Task 3: Building images

Creating a Dockerfile

- To create a new Dockerfile, run the command touch Dockerfile in your working directory. Then open the file using your preferred text editor.

- Inside the Dockerfile, add the following lines at the top:

```
Task-3 > Dockerfile > ...
1   FROM ubuntu
2   LABEL maintainer="Ankit <ankit@example.com>"
3
```

- These lines specify the base image to use for the new image (in this case, Ubuntu) and add a label to the image that includes the maintainer's name and email address.
- To install ping inside the image, add the following line after the LABEL directive:
- This command will first update the package list and then install the iputils-ping package.
- Your Dockerfile should now look something like this:

```
Task-3 > Dockerfile > ...
1   FROM ubuntu
2   LABEL maintainer="Ankit <ankit@example.com>"
3
4   RUN apt-get update && apt-get install -y iputils-ping
5
```

- To build the Docker image, run the following command in the directory containing the Dockerfile:

```
ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training$ cd Task-3
ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training/Task-3$ ls
Dockerfile
ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training/Task-3$ docker build -t ubuntu-ping .
[+] Building 13.6s (6/6) FINISHED
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 148B
 => [internal] load metadata for docker.io/library/ubuntu:latest
 => [1/2] FROM docker.io/library/ubuntu
 => [2/2] RUN apt-get update && apt-get install -y iputils-ping
 => exporting to image
 => => exporting layers
 => => writing image sha256:3807281bcbdf1999db5d3e3b85886ae4064d8d3b6d6c0dd8c3bdf2f42aff4fe0
 => => naming to docker.io/library/ubuntu-ping
ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training/Task-3$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED          SIZE
ubuntu-ping   latest    3807281bcbdf   5 seconds ago    123MB
ping-ubuntu   latest    5824a33829a3   11 minutes ago   123MB
busybox       latest    7cfbbec8963d   5 weeks ago      4.86MB
ubuntu        latest    08d22c0ceb15   6 weeks ago      77.8MB
node          12        6c8de432fc7f   12 months ago    918MB
hello-world   latest    feb5d9fea6a5   19 months ago    13.3kB
ankit@sf-cpu-082:~/Documents/Assignment/Docker/docker-training/Task-3$
```

- When building Docker images, each directive in the Dockerfile maps to a step, and after each step is completed, it becomes a commit. Docker layers each commit on top of the other, which makes images small and improves rebuilding times. However, it also includes temporary data written to the filesystem, generating extra size to the image. To minimize image size, RUN commands can be modified to remove any old logs after the installation completes, and to collapse all the related RUN directives together. This results in a smaller image size and a quicker push/pull process.

- The Dockerfile provides various useful directives including COPY, WORKDIR, CMD, ENV, EXPOSE, and ARG. For building a Dockerfile for ping, ENV and CMD directives can be added.