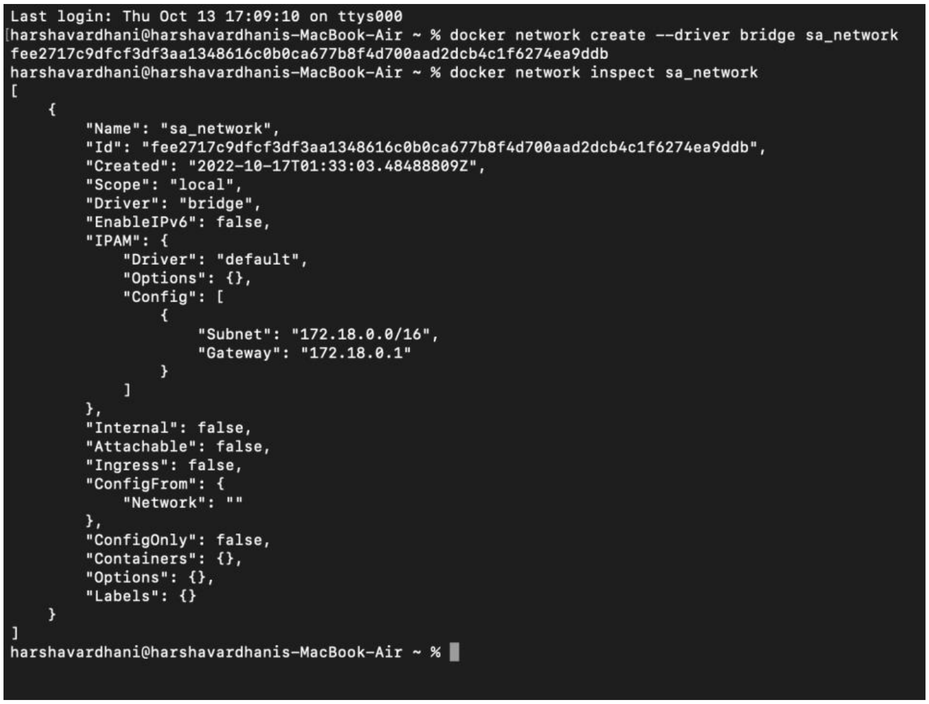
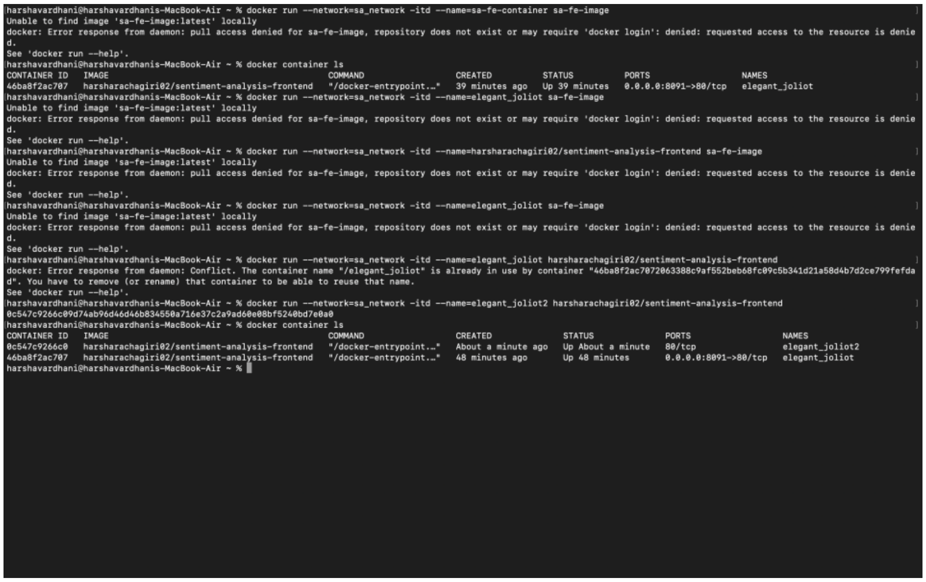
DevOps Networks

1. Communication issues?
2. Create network



```
Last login: Thu Oct 13 17:09:10 on ttys000
harshavardhani@harshavardhanis-MacBook-Air ~ % docker network create --driver bridge sa_network
fee2717c9dfcf3df3aa1348616c0b0ca677b8f4d700aad2dcb4c1f6274ea9ddb
harshavardhani@harshavardhanis-MacBook-Air ~ % docker network inspect sa_network
[
    {
        "Name": "sa_network",
        "Id": "fee2717c9dfcf3df3aa1348616c0b0ca677b8f4d700aad2dcb4c1f6274ea9ddb",
        "Created": "2022-10-17T01:33:03.48488809Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {}
    }
]
harshavardhani@harshavardhanis-MacBook-Air ~ %
```

