

# Project Details

Task: A1  
Done by: Tan Wei Jie (A0202017B)  
Repo Link: [https://github.com/tanweijie123/CS3219\\_Sandbox/tree/main/Task\\_A/A1](https://github.com/tanweijie123/CS3219_Sandbox/tree/main/Task_A/A1)

## Instructions on how to run

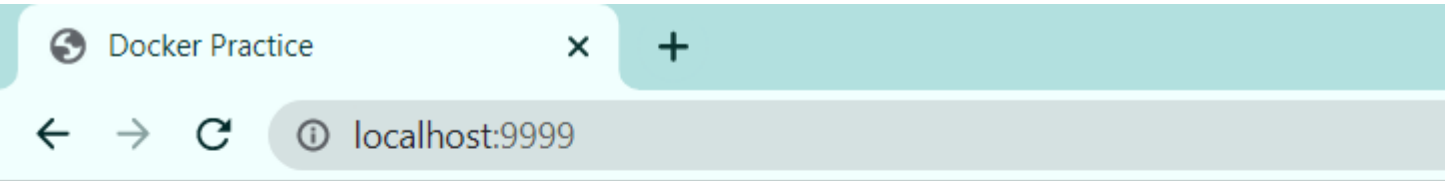
### Instructions on how to run the one static page webserver only

1. Change Directory to `A1/webserver/` . You should see a Dockerfile in this directory.
2. Run the dockerfile using `docker build -t my-static-web .` where `my-static-web` is the name given to the image.
3. To check if the build is successful, run `docker images` and ensure that `my-static-web` is there.
4. Run the command `docker run -d -p 9999:80 my-static-web` to run docker and use the port 9999 to access.
5. Open the web browser and check that `http://localhost:9999/` is showing the `index.html` of this directory.

Windows PowerShell

```
PS C:\Users\tanwe\Desktop\Git\CS3219_sandbox\Task_A\A1\webserver> docker build -t my-static-web .
[+] Building 0.3s (7/7) FINISHED
-> [internal] load build definition from Dockerfile                                0.0s
-> => transferring dockerfile: 132B                                              0.0s
-> [internal] load .dockerignore                                                  0.0s
-> => transferring context: 2B                                                  0.0s
-> [internal] load metadata for docker.io/library/nginx:alpine                  0.0s
-> [internal] load build context                                                  0.0s
-> => transferring context: 607B                                                0.0s
-> CACHED [1/2] FROM docker.io/library/nginx:alpine                            0.0s
-> [2/2] COPY . /usr/share/nginx/html                                           0.1s
-> exporting to image                                                            0.0s
-> => exporting layers                                                            0.0s
-> => writing image sha256:53fc8bbcf0bf648e719e0ab35d6193b5aa61003f559ee239536984c7fd405369 0.0s
-> => naming to docker.io/library/my-static-web                                0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
PS C:\Users\tanwe\Desktop\Git\CS3219_sandbox\Task_A\A1\webserver> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
my-static-web       latest             53fc8bbcf0bf       15 seconds ago    22.9MB
nginx               alpine             513f9a9d8748       3 weeks ago       22.9MB
docker/dev-environments-default  stable-1          7c85b0303242       7 weeks ago       607MB
docker/desktop-git-helper  5a4fca126aadcd3f6cc3a011aa991de982ae7000  efe2d67c403b       2 months ago     44.2MB
fedora               34                 dce66322d647       2 months ago     178MB
dockersamples/static-site  latest            f589ccde7957       5 years ago       191MB
PS C:\Users\tanwe\Desktop\Git\CS3219_sandbox\Task_A\A1\webserver> docker run -d -p 9999:80 my-static-web
8f4d934bf475359924bb09392ee5393d1f2b14b5f549c95ef089d563ce1c1e60
PS C:\Users\tanwe\Desktop\Git\CS3219_sandbox\Task_A\A1\webserver>
```



Welcome to WeiJie's static page.

