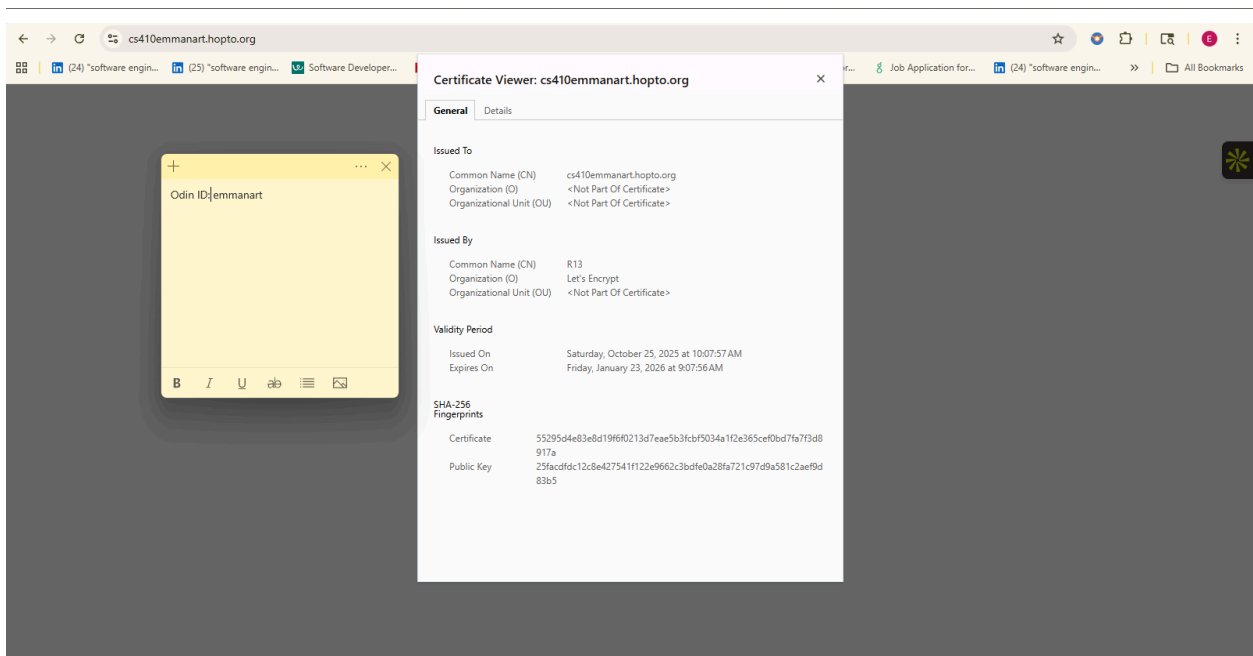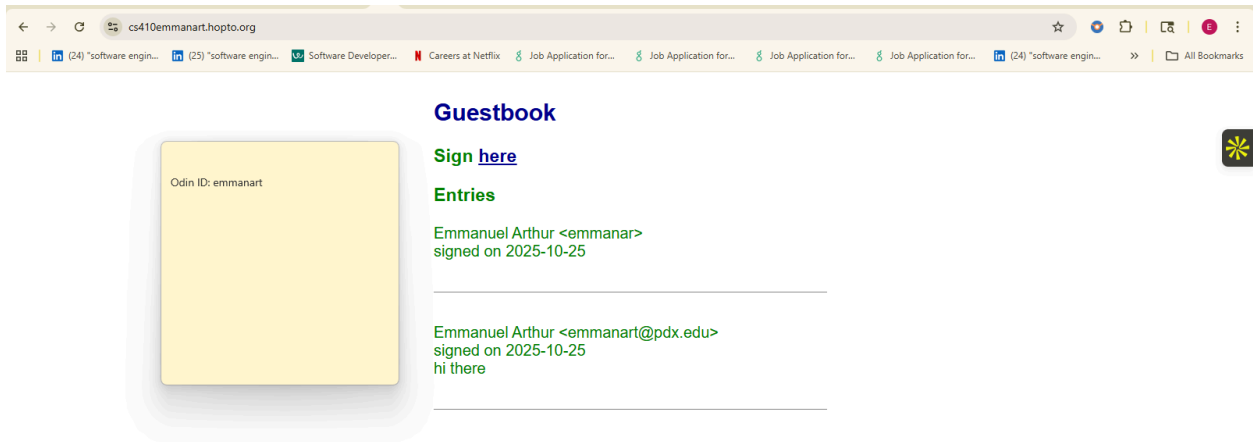## Lab 4.1

- Take a screenshot of the site along with its Let's Encrypt certificate and include it in your lab notebook

Lab 4.2

- Take a screenshot of the results for your lab notebook

- Run the image directly from Docker Hub and show a screenshot of the output of the command in your lab notebook.

