still working on this file! Final version will be published!

1) download docker

```
sudo apt-get install docker.io
```

2.) pull ubuntu

```
sudo docker pull ubuntu
```

#output

```
sedreh@sedreh-Lenovo-YOGA-530-14IKB:~/Downloads/all_that_I_have/cas_pipeline$ sudo
docker pull ubuntu
[sudo] password for sedreh:
Using default tag: latest
latest: Pulling from library/ubuntu
5c939e3a4d10: Pull complete
c63719cdbe7a: Pull complete
19a861ea6baf: Pull complete
651c9d2d6c4f: Pull complete
Digest: sha256:8d31dad0c58f552e890d68bbfb735588b6b820a46e459672d96e585871acc110
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

create the container

```
docker run -i -t docker.io/library/ubuntu:latest /bin/bash
```

#output

```
root@sedreh-Lenovo-YOGA-530-14IKB:~# docker run -i -t
docker.io/library/ubuntu:latest /bin/bash
root@3ac712f878ce:/#
```

Here 3ac712f878ce is the container ID.

This is how we pull images and run containers. To view all the containers:

```
root@sedreh-Lenovo-YOGA-530-14IKB:~# docker container ls -all
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS                        PORTS               NAMES
3ac712f878ce        ubuntu:latest       "/bin/bash"         2 minutes ago
Exited (130) 30 seconds ago                       wonderful_beaver
```

If we want to execute this container again:

First we start the container:

```
docker start 3ac712f878ce
```

```
root@sedreh-Lenovo-YOGA-530-14IKB:~# docker start 3ac712f878ce
3ac712f878ce
```

Every time from now on we can execute it as follows:

```
docker exec -it 3ac712f878ce /bin/bash
###################################################################################
#####################################################################


# let's mount a volume

docker run -it -v /home/sedreh/Downloads/all_that_I_have:/home/work
docker.io/library/ubuntu:latest /bin/bash

After adding volume we have to run the container again. But there is also a way to
add to the running container.

root@sedreh-Lenovo-YOGA-530-14IKB:~# docker run -v
/home/sedreh/Downloads/all_that_I_have:rw -i -t docker.io/library/ubuntu:latest
/bin/bash
root@fa9abed7d5a0:/#

########################
###### ad132145b7a3 ####
########################

docker start ad132145b7a3

#this line is just for mounting volumes to an already existing container
docker run -it -v /home/sedreh/Downloads/all_that_I_have:/home/work /bin/bash
########################################
docker exec -it ad132145b7a3 /bin/bash #
########################################

cd /home/work

#### Let's create a small reusable container with mounted volumes for input and
output

## let's export the container


docker commit ad132145b7a3


# it gives an image id

docker save -o /home/sedreh/Desktop/CAS_PIPELINE.tar <image id>


###################################################################################
#########################################################################
I start to install all required softwares in container

python3 (3.6, 3.7)
CD-HIT version 4.6
Iqtree
prokka
HMMER
ncbi-blast-2.10.0+
and all linux dependencies

######################################
```

#
#
#
#
#
#
#
To make a deployable container:

You will need to save the Docker image as a tar file:

```
docker save -o <path for generated tar file> <image name>
```

Then copy your image to a new system with regular file transfer tools such as cp, scp or rsync(preferred for big files). After that you will have to load the image into Docker:

```
docker load -i <path to image tar file>
```

PS: You may need to sudo all commands.

EDIT: You should add filename (not just directory) with -o, for example:

```
docker save -o c:/myfile.tar centos:16
```

```
docker commit [OPTIONS] CONTAINER [REPOSITORY[:TAG]]
docker commit --author  "Sedreh Nassirnia snassirnia@outlook.com" ad132145b7a3
```