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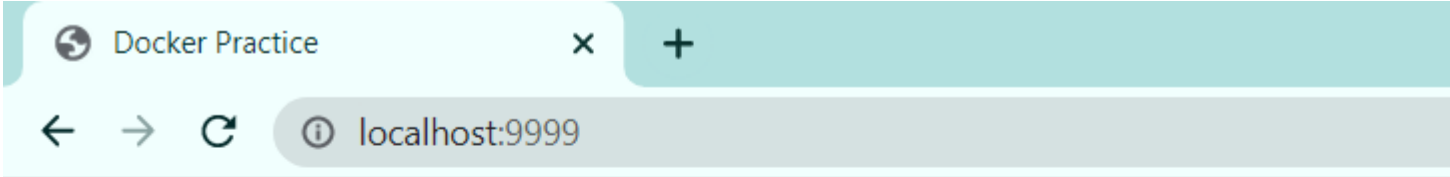
### Instructions on how to set up reverse proxy

1. In this directory, run `docker-compose up -d` to allow docker to create a network between the 2 dockers (webserver and reverse\_proxy).  
The command will:
  - o Perform a docker build in `./webserver` and name this image `my-static-web`
  - o Pull `nginx:alpine` from docker library and map the `nginx.conf` into the reverse proxy docker settings.

```
Windows PowerShell
PS C:\Users\tanwe\Desktop\Git\CS3219_sandbox\Task_A\A1> docker-compose up -d
Creating network "a1_default" with the default driver
Building my-static-web
[+] Building 0.3s (7/7) FINISHED
-> [internal] load build definition from Dockerfile                                0.0s
-> => transferring dockerfile: 132B                                              0.0s
-> [internal] load .dockerignore                                                  0.0s
-> => transferring context: 2B                                                    0.0s
-> [internal] load metadata for docker.io/library/nginx:alpine                  0.0s
-> [internal] load build context                                                  0.0s
-> => transferring context: 760B                                                  0.0s
-> CACHED [1/2] FROM docker.io/library/nginx:alpine                            0.0s
-> [2/2] COPY . /usr/share/nginx/html                                           0.0s
-> exporting to image                                                            0.0s
-> => exporting layers                                                            0.0s
-> => writing image sha256:0822631f0b0345eef7e27ce74eedf326aaab483eddd4c697a1c433c3f6ac89cf 0.0s
-> => naming to docker.io/library/my-static-web                                0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
WARNING: Image for service my-static-web was built because it did not already exist. To rebuild this image you must use
`docker-compose build` or `docker-compose up --build`.
Creating my_static_web ... done
Creating reverse_proxy ... done
PS C:\Users\tanwe\Desktop\Git\CS3219_sandbox\Task_A\A1> docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS
e49a181413b2   nginx:alpine   "/docker-entrypoint...." 9 seconds ago  Up 6 seconds  0.0.0.0:80->80/tcp, :::80->80/tc
p              reverse_proxy
138c48e1f1f9   my-static-web  "/docker-entrypoint...." 11 seconds ago Up 8 seconds  0.0.0.0:9999->80/tcp, :::9999->8
0/tcp         my_static_web
PS C:\Users\tanwe\Desktop\Git\CS3219_sandbox\Task_A\A1>
```

2. Check that to directly access `my-static-web` , you have to use port 9999. Using port 80 will not work.

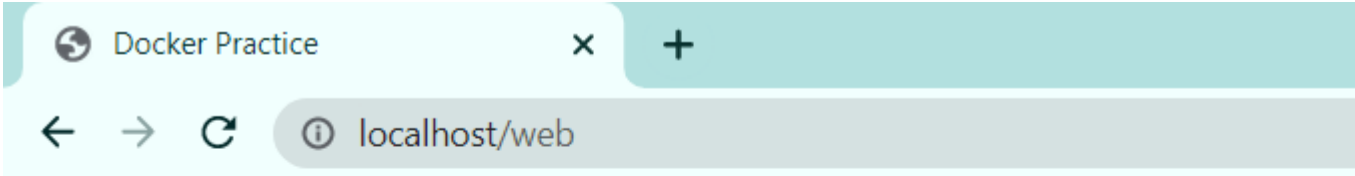


Welcome to WeiJie's static page.

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3. Using the reverse proxy, we can access `my-static-web` via `http://localhost/web` . This will utilise the reverse proxy mapping and not directly access `my-static-web` using port 9999.



Welcome to WeiJie's static page.

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# Learning Points

- Since the webserver is using an image which has a default web, this project utilise this and overwrite the default page, hence the Dockerfile do not have extra steps like `EXPOSE` or `npm install` .
- Need to add a `/` at the back of the reverse proxy link, otherwise, the `/web` will be forwarded to `my-static-web` , resulting in page not found.

# Resources

Resources that are used and referred to during the creation of this project.

Desc	Link
Docker Tutorial	<a href="https://github.com/docker/labs/blob/master/beginner/chapters/setup.md">https://github.com/docker/labs/blob/master/beginner/chapters/setup.md</a>
Docker and Nginx Reverse Proxy Video	<a href="https://youtu.be/hxngRDmHTM0">https://youtu.be/hxngRDmHTM0</a>