Cloud Shell Editor

(cloud-arthur-emmanart) ✕ + ▾

Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more   Don't show again   Dismiss

```
latest: digest: sha256:e1e5cee21cf938ed2c3c6f167d3655add0e11ccb3bd3ebc7d11a3d3215a6fd27 size: 1373
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker images
REPOSITORY                TAG       IMAGE ID       CREATED          SIZE
emmanart/helloubuntu      latest    d0d602db8635   16 minutes ago   471MB
helloubuntu               latest    d0d602db8635   16 minutes ago   471MB
ubuntu                    20.04     b7bab04fd9aa   6 months ago     72.8MB
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker rmi helloubuntu emmanart/helloubuntu
Untagged: helloubuntu:latest
Untagged: emmanart/helloubuntu:latest
Untagged: emmanart/helloubuntu@sha256:e1e5cee21cf938ed2c3c6f167d3655add0e11ccb3bd3ebc7d11a3d3215a6fd27
Deleted: sha256:d0d602db8635206b98aa02d7607c16f729ccc9b0461c0b37dc6fc015b9a3bd69
Deleted: sha256:444be438bd75bfbe5aa4c1a3d219526f7c8135ac0ff6a4ed153394f8a11a9773
Deleted: sha256:b1cfe677bdad8f44bc4e558e72da30f886db57514d31af260823c7190e2b7ecb
Deleted: sha256:e55b0a1398677e1837a16bd92c10ba1fd18fc064fe824b063aa32366a1402121
Deleted: sha256:6973690db9664027282df521b4b08bbd601a11b19d5cc042e99b07330ab23501
Deleted: sha256:29f3ba0211dc79bb0048afbeb8b5367896bacc3cfcf6c8c55417d5773a142f0a
Deleted: sha256:776b786edecb56c6299aec479695b3d0d395339c6c868cd6fb17e5926ff3fe76
Deleted: sha256:24b1e5bb134858e8577b395123fc3904acdfa17492886e851f227f4932518748
Deleted: sha256:651ce10aea1582a0cb8e55193ee093d8e8a40d1e0c961acffa9e14462da220a7
Deleted: sha256:6f2621391b516708f0f2b129ab9d2f1b143abd5e632c791272e94069e62fe33d
Deleted: sha256:e050b27d5ce06fd69cb07d04d5486fdf35574941492e6ac24ff222a546455b43
Deleted: sha256:f3590fe4b1b473f760559761cef812be2e493e6955e383bce568417ec6d52163
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker run -di -p 8000:5000 --name hellou emmanart/helloubuntu
Unable to find image 'emmanart/helloubuntu:latest' locally
latest: Pulling from emmanart/helloubuntu
13b7e930469f: Already exists
ce74f9b3f9bc: Pull complete
71384c5f850d: Pull complete
d1f3d1ee9a98: Pull complete
a07cae8546ed: Pull complete
Digest: sha256:e1e5cee21cf938ed2c3c6f167d3655add0e11ccb3bd3ebc7d11a3d3215a6fd27
Status: Downloaded newer image for emmanart/helloubuntu:latest
e7faf344122cd784842eab43f1de042a4eb5eaf2762c798b5d09b82a37d98483
```

Odin ID: emmanart

● Take a screenshot of the container image and its size for your lab notebook.

emmanart/helloubuntu:latest   Delete Tag

MANIFEST DIGEST sha256:e1e5cee21cf938ed2c3c6f167d3655add0e11ccb3bd3ebc7d11a3d3215a6fd27

OS/ARCH	COMPRESSED SIZE ⓘ	LAST PUSHED	TYPE	MANIFEST DIGEST
linux/amd64	168.95 MB	9 minutes by emmanart	Image	sha256:e1e5cee2...

