Lab 2:

Running the application on the host directly:

```
[root@serverb ~]# git clone https://github.com/meldafrawi/basic-flask-app.git
Cloning into 'basic-flask-app'...
remote: Enumerating objects: 32, done.
remote: Counting objects: 100% (21/21), done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 32 (delta 8), reused 8 (delta 8), pack-reused 11 (from 1)
Receiving objects: 100% (32/32), 274.91 KiB | 522.00 KiB/s, done.
Resolving deltas: 100% (8/8), done.
```

Cloning the application into the host.

```
[root@serverb basic-flask-app]# python routes.py
Traceback (most recent call last):
  File "/root/basic-flask-app/routes.py", line 1, in <module>
    from flask import Flask, render_template
ModuleNotFoundError: No module named 'flask'
```

The flask library is not installed on the system.

```
[root@serverb basic-flask-app]# dnf install python3-pip --disablerepo=VM_AppStream --disablerepo=VM_BaseOS
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use subscription-manager to register.

Last metadata expiration check: 0:59:32 ago on Fri 27 Feb 2026 02:33:55 PM EET.
Dependencies resolved.
================================================================================================================
 Package                  Architecture        Version            Repository                      Size
================================================================================================================
Installing:
 python3-pip              noarch              21.2.3-7.el9        Local_VM_AppStream              2.0 M

Transaction Summary
================================================================================================================
Install  1 Package

Total size: 2.0 M
```

Installing pip because it is not also installed.

```
[root@serverb basic-flask-app]# pip install flask
Collecting flask
  Downloading flask-3.1.3-py3-none-any.whl (103 kB)
  |████████████████████████████| 103 kB 986 kB/s
Collecting itsdangerous>=2.2.0
  Downloading itsdangerous-2.2.0-py3-none-any.whl (16 kB)
Collecting markupsafe>=2.1.1
  Downloading markupsafe-3.0.3-cp39-cp39-manylinux2014_x86_64.manylinux_2_17_x86_64.manylinux_2_28_x86_64.whl (20 kB)
Collecting werkzeug>=3.1.0
  Downloading werkzeug-3.1.6-py3-none-any.whl (225 kB)
  |████████████████████████████| 225 kB 3.3 MB/s
Collecting blinker>=1.9.0
  Downloading blinker-1.9.0-py3-none-any.whl (8.5 kB)
Collecting importlib-metadata>=3.6.0
  Downloading importlib_metadata-8.7.1-py3-none-any.whl (27 kB)
Collecting jinja2>=3.1.2
  Downloading jinja2-3.1.6-py3-none-any.whl (134 kB)
  |████████████████████████████| 134 kB 3.2 MB/s
Collecting click>=8.1.3
  Downloading click-8.1.8-py3-none-any.whl (98 kB)
```

Installing the flask dependency.

```
[root@serverb basic-flask-app]# python routes.py
 * Serving Flask app 'routes'
 * Debug mode: on
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://127.0.0.1:5000
 * Running on http://192.168.23.130:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 102-633-497
```

Now the application works.
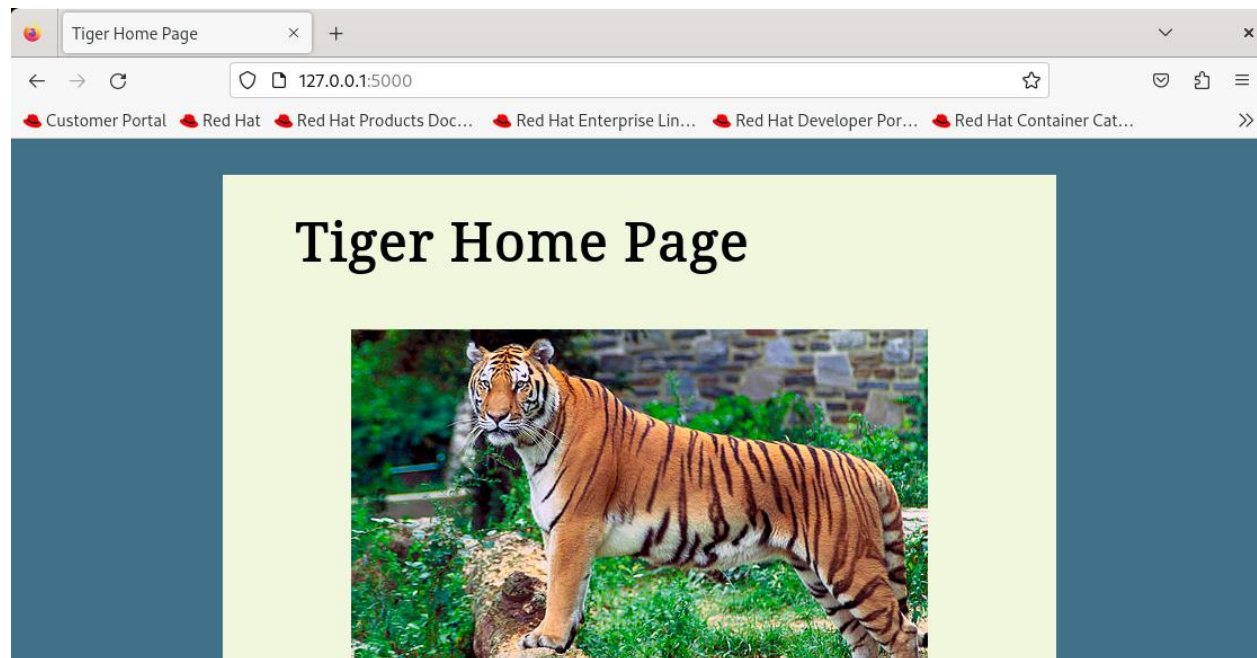
The website works.

