

# Report : Qoala DevOps Assignment

## Student Details

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  - **GitHub Repository:** [https://github.com/harryboiii07/devops-qoala-assignment-Harshit\\_Chicholikar-21UEC061](https://github.com/harryboiii07/devops-qoala-assignment-Harshit_Chicholikar-21UEC061)
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## Overview

This report outlines the debugging, error resolution, and verification steps taken to complete the DevOps assignment. The objective was to set up a Dockerized environment using Docker and Docker Compose, troubleshoot intentional errors, and confirm the application's functionality in a browser.

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## Issues Identified, Debugging Steps, and Resolutions

### 1. Nginx Configuration (nginx.conf)

- **Issue:** Multiple typing errors in the configuration file.
- **Debugging Steps:**
  - Checked Nginx container logs, which indicated syntax errors in nginx.conf.
  - Examined each line in nginx.conf to locate typos.
- **Resolution:** Corrected typos in directives:
  - worker\_process → worker\_processes
  - worker\_connection → worker\_connections
  - mime.typeess → mime.types
  - default\_typ → default\_type

### 2. Nginx Dockerfile

- **Issue:** File name, path, and command issues in the Nginx Dockerfile.
- **Debugging Steps:**
  - Attempted to build the Docker image and encountered errors in paths and file names.
  - Noticed that Nginx failed to start due to incorrect port specification and command syntax.
- **Resolution:** Made the following corrections:

```

PS C:\Users\ironm\OneDrive\Desktop\Harshit\webd\devops-internship-challenge\nginx> docker build -t local-nginx .
[+] Building 7.5s (2/2) FINISHED                                docker:desktop-linux
=> [internal] load build definition from Dockerfile              0.0s
=> => transferring dockerfile: 195B                             0.0s
=> ERROR [internal] load metadata for docker.io/library/nginx:latest 7.5s
-----
> [internal] load metadata for docker.io/library/nginx:latest:
-----
Dockerfile:1
-----
 1 | >>> FROM nginx:latest
 2 |
 3 |     COPY nginx.conf /etc/nginx/nginx.conf
-----
ERROR: failed to solve: nginx:latest: failed to resolve source metadata for docker.io/library/nginx:latest: docker.io/library/nginx:latest: not found

```

- Base image latests → latest
- Configuration file name nginx.conf → nginx.conf
- COPY ./html /usr/share/nginx/html → We **do not need** this line. In this case, NGINX does not need to serve any HTML files directly; it only needs the nginx.conf file to route requests to the backend.
- Port "eighty" → 80

```

PS C:\Users\ironm\OneDrive\Desktop\Harshit\webd\devops-internship-challenge\nginx> docker build -t local-nginx .
[+] Building 8.3s (2/2) FINISHED                                docker:desktop-linux
=> [internal] load build definition from Dockerfile              0.0s
=> => transferring dockerfile: 192B                             0.0s
=> [internal] load metadata for docker.io/library/nginx:latest 8.3s
Dockerfile:7
-----
 5 |     COPY ./html /usr/share/nginx/html
 6 |
 7 | >>> EXPOSE "eighty"
 8 |
 9 |     CMD ["nginx", "-g", "daemon off;"]
-----
ERROR: failed to solve: invalid containerPort: eighty

```

- Command "daemon of;" → "daemon off;"

```

PS C:\Users\ironm\OneDrive\Desktop\Harshit\webd\devops-internship-challenge\nginx> docker build -t local-nginx .
[+] Building 1.8s (7/7) FINISHED                                docker:desktop-linux
=> [internal] load build definition from Dockerfile              0.0s
=> => transferring dockerfile: 148B                             0.0s
=> [internal] load metadata for docker.io/library/nginx:latest 1.6s
=> [internal] load .dockerignore                                0.0s
=> => transferring context: 2B                                   0.0s
=> [internal] load build context                                0.0s
=> => transferring context: 32B                                  0.0s
=> [1/2] FROM docker.io/library/nginx:latest@sha256:28402db69fec7c17e179ea87882667f1e054391138f77ffa0c3eb388efc 0.0s
=> CACHED [2/2] COPY nginx.conf /etc/nginx/nginx.conf          0.0s
=> exporting to image                                           0.0s
=> => exporting layers                                          0.0s
=> => writing image sha256:dcdb712bca7c64a0d273316dfa32b3d7ef7824f0c8c2a335db218909f895b92b 0.0s
=> => naming to docker.io/library/local-nginx                  0.0s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/zov1lv17xbaalqvfwf1zdfez

What's next:
View a summary of image vulnerabilities and recommendations → docker scout quickview

```

### 3. Python Application and Dockerfile

- **Issue:** Errors in the Python application Dockerfile, including incorrect paths, port, and package names.
- **Debugging Steps:**
  - Attempted to build the Python Docker image and received errors regarding missing directories and files.
  - The application logs indicated a failure to import netiface and start on port 8000.
- **Resolution:** Corrected the issues as follows:

- Working directory apppp → app
- File name appy.py → app.py
- Package name netiface → netifaces
- Port "eight thousand" → 8000
- Command pythn → python

```
PS C:\Users\ironm\OneDrive\Desktop\Harshit\webd\devops-internship-challenge\Python> docker build -t local-python-app .
[+] Building 43.8s (9/9) FINISHED
=> [internal] load build definition from Dockerfile                                0.0s
=> => transferring dockerfile: 170B                                              0.0s
=> [internal] load metadata for docker.io/library/python:3.9                    6.1s
=> [internal] load .dockerignore                                                  0.0s
=> => transferring context: 2B                                                  0.0s
=> [1/4] FROM docker.io/library/python:3.9@sha256:ed8b9dd4e9f89c111f4bdb85a55f8c9f0e22796a298449380b15f627d9914 16.5s
=> => resolve docker.io/library/python:3.9@sha256:ed8b9dd4e9f89c111f4bdb85a55f8c9f0e22796a298449380b15f627d99140 0.0s
=> => sha256:24e94023d80962f8ad8e7a968fad0ea47c4fd9992938e18270f8f49859a35a62 6.30kB / 6.30kB 0.0s
=> => sha256:ccecc6c1c4bf5a8539f053b01dda5a0fba46a5b04afdd30fb30dcaf526778824 19.84MB / 19.84MB 9.7s
=> => sha256:63dc518f902b82e47f42908845205bcbbdd2bea1a70e1f13f4fb0859fbfd91671 250B / 250B 6.5s
=> => sha256:ed8b9dd4e9f89c111f4bdb85a55f8c9f0e22796a298449380b15f627d9914095 10.35kB / 10.35kB 0.0s
=> => sha256:980816fef8aa0a957c9ac5bc4502951bdca106c77f1578d529431cc30c5c61b4 2.32kB / 2.32kB 0.0s
=> => sha256:4eb48115a0423399a647666a3212b3977f31d779480dca8d8d8f9bbfb35f92e4 6.16MB / 6.16MB 10.4s
=> => sha256:4eb48115a0423399a647666a3212b3977f31d779480dca8d8d8f9bbfb35f92e4 1.5s
=> => extracting sha256:ccecc6c1c4bf5a8539f053b01dda5a0fba46a5b04afdd30fb30dcaf526778824 4.2s
=> => extracting sha256:63dc518f902b82e47f42908845205bcbbdd2bea1a70e1f13f4fb0859fbfd91671 0.0s
=> [internal] load build context                                                0.0s
=> => transferring context: 1.25kB                                              0.0s
=> [2/4] WORKDIR /app                                                         0.2s
=> [3/4] COPY app.py /app                                                       0.1s
=> [4/4] RUN pip install flask netifaces                                       20.2s
=> => exporting to image                                                         0.5s
=> => exporting layers                                                         0.4s
=> => writing image sha256:93a36d79a4a54d095bc4c024f76a7242ae6a4ea316a34335f5515ad10eb9e455 0.0s
=> => naming to docker.io/library/local-python-app                             0.0s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/twlhmpffc93y5nwphodwkvj4n
```

#### 4. Docker Compose Configuration (docker-compose.yml)

- **Issue:** Typing errors and incorrect configurations in the Docker Compose file.
- **Debugging Steps:**
  - Ran docker-compose up, which showed errors in port mapping and network configuration.
  - Examined the file to identify issues in service configurations and network settings.
- **Resolution:**
  - Corrected port mapping eighty → 80
  - Configuration path nginx.conf → nginx.conf
  - Network driver bridg → bridge
  - Removed unnecessary compelex\_option.

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#### Debugging Tools and Commands

Throughout the debugging process, the following commands and tools were essential:

- **Docker Logs:** docker logs <container\_name> to identify container-specific errors.

- **Syntax Checks:** Examined syntax errors in configuration files (e.g., nginx.conf).
  - **Build and Run Commands:** Used docker build and docker-compose up to catch build and runtime errors.
  - **File Inspection:** Manually inspected paths, filenames, and commands for typos.
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## Verification

### 1. Application Testing:

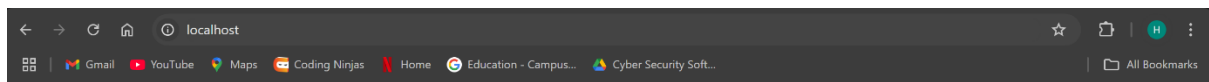
- Launched the application using Docker Compose.
- Accessed http://localhost to confirm that Nginx was correctly routing requests to the Python application.

### 2. Log Verification:

- Verified Nginx logs showed successful requests to the Python application.
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## Screenshots

- **Application Running:**



IP Address: 172.19.0.2

MAC Address: 00:00:00:00:00:00

Username: Guest

Timestamp: 2024-11-02 18:36:39

Assignment completed successfully!



- **Nginx Logs:**

```

/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: IPv6 listen already enabled
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2024/11/02 18:16:17 [emerg] 1#1: directive "worker_processes" is not terminated by ";" in /etc/nginx/nginx.conf:3
nginx: [emerg] directive "worker_processes" is not terminated by ";" in /etc/nginx/nginx.conf:3
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: IPv6 listen already enabled
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2024/11/02 18:27:50 [emerg] 1#1: directive "worker_processes" is not terminated by ";" in /etc/nginx/nginx.conf:3
nginx: [emerg] directive "worker_processes" is not terminated by ";" in /etc/nginx/nginx.conf:3
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: IPv6 listen already enabled
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
172.19.0.1 - - [02/Nov/2024:18:36:39 +0000] "GET / HTTP/1.1" 200 305 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/130.0.0.0 Safari/537.36"
172.19.0.1 - - [02/Nov/2024:18:36:39 +0000] "GET /favicon.ico HTTP/1.1" 404 207 "http://localhost/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/130.0.0.0 Safari/537.36"

```

## Cloud Deployment

- **Cloud Provider:** Azure
- **Endpoint :** <https://goala-assignment-fraehkdyccfmjcbh.canadacentral-01.azurewebsites.net/>

