

ASSIGNMENT (3)

Course: CSE491

DOCKER

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Install docker

```
File Edit View Search Terminal Help
ILMI@tabassum17101130:~$ sudo apt-get install openssh-server
[sudo] password for ilmi:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ncurses-term openssh-sftp-server ssh-import-id
Suggested packages:
  molly-guard monkeysphere rssh ssh-askpass
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
0 upgraded, 4 newly installed, 0 to remove and 233 not upgraded.
Need to get 637 kB of archives.
After this operation, 5,316 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 ncurses-term all 6.1
-1ubuntu1.18.04 [248 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 openssh-sftp-server
amd64 1:7.6p1-4ubuntu0.3 [45.6 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 openssh-server amd64
1:7.6p1-4ubuntu0.3 [333 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 ssh-import-id all 5.
7-0ubuntu1.1 [10.9 kB]
Fetched 637 kB in 3s (230 kB/s)
```

```
ILMI@tabassum17101130:~$ sudo apt-get install nano
[sudo] password for ilmi:
Reading package lists... Done
Building dependency tree
Reading state information... Done
nano is already the newest version (2.9.3-2).
0 upgraded, 0 newly installed, 0 to remove and 233 not upgraded.
ILMI@tabassum17101130:~$ sudo nano /etc/ssh/sshd_config
ILMI@tabassum17101130:~$ sudo ufw allow from any to any port 8568 proto tcp
Rules updated
Rules updated (v6)
```

Installing Docker Engine

```
ILMI@tabassum17101130:~$ sudo apt install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  aufs-tools cgroupfs-mount containerd.io docker-ce-cli git git-man
  liberror-perl pigz
Suggested packages:
  git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk
  gitweb git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
  aufs-tools cgroupfs-mount containerd.io docker-ce docker-ce-cli git git-man
  liberror-perl pigz
0 upgraded, 9 newly installed, 0 to remove and 232 not upgraded.
Need to get 90.0 MB of archives.
After this operation, 415 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 https://download.docker.com/linux/ubuntu bionic/stable amd64 containerd.io
amd64 1.2.13-2 [21.4 MB]
Get:2 http://us.archive.ubuntu.com/ubuntu bionic/universe amd64 pigz amd64 2.4-1
[57.4 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu bionic/universe amd64 aufs-tools amd64
1:4.9+20170918-1ubuntu1 [104 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu bionic/universe amd64 cgroupfs-mount a
ll 1.4 [6,320 B]
Get:5 http://us.archive.ubuntu.com/ubuntu bionic/main amd64 liberror-perl all 0.
17025-1 [22.8 kB]
Get:6 https://download.docker.com/linux/ubuntu bionic/stable amd64 docker-ce-cli
amd64 5:19.03.12~3-0~ubuntu-bionic [41.2 MB]
Get:7 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 git-man all
1:2.17.1-1ubuntu0.7 [804 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 git amd64 1:
2.17.1-1ubuntu0.7 [3,915 kB]
Get:9 https://download.docker.com/linux/ubuntu bionic/stable amd64 docker-ce amd
64 5:19.03.12~3-0~ubuntu-bionic [22.5 MB]
Fetched 90.0 MB in 15s (5,876 kB/s)
```

```
ILMI@tabassum17101130:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: e
   Active: active (running) since Mon 2020-08-03 07:22:29 EDT; 2min 48s ago
     Docs: https://docs.docker.com
   Main PID: 6434 (dockerd)
    Tasks: 10
   CGroup: /system.slice/docker.service
           └─6434 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/contain

Aug 03 07:22:26 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:26.610774
Aug 03 07:22:26 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:26.610981
Aug 03 07:22:26 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:26.611230
Aug 03 07:22:26 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:26.611853
Aug 03 07:22:27 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:27.633809
Aug 03 07:22:28 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:28.316195
Aug 03 07:22:29 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:29.011791
Aug 03 07:22:29 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:29.012295
Aug 03 07:22:29 tabassum17101130 systemd[1]: Started Docker Application Containe
Aug 03 07:22:29 tabassum17101130 dockerd[6434]: time="2020-08-03T07:22:29.843438
```

```
ILMI@tabassum17101130:~$ sudo add-apt-repository "deb [arch=amd64] https://downl
oad.docker.com/linux/ubuntu bionic stable"
Get:1 https://download.docker.com/linux/ubuntu bionic InRelease [64.4 kB]
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Hit:3 http://us.archive.ubuntu.com/ubuntu bionic InRelease
Get:4 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages [12.
5 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Fetched 329 kB in 2s (150 kB/s)
Reading package lists... Done
ILMI@tabassum17101130:~$ sudo apt update
Hit:1 https://download.docker.com/linux/ubuntu bionic InRelease
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Hit:3 http://us.archive.ubuntu.com/ubuntu bionic InRelease
Get:4 http://us.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Fetched 252 kB in 2s (118 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
232 packages can be upgraded. Run 'apt list --upgradable' to see them.
ILMI@tabassum17101130:~$ apt-cache policy docker-ce
docker-ce:
  Installed: (none)
  Candidate: 5:19.03.12~3-0~ubuntu-bionic
  Version table:
     5:19.03.12~3-0~ubuntu-bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Package
S
     5:19.03.11~3-0~ubuntu-bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Package
S
     5:19.03.10~3-0~ubuntu-bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Package
S
```