Installing the application in a container:

```
[root@serverb basic-flask-app]# cat Dockerfile
FROM alpine

WORKDIR /basic-flask-app

COPY . .

RUN apk add --no-cache python3 py3-pip

RUN pip install flask --break-system-packages

ENTRYPOINT ["python","routes.py"]
[root@serverb basic-flask-app]#
```

Creating the Dockerfile.

```
[root@serverb basic-flask-app]# docker build -t tasneemadel/basic-flask-app .
[+] Building 34.3s (10/10) FINISHED                                                                       docker:default
 => [internal] load build definition from Dockerfile                                                                0.0s
 => => transferring dockerfile: 269B                                                                                0.0s
 => [internal] load metadata for docker.io/library/alpine:latest                                                   0.1s
 => [internal] load .dockerignore                                                                                  0.0s
 => => transferring context: 2B                                                                                     0.0s
 => [1/5] FROM docker.io/library/alpine:latest@sha256:25109184c71bdad752c8312a8623239686a9a2071e8825f20acb8f2198c3f659   0.1s
 => => resolve docker.io/library/alpine:latest@sha256:25109184c71bdad752c8312a8623239686a9a2071e8825f20acb8f2198c3f659   0.1s
 => [internal] load build context                                                                                  0.0s
 => => transferring context: 6.33kB                                                                                0.0s
 => CACHED [2/5] WORKDIR /basic-flask-app                                                                           0.0s
 => [3/5] COPY . .                                                                                                  0.1s
 => [4/5] RUN apk add --no-cache python3 py3-pip                                                                   11.5s
 => [5/5] RUN pip install flask --break-system-packages                                                             8.4s
 => exporting to image                                                                                             13.8s
 => => exporting layers                                                                                             8.4s
 => => exporting manifest sha256:20f72e99a86c23a799729c4b57bcefdd6fa267a1fff17cf18d482c04689bd27e                  0.0s
 => => exporting config sha256:3c31eaad18be2cedfdcb01d0be1da44695b3ab8832cb20fb67544d335d20e130                    0.0s
 => => exporting attestation manifest sha256:9b425b13bbd958ec7c1e6e7137e212598ae9405d54596a0619ad3df0de5a9fdc      0.1s
 => => exporting manifest list sha256:b47c6bc80d0de4e22cff6ef3f3afbbaaf812b376b7a251ceb40015d43bbb61da             0.0s
 => => naming to docker.io/tasneemadel/basic-flask-app:latest                                                      0.0s
 => => unpacking to docker.io/tasneemadel/basic-flask-app:latest                                                   5.2s
[root@serverb basic-flask-app]#
```
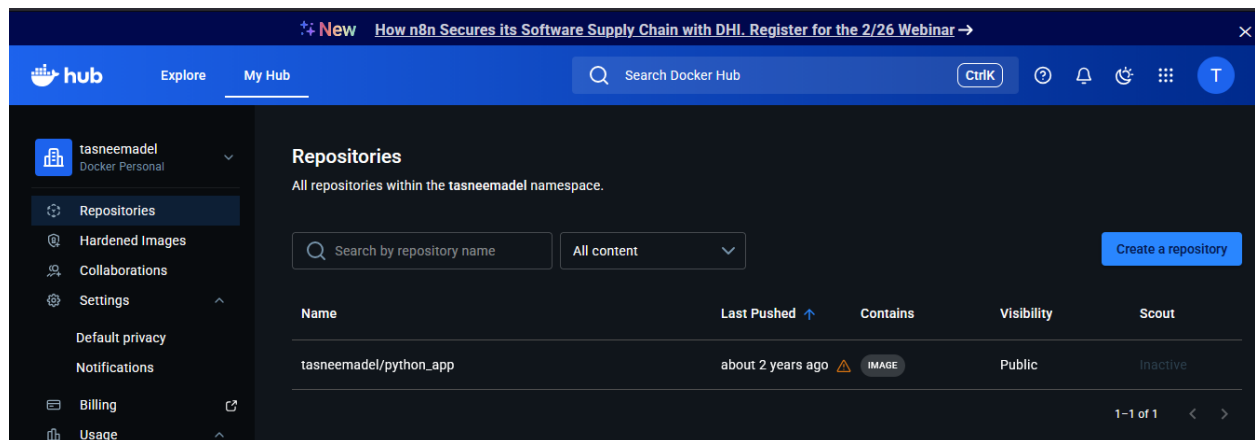
Building the image from the dockerfile.

```
[root@serverb basic-flask-app]# docker run --name flask-app -p 80:5000 --memory="100m" tasneemadel/basic-flask-app:latest
 * Serving Flask app 'routes'
 * Debug mode: on
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://127.0.0.1:5000
 * Running on http://172.17.0.2:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 185-591-003
```