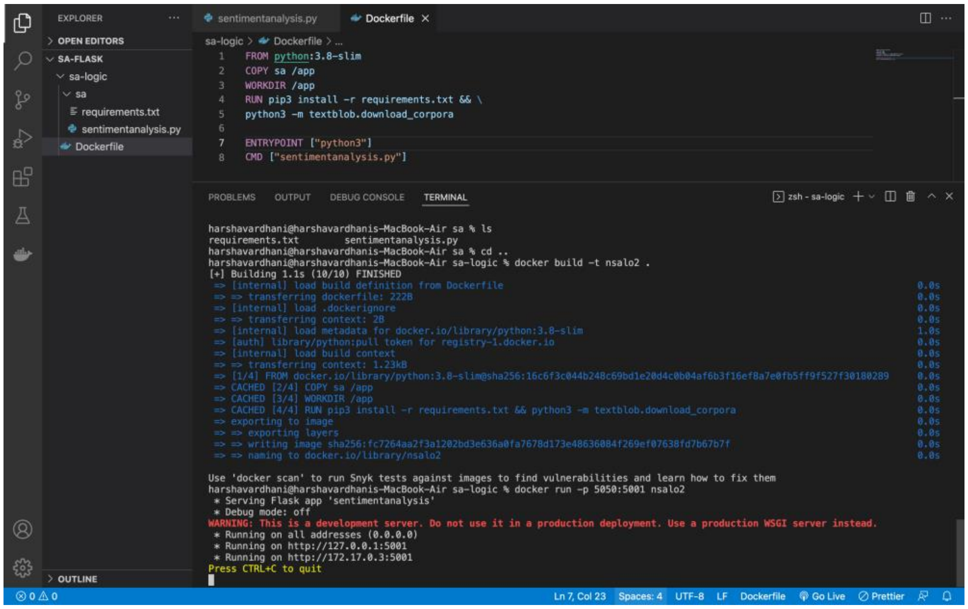
3. Connect a container to a network



```
harshavardhani@harshavardhanis-MacBook-Air ~ % docker run --network=sa_network -itd --name=sa-fe-container sa-fe-image
Unable to find image 'sa-fe-image:latest' locally
docker: Error response from daemon: pull access denied for sa-fe-image, repository does not exist or may require 'docker login': denied: requested access to the resource is denie
d.
See 'docker run --help'.
harshavardhani@harshavardhanis-MacBook-Air ~ % docker container ls
CONTAINER ID   IMAGE                                      COMMAND                  CREATED          STATUS          PORTS                  NAMES
46ba8f2ac707   harsharachagiri02/sentiment-analysis-frontend   "/docker-entrypoint.…"   39 minutes ago   Up 39 minutes   0.0.0.0:8091->80/tcp   elegant_joliot
harshavardhani@harshavardhanis-MacBook-Air ~ % docker run --network=sa_network -itd --name=elegant_joliot sa-fe-image
Unable to find image 'sa-fe-image:latest' locally
docker: Error response from daemon: pull access denied for sa-fe-image, repository does not exist or may require 'docker login': denied: requested access to the resource is denie
d.
See 'docker run --help'.
harshavardhani@harshavardhanis-MacBook-Air ~ % docker run --network=sa_network -itd --name=harsharachagiri02/sentiment-analysis-frontend sa-fe-image
Unable to find image 'sa-fe-image:latest' locally
docker: Error response from daemon: pull access denied for sa-fe-image, repository does not exist or may require 'docker login': denied: requested access to the resource is denie
d.
See 'docker run --help'.
harshavardhani@harshavardhanis-MacBook-Air ~ % docker run --network=sa_network -itd --name=elegant_joliot sa-fe-image
Unable to find image 'sa-fe-image:latest' locally
docker: Error response from daemon: pull access denied for sa-fe-image, repository does not exist or may require 'docker login': denied: requested access to the resource is denie
d.
See 'docker run --help'.
harshavardhani@harshavardhanis-MacBook-Air ~ % docker run --network=sa_network -itd --name=elegant_joliot harsharachagiri02/sentiment-analysis-frontend
docker: Error response from daemon: Conflict. The container name "/elegant_joliot" is already in use by container "46ba8f2ac7072063388c9af552beb68fc09c5b341d21a58d4b7d2ce799fefda
d". You have to remove (or rename) that container to be able to reuse that name.
See 'docker run --help'.
harshavardhani@harshavardhanis-MacBook-Air ~ % docker run --network=sa_network -itd --name=elegant_joliot2 harsharachagiri02/sentiment-analysis-frontend
0c547c9266c09d74ab96d46d46b834550a716e37c2a9ad60e08bf5240bd7e0a0
harshavardhani@harshavardhanis-MacBook-Air ~ % docker container ls
CONTAINER ID   IMAGE                                      COMMAND                  CREATED              STATUS              PORTS                  NAMES
0c547c9266c0   harsharachagiri02/sentiment-analysis-frontend   "/docker-entrypoint.…"   About a minute ago   Up About a minute   80/tcp                 elegant_joliot2
46ba8f2ac707   harsharachagiri02/sentiment-analysis-frontend   "/docker-entrypoint.…"   48 minutes ago       Up 48 minutes       0.0.0.0:8091->80/tcp   elegant_joliot
harshavardhani@harshavardhanis-MacBook-Air ~ %
```

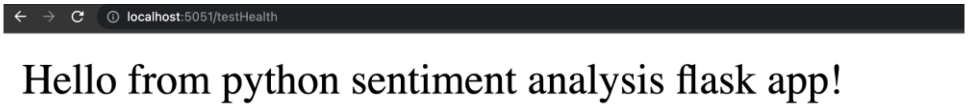
4. SA-LOGIC:

