta@Vader: ~ X + v
ratangupta@Vader:~/projectdns$ docker compose up
[+] Building 50.0s (21/23)
=> [projectdns-nslookup-client internal] load build definition from Dockerfile
=> => transferring dockerfile: 323B
=> [projectdns-bind9-server internal] load build definition from Dockerfile
=> => transferring dockerfile: 589B
=> [projectdns-nslookup-client internal] load .dockerignore
=> => transferring context: 2B
=> [projectdns-bind9-server internal] load .dockerignore
=> => transferring context: 2B
=> [projectdns-nslookup-client internal] load metadata for docker.io/library/centos
=> [projectdns-bind9-server internal] load metadata for docker.io/library/ubuntu:bi
=> [auth] library/ubuntu:pull token for registry-1.docker.io
=> [auth] library/centos:pull token for registry-1.docker.io
=> [projectdns-bind9-server internal] load build context
=> => transferring context: 1.50kB
```

Running *docker compose up* will build and run the containers. The DNS server will continue to run until it is terminated manually. The client will run three (3) *nslookup* commands to resolve

the three (3) names specified and then exit with code 0. The client's behavior is acceptable since it is completing the functions it is supposed to perform before it terminates. The output of *docker compose up* is as follows: -

```
[+] Running 3/1
# Network projectdns_default          Created
# Container projectdns-nslookup-client-1 Created
# Container projectdns-bind9-server-1 Created
Attaching to projectdns-bind9-server-1, projectdns-nslookup-client-1
projectdns-bind9-server-1 | * Stopping domain name service... bind9      rndc: connect failed: 127.0.0.1#953: connection refused
projectdns-bind9-server-1 |
projectdns-bind9-server-1 | * Starting domain name service... bind9 [ OK ]
projectdns-nslookup-client-1 | Server:      bind9-server
projectdns-nslookup-client-1 | Address:     192.168.16.3#53
projectdns-nslookup-client-1 |
projectdns-nslookup-client-1 | Name:       server1.project.com
projectdns-nslookup-client-1 | Address:    10.128.10.11
projectdns-nslookup-client-1 |
projectdns-nslookup-client-1 | Server:      bind9-server
projectdns-nslookup-client-1 | Address:     192.168.16.3#53
projectdns-nslookup-client-1 |
projectdns-nslookup-client-1 | Name:       host1.project.com
projectdns-nslookup-client-1 | Address:    10.128.100.101
projectdns-nslookup-client-1 |
projectdns-nslookup-client-1 | Server:      bind9-server
projectdns-nslookup-client-1 | Address:     192.168.16.3#53
projectdns-nslookup-client-1 |
projectdns-nslookup-client-1 | Name:       host2.project.com
projectdns-nslookup-client-1 | Address:    10.128.200.102
projectdns-nslookup-client-1 |
projectdns-nslookup-client-1 exited with code 0
```

The DNS server can be accessed by the host machine as follows: -

```
ratangupta@Vader: ~/projectc  X  ratangupta@Vader: ~  X  +  v
ratangupta@Vader:~$ nslookup server1.project.com localhost
Server:      localhost
Address:     127.0.0.1#53

Name:       server1.project.com
Address:    10.128.10.11

ratangupta@Vader:~$ nslookup host1.project.com localhost
Server:      localhost
Address:     127.0.0.1#53

Name:       host1.project.com
Address:    10.128.100.101

ratangupta@Vader:~$ nslookup host2.project.com localhost
Server:      localhost
Address:     127.0.0.1#53

Name:       host2.project.com
Address:    10.128.200.102

ratangupta@Vader:~$
```