Creating a container from the image.
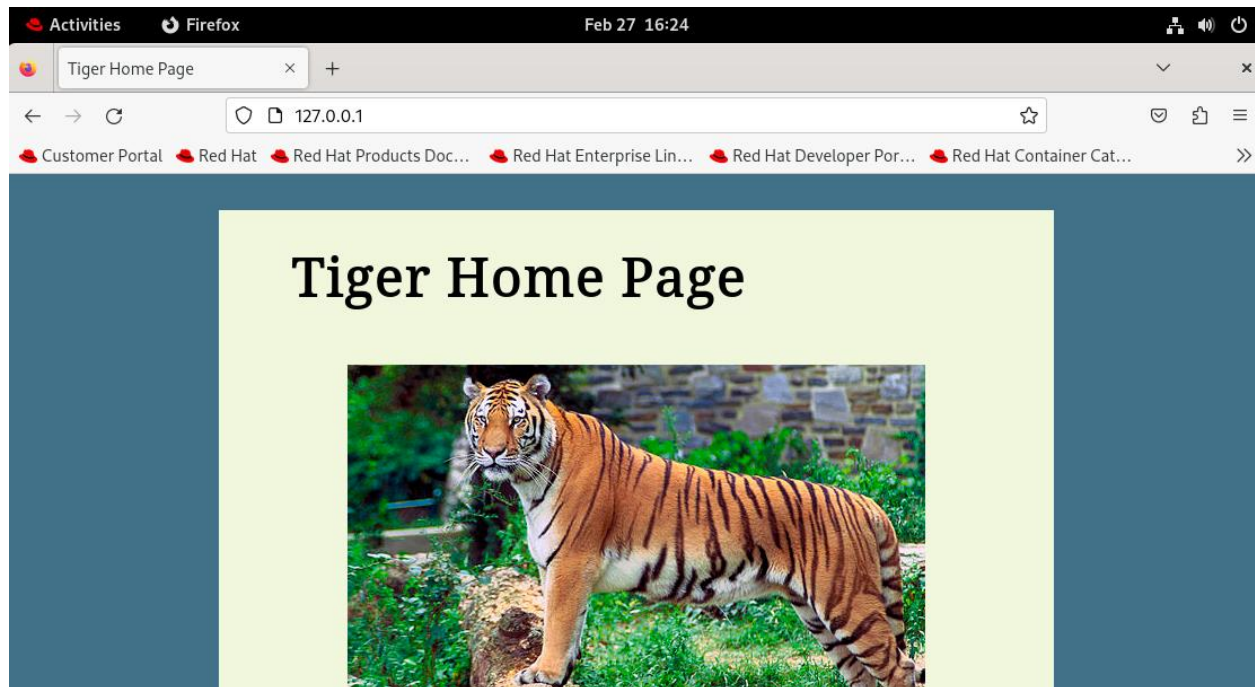
The tiger page loads successfully on port 80 from the host.

Dockerhub account is created.

Logged into the account successfully.

The flask image has been added successfully.