BUILD & RUN



```dockerfile
FROM python:3.8-slim
COPY sa /app
WORKDIR /app
RUN pip3 install -r requirements.txt && \
python3 -m textblob.download_corpora

ENTRYPOINT ["python3"]
CMD ["sentimentanalysis.py"]
```

```
harshavardhani@harshavardhanis-MacBook-Air sa % ls
requirements.txt        sentimentanalysis.py
harshavardhani@harshavardhanis-MacBook-Air sa % cd ..
harshavardhani@harshavardhanis-MacBook-Air sa-logic % docker build -t nsalo2 .
[+] Building 1.1s (10/10) FINISHED
 => [internal] load build definition from Dockerfile                                                               0.0s
 => => transferring dockerfile: 222B                                                                               0.0s
 => [internal] load .dockerignore                                                                                  0.0s
 => => transferring context: 2B                                                                                    0.0s
 => [internal] load metadata for docker.io/library/python:3.8-slim                                                 1.0s
 => [auth] library/python:pull token for registry-1.docker.io                                                      0.0s
 => [internal] load build context                                                                                  0.0s
 => => transferring context: 1.23kB                                                                                0.0s
 => [1/4] FROM docker.io/library/python:3.8-slim@sha256:16c6f3c044b248c69bd1e20d4c0b04af6b3f16ef8a7e0fb5ff9f527f30180289   0.0s
 => CACHED [2/4] COPY sa /app                                                                                      0.0s
 => CACHED [3/4] WORKDIR /app                                                                                      0.0s
 => CACHED [4/4] RUN pip3 install -r requirements.txt && python3 -m textblob.download_corpora                      0.0s
 => exporting to image                                                                                             0.0s
 => => exporting layers                                                                                            0.0s
 => => writing image sha256:fc7264aa2f3a1202bd3e636a0fa7678d173e48636084f269ef07638fd7b67b7f                       0.0s
 => => naming to docker.io/library/nsalo2                                                                          0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
harshavardhani@harshavardhanis-MacBook-Air sa-logic % docker run -p 5050:5001 nsalo2
 * Serving Flask app 'sentimentanalysis'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5001
 * Running on http://172.17.0.3:5001
Press CTRL+C to quit
```

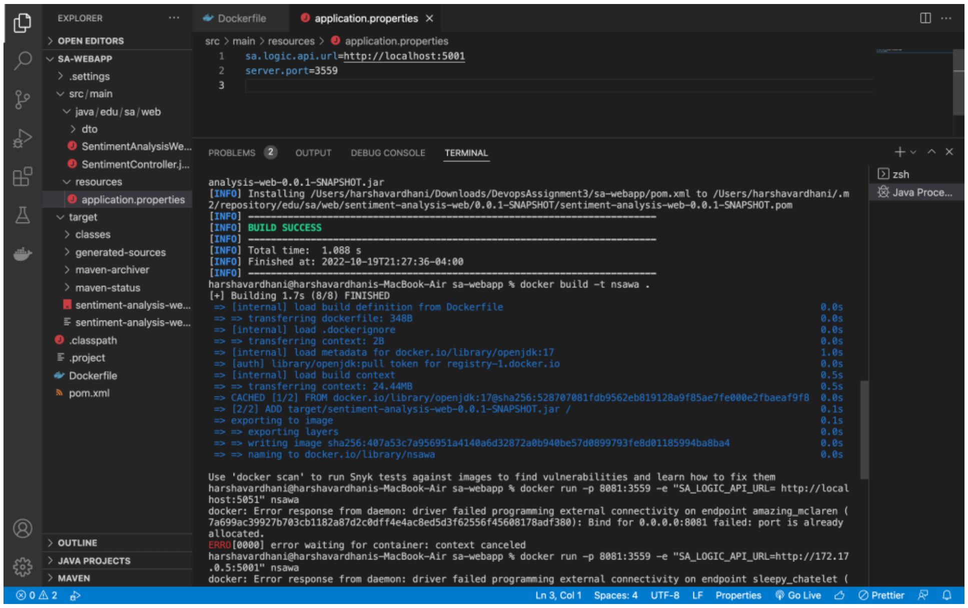


localhost:5051/testHealth

Hello from python sentiment analysis flask app!

5. SA-WEBAPP

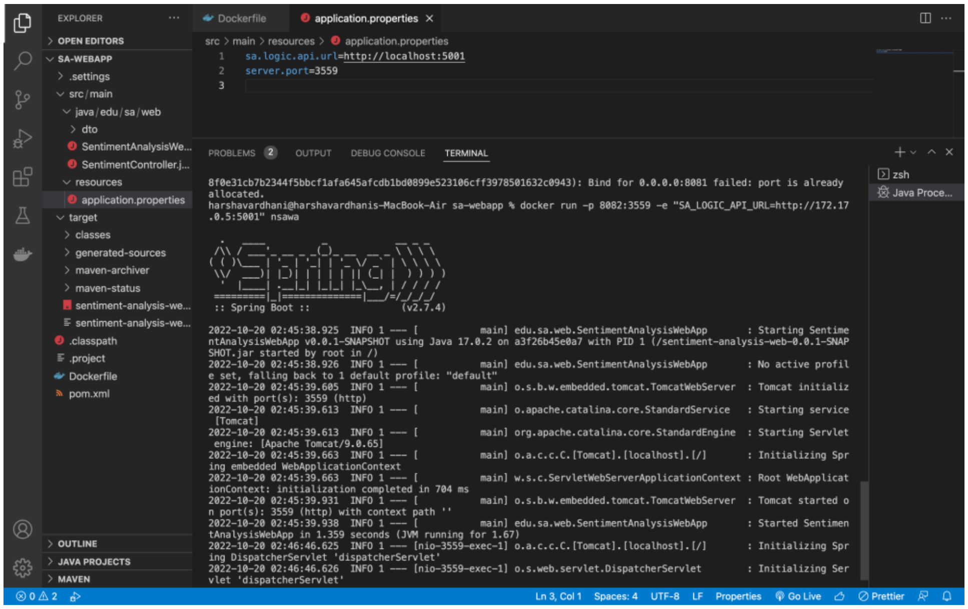
-- BUILD



```
sa.logic.api.url=http://localhost:5001
server.port=3559
```