Image Layers   Vulnerabilities

Image Layers ⓘ   Command

1	ARG RELEASE	0 B
2	ARG LAUNCHPAD_BUILD_ARCH	0 B
3	LABEL org.opencontainers.image.ref.name=ubuntu	0 B
4	LABEL org.opencontainers.image.version=20.04	0 B
5	ADD file ... in /	26.24 MB
6	CMD ["/bin/bash"]	0 B
7	LABEL maintainer=yourname@pdx.edu	0 B
8	/bin/sh -c apt-get update -y	37.9 MB
9	/bin/sh -c apt-get install -y	102.79 MB
10	COPY dir:bb6a090c8d0ed6fabdc9cfb8875b13add084586365e843e7cbd23ece7b830820 in /app	2.99 KB
11	WORKDIR /app	0 B
12	/bin/sh -c pip install -r	2.02 MB
13	ENTRYPOINT ["python3"]	0 B
14	CMD ["app.py"]	0 B

ARG RELEASE

Odin ID: emmanart

- What layer adds the most to the container image? How much does it add?

  The layer " /bin/sh -c apt-get install -y" adds the most and its size is 102.79 MB

- Take a screenshot of the image generated and its size for your lab notebook. How much smaller is the image than the Ubuntu one?

  The image is smaller by 12.1 MB

- Show the output of this command in a screenshot for your lab notebook. What might have happened?

Cloud Shell Editor

(cloud-arthur-emmanart) ✕   + ▾

ⓘ Gemini CLI is available in Cloud Shell terminal! Type gemini to try it. Learn more   Don't show again Dismiss

```
Downloading blinker-1.9.0-py3-none-any.whl (8.5 kB)
Downloading click-8.3.0-py3-none-any.whl (107 kB)
Downloading itsdangerous-2.2.0-py3-none-any.whl (16 kB)
Downloading jinja2-3.1.6-py3-none-any.whl (134 kB)
Downloading markupsafe-3.0.3-cp314-musllinux_1_2_x86_64.whl (23 kB)
Downloading werkzeug-3.1.3-py3-none-any.whl (224 kB)
Installing collected packages: markupsafe, itsdangerous, click, blinker, werkzeug, jinja2, flask
Successfully installed blinker-1.9.0 click-8.3.0 flask-3.1.2 itsdangerous-2.2.0 jinja2-3.1.6 markupsafe-3.0.3 werkzeug-3.1.3
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly renderi    ded to use a v
irtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress
[notice] A new release of pip is available: 25.2 -> 25.3
[notice] To update, run: pip install --upgrade pip
 ---> Removed intermediate container fb60d3d41df0
 ---> 00f021cf6f72
Step 6/7 : ENTRYPOINT ["python3"]
 ---> Running in bd7f66296602
 ---> Removed intermediate container bd7f66296602
 ---> cfdcf0dfbe8a
Step 7/7 : CMD ["app.py"]
 ---> Running in c9a3af5ca6ae
 ---> Removed intermediate container c9a3af5ca6ae
 ---> 9ecb7203850a
Successfully built 9ecb7203850a
Successfully tagged helloalpine:latest
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker images
REPOSITORY      TAG       IMAGE ID       CREATED          SIZE
helloalpine     latest    9ecb7203850a   49 seconds ago   60.7MB
python          alpine    24ef78ff5ffe   2 weeks ago      47MB
ubuntu          20.04     b7bab04fd9aa   6 months ago     72.8MB
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker run -p 8000:5000 --name helloa -di helloalpine
49a150b6924d70578db336df377a64bae46f571ea22b7c45ca8ee38822a12c9a
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker ps -a
CONTAINER ID   IMAGE         COMMAND          CREATED          STATUS         PORTS                                              NAMES
49a150b6924d   helloalpine   "python3 app.py"  15 seconds ago  Up 14 seconds  0.0.0.0:8000->5000/tcp, [::]:8000->5000/tcp   helloa
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker exec -it helloa /bin/bash
OCI runtime exec failed: exec failed: unable to start container process: exec: "/bin/bash": stat /bin/bash: no such file or directory: unknown
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ ▯
```

Odin ID: emmanart

Maybe what happened was we thought this Alpine image was a bash kind of linux.