Task2:

```
[root@serverb basic-flask-app]# docker network create --subnet=10.0.0.0/8 iti-network
a48c10fb3d45bbab689051922bc7a724b99c6f407317c646fccde792ffe91d14
[root@serverb basic-flask-app]#
```

Creating the iti-network.

```
[root@serverb ~]# cat webserver-iti/Dockerfile
From httpd

RUN sed -i 's/Listen 80/Listen 8080/' /usr/local/apache2/conf/httpd.conf
[root@serverb ~]#
```

Docker file is created to change the port 80 to 8080 in the configuration of httpd using the sed tool.

```
[root@serverb webserver-iti]# docker build -t webserver-iti-im .
[+] Building 0.9s (6/6) FINISHED                                                                          docker:default
 => [internal] load build definition from Dockerfile                                                              0.0s
 => => transferring dockerfile: 182B                                                                              0.0s
 => WARN: ConsistentInstructionCasing: Command 'From' should match the case of the command majority (uppercase) (line 1)   0.0s
 => [internal] load metadata for docker.io/library/httpd:latest                                                  0.1s
 => [internal] load .dockerignore                                                                                 0.0s
 => => transferring context: 2B                                                                                   0.0s
 => [1/2] FROM docker.io/library/httpd:latest@sha256:96b1e8f69ee3adde956e819f7a7c3e706edef7ad88a26a491734015e5c595333   0.1s
 => => resolve docker.io/library/httpd:latest@sha256:96b1e8f69ee3adde956e819f7a7c3e706edef7ad88a26a491734015e5c595333   0.1s
 => CACHED [2/2] RUN sed -i 's/Listen 80/Listen 8080/' /usr/local/apache2/conf/httpd.conf                         0.0s
 => exporting to image                                                                                            0.3s
 => => exporting layers                                                                                           0.0s
 => => exporting manifest sha256:c79bb58d2ab32af1b65e59f81d1f4bb737bb98f540ae945bd3988fae57ea10e3                 0.0s
 => => exporting config sha256:0af03aa9fc2463c5f540a5cf554f09f16a469dd9ce2c1132b2d83b0acf105242                   0.0s
 => => exporting attestation manifest sha256:c2228e72b34057b092c9b9d301f06416a71ed12f44fad09bc584591e4b55ac1f     0.1s
 => => exporting manifest list sha256:8acef0fa3418032e15fc234beecfd400da984c0fdc8f8ed23a4c9cd7d6b73f14            0.0s
 => => naming to docker.io/library/webserver-iti-im:latest                                                        0.0s
 => => unpacking to docker.io/library/webserver-iti-im:latest                                                     0.1s

 1 warning found (use docker --debug to expand):
 - ConsistentInstructionCasing: Command 'From' should match the case of the command majority (uppercase) (line 1)
```

Building the image.

```
[root@serverb webserver-iti]# docker run --name webserver-iti -p 8080:8080 --network iti-network -v ./index.html:/usr/local/apache2/htd
ocs/index.html webserver-iti-im
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 10.0.0.2. Set the 'ServerName' directive g
lobally to suppress this message
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 10.0.0.2. Set the 'ServerName' directive g
lobally to suppress this message
[Sat Feb 28 07:42:15.188972 2026] [mpm_event:notice] [pid 1:tid 1] AH00489: Apache/2.4.66 (Unix) configured -- resuming normal operatio
ns
[Sat Feb 28 07:42:15.192972 2026] [core:notice] [pid 1:tid 1] AH00094: Command line: 'httpd -D FOREGROUND'
10.0.0.1 - - [28/Feb/2026:07:44:21 +0000] "GET / HTTP/1.1" 200 34
10.0.0.1 - - [28/Feb/2026:07:44:21 +0000] "GET /favicon.ico HTTP/1.1" 404 236
```

Running the container and testing the site.
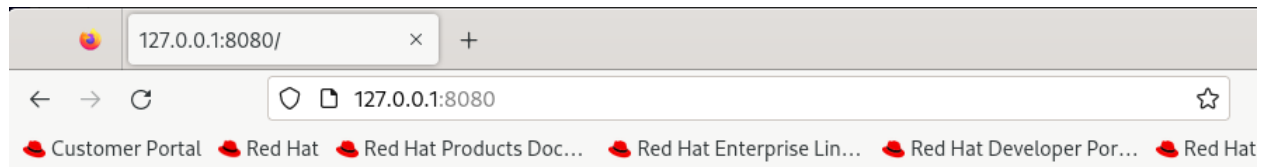
Lab 2 ITI - Tasneem Adel

The site is working successfully.