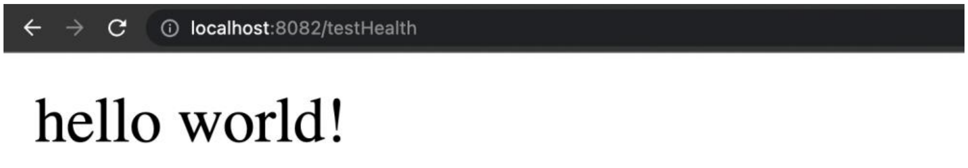
```
analysis-web-0.0.1-SNAPSHOT.jar
[INFO] Installing /Users/harshavardhani/Downloads/DevopsAssignment3/sa-webapp/pom.xml to /Users/harshavardhani/.m
2/repository/edu/sa/web/sentiment-analysis-web/0.0.1-SNAPSHOT/sentiment-analysis-web-0.0.1-SNAPSHOT.pom
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  1.088 s
[INFO] Finished at: 2022-10-19T21:27:36-04:00
[INFO] ------------------------------------------------------------------------
harshavardhani@harshavardhanis-MacBook-Air sa-webapp % docker build -t nsawa .
[+] Building 1.7s (8/8) FINISHED
 => [internal] load build definition from Dockerfile                                       0.0s
 => => transferring dockerfile: 348B                                                       0.0s
 => [internal] load .dockerignore                                                          0.0s
 => => transferring context: 2B                                                            0.0s
 => [internal] load metadata for docker.io/library/openjdk:17                              1.0s
 => [auth] library/openjdk:pull token for registry-1.docker.io                             0.0s
 => [internal] load build context                                                          0.5s
 => => transferring context: 24.44MB                                                       0.5s
 => CACHED [1/2] FROM docker.io/library/openjdk:17@sha256:528707081fdb9562eb819128a9f85ae7fe000e2fbaeaf9f8  0.0s
 => [2/2] ADD target/sentiment-analysis-web-0.0.1-SNAPSHOT.jar /                           0.1s
 => exporting to image                                                                     0.1s
 => => exporting layers                                                                    0.0s
 => => writing image sha256:407a53c7a956951a4140a6d32872a0b940be57d0899793fe8d01185994ba8ba4  0.0s
 => => naming to docker.io/library/nsawa                                                   0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
harshavardhani@harshavardhanis-MacBook-Air sa-webapp % docker run -p 8081:3559 -e "SA_LOGIC_API_URL= http://local
host:5051" nsawa
docker: Error response from daemon: driver failed programming external connectivity on endpoint amazing_mclaren (
7a699ac39927b703cb1182a87d2c0dff4e4ac8ed5d3f62556f45608178adf380): Bind for 0.0.0.0:8081 failed: port is already
allocated.
ERRO[0000] error waiting for container: context canceled
harshavardhani@harshavardhanis-MacBook-Air sa-webapp % docker run -p 8081:3559 -e "SA_LOGIC_API_URL=http://172.17
.0.5:5001" nsawa
docker: Error response from daemon: driver failed programming external connectivity on endpoint sleepy_chatelet (
```