Checking Docker image using container to get the latest image

#pull

```
root@ilmi-17101130:~# sudo docker pull swift
Using default tag: latest
latest: Pulling from library/swift
5d9821c94847: Pull complete
a610eae58dfc: Pull complete
a40e0eb9f140: Pull complete
647632863021: Pull complete
57e6349e03b6: Pull complete
Digest: sha256:9dccc8a4c6a56b1f718d1cccd4df20401a460a9f99d6fce30fe74f3ee40aadd
Status: Downloaded newer image for swift:latest
docker.io/library/swift:latest
```

Show outputs of basic Docker commands

ps -a

```
ILMI@tabassum17101130:~$ sudo docker ps -a
[sudo] password for ilmi:
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
99581f7e6a81       ubuntu             "/bin/bash"        23 minutes ago     Up 23 minutes      0.0.0.0:22->22      nervous_perlman
68907ae16de9       hello-world        "/hello"           4 hours ago        Exited (0) 4 hours ago                       epic_cray
```

commit

```
ILMI@tabassum17101130:~$ docker commit 9970d24f8e2d ilmitabassum/modified-ubuntu
sha256:7dc2b43fba775eb8f3ff57f86908ffde119c0a5f0d2875583466c37185fb7e95
ILMI@tabassum17101130:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ilmitabassum/modified-ubuntu   latest             7dc2b43fba77       12 seconds ago     73.9MB
myimage1             1.0                3e301622db73       3 days ago         96.4MB
ubuntu               latest             1e4467b07108       13 days ago        73.9MB
ILMI@tabassum17101130:~$ docker run -it -d ilmitabassum/modified-ubuntu
153e723ebd6e39121209571047e679ff0c51f637716fbae165a8c78834d8d5f7
ILMI@tabassum17101130:~$ docker run -it -d ilmitabassum/modified-ubuntu bash
bcfe7a9bbd7255f709aef03a16162c17f8e3e062e80daec258a0419944784186
```

#Run

```

ILMI@tabassum17101130:~/DockerFile$ sudo docker run 3e301622db73
Hello EVERYONE ....! welcome to my First Docker Image
ILMI@tabassum17101130:~/DockerFile$ cd..
cd..: command not found
ILMI@tabassum17101130:~/DockerFile$ cd ..
ILMI@tabassum17101130:~$ sudo docker run -it 3e301622db73
Hello EVERYONE ....! welcome to my First Docker Image
ILMI@tabassum17101130:~$ sudo docker run -it ubuntu
root@cs5a9095b3476:/# ls
bin      dev      home    lib32    libx32   mnt      proc    run      srv      tmp      var
boot    etc     lib     lib64    media    opt      root    sbin     sys      usr
root@cs5a9095b3476:/#