- Take a screenshot of the output of each

```
[notice] A new release of pip is available: 25.2 -> 25.3
[notice] To update, run: pip install --upgrade pip
 ---> Removed intermediate container fb60d3d41df0
 ---> 00f021cf6f72
Step 6/7 : ENTRYPOINT ["python3"]
 ---> Running in bd7f66296602
 ---> Removed intermediate container bd7f66296602
 ---> cfdcf0dfbe8a
Step 7/7 : CMD ["app.py"]
 ---> Running in c9a3af5ca6ae
 ---> Removed intermediate container c9a3af5ca6ae
 ---> 9ecb7203850a
Successfully built 9ecb7203850a
Successfully tagged helloalpine:latest
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker images
REPOSITORY      TAG       IMAGE ID       CREATED          SIZE
helloalpine     latest    9ecb7203850a   49 seconds ago   60.7MB
python          alpine    24ef78ff5ffe   2 weeks ago      47MB
ubuntu          20.04     b7bab04fd9aa   6 months ago     72.8MB
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker run -p 8000:5000 --name helloa -di helloalpine
49a150b6924d70578db336df377a64bae46f571ea22b7c45ca8ee38822a12c9a
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker ps -a
CONTAINER ID   IMAGE         COMMAND           CREATED          STATUS         PORTS                                              NAMES
49a150b6924d   helloalpine   "python3 app.py"  15 seconds ago   Up 14 seconds  0.0.0.0:8000->5000/tcp, [::]:8000->5000/tcp   helloa
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker exec -it helloa /bin/bash
OCI runtime exec failed: exec failed: unable to start container process: exec: "/bin/bash": stat /bin/bash: no such file or directory: unknown
emmanart@course-vm:~/cs430-src/04_container_dockerhub$ docker exec -it helloa /bin/sh
/app # cat /etc/alpine-release
3.22.2
/app # ps -ef
PID   USER     TIME  COMMAND
    1 root      0:00 python3 app.py
    7 root      0:00 /usr/local/bin/python3 -c from multiprocessing.resource_tracker import main;main(5)
    8 root      0:01 /usr/local/bin/python3 app.py
    9 root      0:00 /usr/local/bin/python3 -c from multiprocessing.resource_tracker import main;main(6)
   18 root      0:00 /bin/sh
   25 root      0:00 ps -ef
/app # ▯
```

Odin ID: emmanart

- Take a screenshot of the container image and its size.

emmanart/helloalpine:latest

MANIFEST DIGEST sha256:856f07789d62b37425ae32733651251277213627ba14d89b74215e7da923ee63

OS/ARCH	COMPRESSED SIZE	LAST PUSHED	TYPE	MANIFEST DIGEST
linux/amd64	21.62 MB	3 minutes by emmanart	Image	sha256:856f0778...

Delete Tag

Image Layers   Vulnerabilities

**Image Layers**

1 ADD alpine-minirootfs-3.22.2-x86_64.tar.gz / # buildkit	3.63 MB	
2 CMD ["/bin/sh"]	0 B	
3 ENV PATH=/usr/local/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin_	0 B	
4 RUN /bin/sh -c set -eux;	446.21 KB	
5 ENV PYTHON_VERSION=3.14.0	0 B	
6 ENV PYTHON_SHA256=2299dae542d395ce3883aca00d3c910307cd68e0b2f7336098c8e7b7eee9f_	0 B	
7 RUN /bin/sh -c set -eux;	12.61 MB	
8 RUN /bin/sh -c set -eux;	250 B	
9 CMD ["python3"]	0 B	
10 LABEL maintainer=emmanart@pdx.edu	0 B	

Command

ADD alpine-minirootfs-3.22.2-x86_64.tar.gz / # buildkit

Odin ID: emmanart

7:48 PM

- Take a screenshot of the entry that includes the VM's external IP address for your lab notebook

34.105.39.150
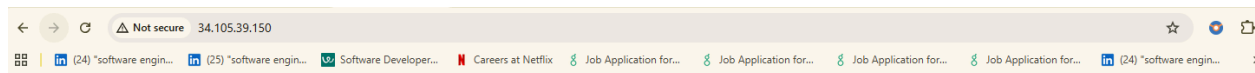
Guestbook

Sign here

Entries

Emmanuel Arthur <emmanart@pdx.edu>
signed on 2025-10-26
Hello Compute Engine + Docker

Odin ID: emmanart