-- RUN



```
sa.logic.api.url=http://localhost:5001
server.port=3559
```

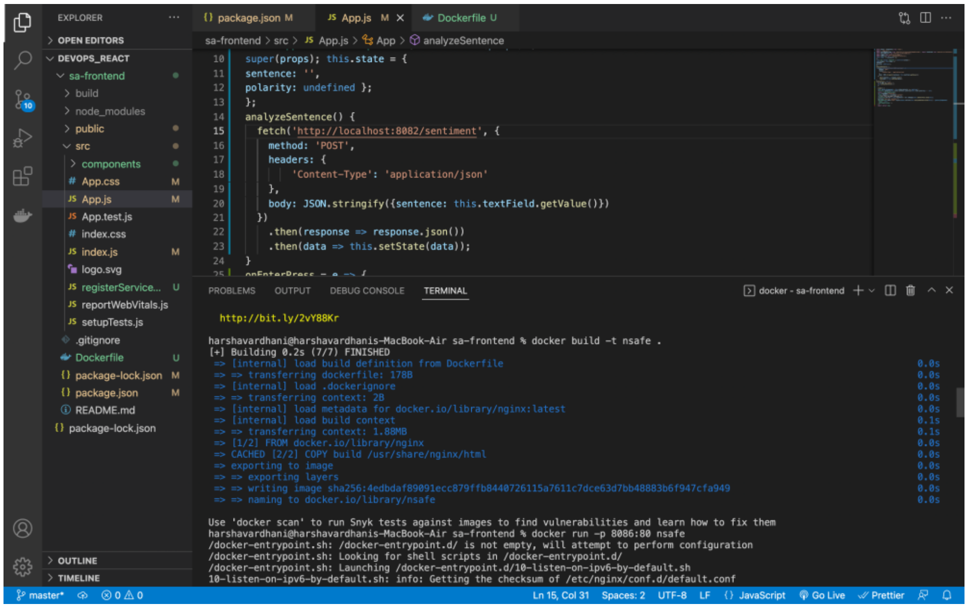
```
8f0e31cb7b2344f5bbcf1afa645afcdb1bd0899e523106cff3978501632c0943): Bind for 0.0.0.0:8081 failed: port is already
allocated.
harshavardhani@harshavardhanis-MacBook-Air sa-webapp % docker run -p 8082:3559 -e "SA_LOGIC_API_URL=http://172.17
.0.5:5001" nsawa

  .   ____          _            __ _ _
 /\\ / ___'_ __ _ _(_)_ __  __ _ \ \ \ \
( ( )\___ | '_ | '_| | '_ \/ _` | \ \ \ \
 \\/  ___)| |_)| | | | | || (_| |  ) ) ) )
  '  |____| .__|_| |_|_| |_\__, | / / / /
 =========|_|==============|___/=/_/_/_/
 :: Spring Boot ::                (v2.7.4)

2022-10-20 02:45:38.925  INFO 1 --- [           main] edu.sa.web.SentimentAnalysisWebApp       : Starting Sentime
ntAnalysisWebApp v0.0.1-SNAPSHOT using Java 17.0.2 on a3f26b45e0a7 with PID 1 (/sentiment-analysis-web-0.0.1-SNAP
SHOT.jar started by root in /)
2022-10-20 02:45:38.926  INFO 1 --- [           main] edu.sa.web.SentimentAnalysisWebApp       : No active profil
e set, falling back to 1 default profile: "default"
2022-10-20 02:45:39.605  INFO 1 --- [           main] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat initializ
ed with port(s): 3559 (http)
2022-10-20 02:45:39.613  INFO 1 --- [           main] o.apache.catalina.core.StandardService   : Starting service
 [Tomcat]
2022-10-20 02:45:39.613  INFO 1 --- [           main] org.apache.catalina.core.StandardEngine  : Starting Servlet
 engine: [Apache Tomcat/9.0.65]
2022-10-20 02:45:39.663  INFO 1 --- [           main] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spr
ing embedded WebApplicationContext
2022-10-20 02:45:39.663  INFO 1 --- [           main] w.s.c.ServletWebServerApplicationContext : Root WebApplicat
ionContext: initialization completed in 704 ms
2022-10-20 02:45:39.931  INFO 1 --- [           main] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat started o
n port(s): 3559 (http) with context path ''
2022-10-20 02:45:39.938  INFO 1 --- [           main] edu.sa.web.SentimentAnalysisWebApp       : Started Sentimen
tAnalysisWebApp in 1.359 seconds (JVM running for 1.67)
2022-10-20 02:46:46.625  INFO 1 --- [nio-3559-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spr
ing DispatcherServlet 'dispatcherServlet'
2022-10-20 02:46:46.626  INFO 1 --- [nio-3559-exec-1] o.s.web.servlet.DispatcherServlet        : Initializing Ser
vlet 'dispatcherServlet'
```


localhost:8082/testHealth

hello world!

6. SA-FRONTEND

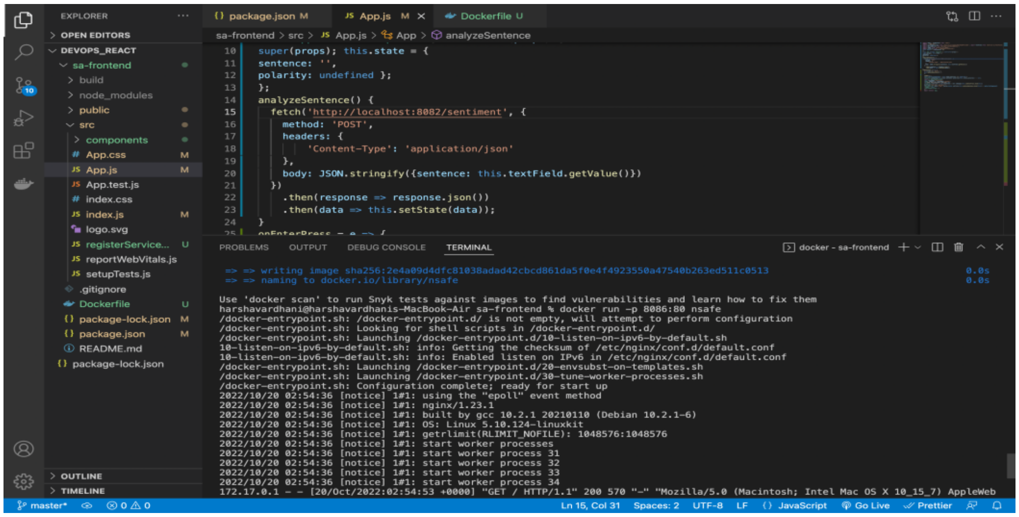
--BUILD



```javascript
super(props); this.state = {
sentence: '',
polarity: undefined };
};
analyzeSentence() {
  fetch('http://localhost:8082/sentiment', {
    method: 'POST',
    headers: {
      'Content-Type': 'application/json'
    },
    body: JSON.stringify({sentence: this.textField.getValue()})
  })
    .then(response => response.json())
    .then(data => this.setState(data));
}
onEnterPress = e => {
```

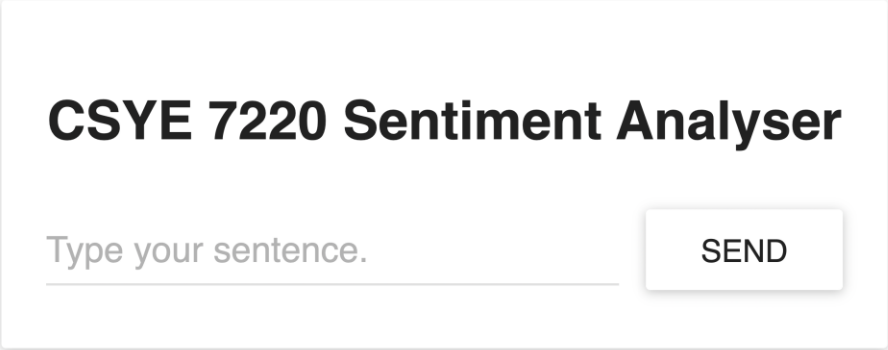
```
 http://bit.ly/2vY88Kr

harshavardhani@harshavardhanis-MacBook-Air sa-frontend % docker build -t nsafe .
[+] Building 0.2s (7/7) FINISHED
 => [internal] load build definition from Dockerfile                                           0.0s
 => => transferring dockerfile: 178B                                                           0.0s
 => [internal] load .dockerignore                                                              0.0s
 => => transferring context: 2B                                                                0.0s
 => [internal] load metadata for docker.io/library/nginx:latest                                0.0s
 => [internal] load build context                                                              0.1s
 => => transferring context: 1.88MB                                                            0.1s
 => [1/2] FROM docker.io/library/nginx                                                         0.0s
 => CACHED [2/2] COPY build /usr/share/nginx/html                                              0.0s
 => exporting to image                                                                         0.0s
 => => exporting layers                                                                        0.0s
 => => writing image sha256:4edbdaf89091ecc879ffb8440726115a7611c7dce63d7bb48883b6f947cfa949   0.0s
 => => naming to docker.io/library/nsafe                                                       0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
harshavardhani@harshavardhanis-MacBook-Air sa-frontend % docker run -p 8086:80 nsafe
/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: Getting the checksum of /etc/nginx/conf.d/default.conf
```

--RUN



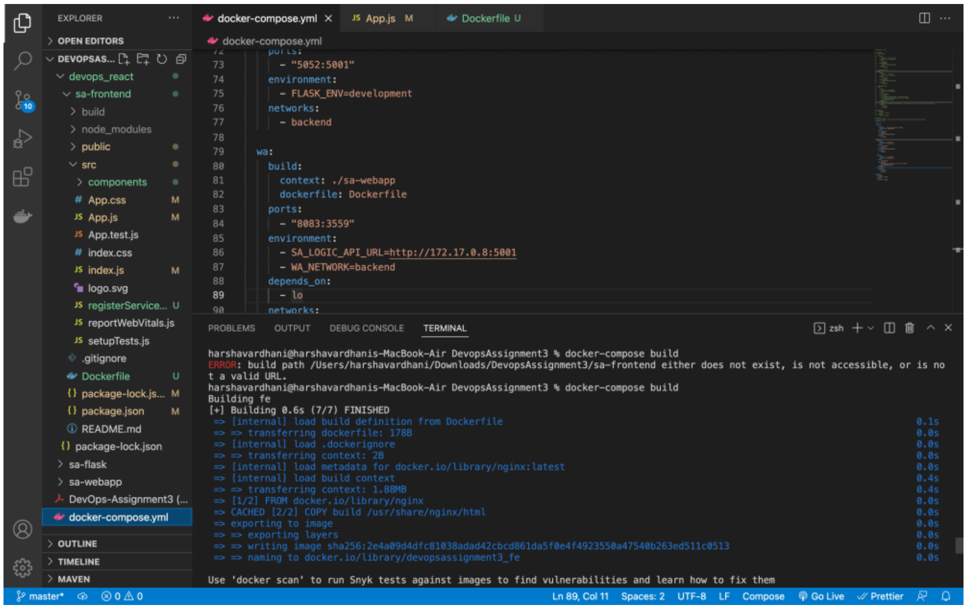
```javascript
super(props); this.state = {
sentence: '',
polarity: undefined };
};
analyzeSentence() {
  fetch('http://localhost:8082/sentiment', {
    method: 'POST',
    headers: {
      'Content-Type': 'application/json'
    },
    body: JSON.stringify({sentence: this.textField.getValue()})
  })
    .then(response => response.json())
    .then(data => this.setState(data));
}
onEnterPress = e => {
```

```
 => => writing image sha256:2e4a09d4dfc81038adad42cbcd861da5f0e4f4923550a47540b263ed511c0513   0.0s
 => => naming to docker.io/library/nsafe                                                       0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
harshavardhani@harshavardhanis-MacBook-Air sa-frontend % docker run -p 8086:80 nsafe
/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: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/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
2022/10/20 02:54:36 [notice] 1#1: using the "epoll" event method
2022/10/20 02:54:36 [notice] 1#1: nginx/1.23.1
2022/10/20 02:54:36 [notice] 1#1: built by gcc 10.2.1 20210110 (Debian 10.2.1-6)
2022/10/20 02:54:36 [notice] 1#1: OS: Linux 5.10.124-linuxkit
2022/10/20 02:54:36 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2022/10/20 02:54:36 [notice] 1#1: start worker processes
2022/10/20 02:54:36 [notice] 1#1: start worker process 31
2022/10/20 02:54:36 [notice] 1#1: start worker process 32
2022/10/20 02:54:36 [notice] 1#1: start worker process 33
2022/10/20 02:54:36 [notice] 1#1: start worker process 34
172.17.0.1 - - [20/Oct/2022:02:54:53 +0000] "GET / HTTP/1.1" 200 570 "-" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWeb
```



DOCKER-COMPOSE:

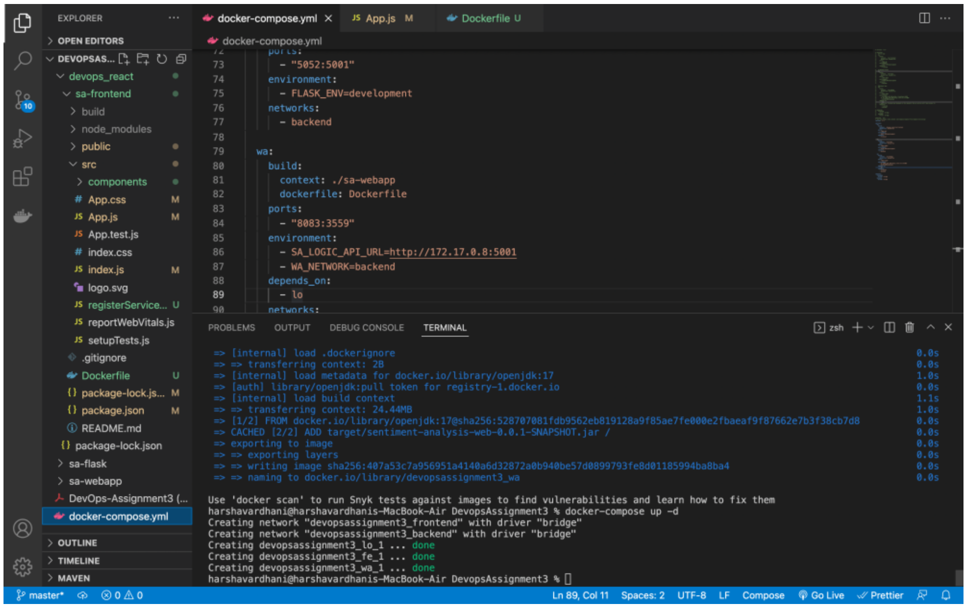
docker-compose build



```
    ports:
      - "5052:5001"
    environment:
      - FLASK_ENV=development
    networks:
      - backend

  wa:
    build:
      context: ./sa-webapp
      dockerfile: Dockerfile
    ports:
      - "8083:3559"
    environment:
      - SA_LOGIC_API_URL=http://172.17.0.8:5001
      - WA_NETWORK=backend
    depends_on:
      - lo
    networks:
```

```
harshavardhani@harshavardhanis-MacBook-Air DevopsAssignment3 % docker-compose build
ERROR: build path /Users/harshavardhani/Downloads/DevopsAssignment3/sa-frontend either does not exist, is not accessible, or is no
t a valid URL.
harshavardhani@harshavardhanis-MacBook-Air DevopsAssignment3 % docker-compose build
Building fe
[+] Building 0.6s (7/7) FINISHED
 => [internal] load build definition from Dockerfile                                                                    0.1s
 => => transferring dockerfile: 178B                                                                                    0.0s
 => [internal] load .dockerignore                                                                                       0.0s
 => => transferring context: 2B                                                                                         0.0s
 => [internal] load metadata for docker.io/library/nginx:latest                                                         0.0s
 => [internal] load build context                                                                                       0.4s
 => => transferring context: 1.88MB                                                                                     0.4s
 => [1/2] FROM docker.io/library/nginx                                                                                  0.0s
 => CACHED [2/2] COPY build /usr/share/nginx/html                                                                       0.0s
 => exporting to image                                                                                                  0.0s
 => => exporting layers                                                                                                 0.0s
 => => writing image sha256:2e4a09d4dfc81038adad42cbcd861da5f0e4f4923550a47540b263ed511c0513                            0.0s
 => => naming to docker.io/library/devopsassignment3_fe                                                                 0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
```

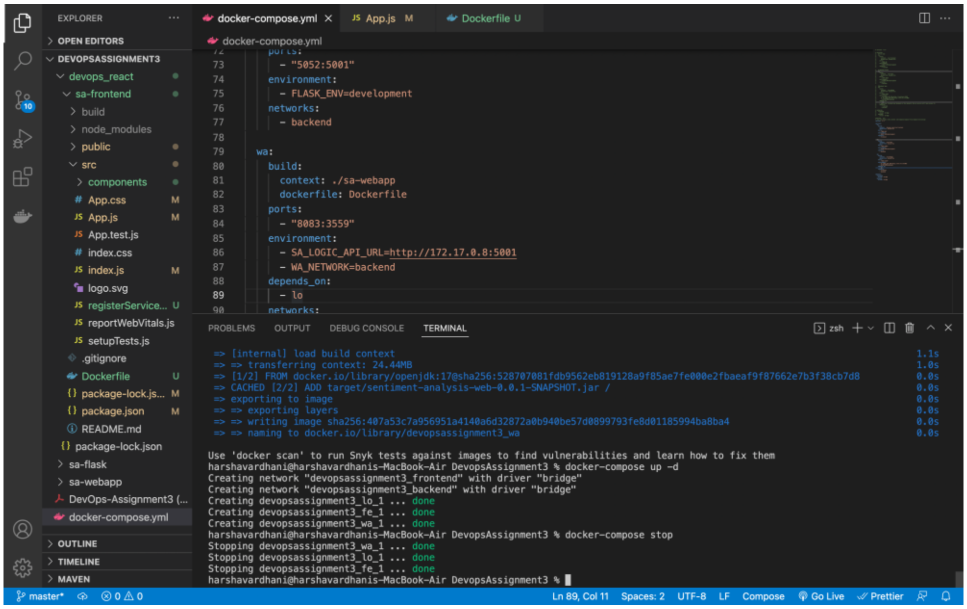
docker-compose up -d



```
    ports:
      - "5052:5001"
    environment:
      - FLASK_ENV=development
    networks:
      - backend

  wa:
    build:
      context: ./sa-webapp
      dockerfile: Dockerfile
    ports:
      - "8083:3559"
    environment:
      - SA_LOGIC_API_URL=http://172.17.0.8:5001
      - WA_NETWORK=backend
    depends_on:
      - lo
    networks:
```

```
 => [internal] load .dockerignore                                                                         0.0s
 => => transferring context: 2B                                                                           0.0s
 => [internal] load metadata for docker.io/library/openjdk:17                                             1.0s
 => [auth] library/openjdk:pull token for registry-1.docker.io                                            0.0s
 => [internal] load build context                                                                         1.1s
 => => transferring context: 24.44MB                                                                      1.0s
 => [1/2] FROM docker.io/library/openjdk:17@sha256:528707081fdb9562eb819128a9f85ae7fe000e2fbaeaf9f87662e7b3f38cb7d8  0.0s
 => CACHED [2/2] ADD target/sentiment-analysis-web-0.0.1-SNAPSHOT.jar /                                   0.0s
 => exporting to image                                                                                    0.0s
 => => exporting layers                                                                                   0.0s
 => => writing image sha256:407a53c7a956951a4140a6d32872a0b940be57d0899793fe8d01185994ba8ba4              0.0s
 => => naming to docker.io/library/devopsassignment3_wa                                                   0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
harshavardhani@harshavardhanis-MacBook-Air DevopsAssignment3 % docker-compose up -d
Creating network "devopsassignment3_frontend" with driver "bridge"
Creating network "devopsassignment3_backend" with driver "bridge"
Creating devopsassignment3_lo_1 ... done
Creating devopsassignment3_fe_1 ... done
Creating devopsassignment3_wa_1 ... done
harshavardhani@harshavardhanis-MacBook-Air DevopsAssignment3 % 
```

docker-compose stop



```
    ports:
      - "5052:5001"
    environment:
      - FLASK_ENV=development
    networks:
      - backend

  wa:
    build:
      context: ./sa-webapp
      dockerfile: Dockerfile
    ports:
      - "8083:3559"
    environment:
      - SA_LOGIC_API_URL=http://172.17.0.8:5001
      - WA_NETWORK=backend
    depends_on:
      - lo
    networks:
```

```
 => [internal] load build context                                                                         1.1s
 => => transferring context: 24.44MB                                                                      1.0s
 => [1/2] FROM docker.io/library/openjdk:17@sha256:528707081fdb9562eb819128a9f85ae7fe000e2fbaeaf9f87662e7b3f38cb7d8  0.0s
 => CACHED [2/2] ADD target/sentiment-analysis-web-0.0.1-SNAPSHOT.jar /                                   0.0s
 => exporting to image                                                                                    0.0s
 => => exporting layers                                                                                   0.0s
 => => writing image sha256:407a53c7a956951a4140a6d32872a0b940be57d0899793fe8d01185994ba8ba4              0.0s
 => => naming to docker.io/library/devopsassignment3_wa                                                   0.0s

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Creating network "devopsassignment3_frontend" with driver "bridge"
Creating network "devopsassignment3_backend" with driver "bridge"
Creating devopsassignment3_lo_1 ... done
Creating devopsassignment3_fe_1 ... done
Creating devopsassignment3_wa_1 ... done
harshavardhani@harshavardhanis-MacBook-Air DevopsAssignment3 % docker-compose stop
Stopping devopsassignment3_wa_1 ... done
Stopping devopsassignment3_lo_1 ... done
Stopping devopsassignment3_fe_1 ... done
harshavardhani@harshavardhanis-MacBook-Air DevopsAssignment3 % 
```