```

#Build

```

ILMI@tabassum17101130:~$ cd DockerFile
ILMI@tabassum17101130:~/DockerFile$ docker build -t myimage1:1.0 .
Sending build context to Docker daemon  2.56kB
Step 1/4 : From ubuntu
----> 1e4467b07108
Step 2/4 : MAINTAINER ILMI TABASSUM <ilmitabassum1997@gmail.com>
----> Running in 521e6030eb85
Removing intermediate container 521e6030eb85
----> a3507ede9121
Step 3/4 : RUN apt-get update
----> Running in 8935dc418a77
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [1078 B]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [189 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [39.1 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [53.2 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:12 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [39.1 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [408 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [17.3 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [183 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [3209 B]
Fetched 14.3 MB in 17s (849 kB/s)
Reading package lists...
Removing intermediate container 8935dc418a77
----> 3784fe68d055
Step 4/4 : CMD ["echo", "Hello EVERYONE ....! welcome to my First Docker Image "]
----> Running in 7787eb579593
Removing intermediate container 7787eb579593

```

Rm and rmi

```

ILMI@tabassum17101130:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
myimage1             1.0                 3e301622db73       3 days ago         96.4MB
ubuntu               latest              1e4467b07108       13 days ago        73.9MB
hello-world          latest              bf756fb1ae65       7 months ago       13.3kB
ILMI@tabassum17101130:~$ docker rmi bf756fb1ae65
Error response from daemon: conflict: unable to delete bf756fb1ae65 (must be forced) - image is being used by stopped container 68907ae16de9
ILMI@tabassum17101130:~$ docker rmi hello-world
Error response from daemon: conflict: unable to remove repository reference "hello-world" (must force) - container 68907ae16de9 is using its r
eferenced image bf756fb1ae65
ILMI@tabassum17101130:~$ sudo docker rmi hello-world
[sudo] password for ilmi:
Error response from daemon: conflict: unable to remove repository reference "hello-world" (must force) - container 68907ae16de9 is using its r
eferenced image bf756fb1ae65
ILMI@tabassum17101130:~$ docker rm 68907ae16de9
68907ae16de9
ILMI@tabassum17101130:~$ docker rmi bf756fb1ae65
Untagged: hello-world:latest
Untagged: hello-world@sha256:49a1c880c94df04e9658809b006fd8a686cab8028d33cfba2cc049724254202
Deleted: sha256:bf756fb1ae65adf866bd8c456593cd24beb6a0a061dedf42b26a993176745f6b
Deleted: sha256:9c27e219663c25e0f28493790cc0b88bc973ba3b1686355f221c38a36978ac63

```

Search

```
root@ilmi-17101130:~# docker search ubuntu
```

NAME	DESCRIPTION	STARS	OFFICIAL
AUTOMATED			
ubuntu	Ubuntu is a Debian-based Linux operating sys...	11342	[OK]
dorowu/ubuntu-desktop-lxde-vnc	Docker image to provide HTML5 VNC interface ...	465	
[OK]			
rastasheep/ubuntu-sshd	Dockerized SSH service, built on top of offi...	247	
[OK]			
consol/ubuntu-xfce-vnc	Ubuntu container with "headless" VNC session...	226	
[OK]			
ubuntu-upstart	Upstart is an event-based replacement for th...	110	[OK]
ansible/ubuntu14.04-ansible	Ubuntu 14.04 LTS with ansible	98	
[OK]			
neurodebian	NeuroDebian provides neuroscience research s...	70	[OK]
1and1internet/ubuntu-16-nginx-php-phpmyadmin-mysql-5	ubuntu-16-nginx-php-phpmyadmin-mysql-5	50	
[OK]			
ubuntu-debootstrap	debootstrap --variant=minbase --components=m...	44	[OK]
nuagebec/ubuntu	Simple always updated Ubuntu docker images w...	24	
[OK]			
i386/ubuntu	Ubuntu is a Debian-based Linux operating sys...	24	
1and1internet/ubuntu-16-apache-php-5.6	ubuntu-16-apache-php-5.6	14	
[OK]			
1and1internet/ubuntu-16-apache-php-7.0	ubuntu-16-apache-php-7.0	13	
[OK]			
1and1internet/ubuntu-16-nginx-php-phpmyadmin-mariadb-10	ubuntu-16-nginx-php-phpmyadmin-mariadb-10	11	
[OK]			
1and1internet/ubuntu-16-nginx-php-5.6	ubuntu-16-nginx-php-5.6	8	
[OK]			

Create a Docker image using Dockerfile.

1. First, we have to create a file named ‘Dockerfile’ in a folder named “Dockerfile” in the Desktop using:

```
cd Desktop
mkdir Dockerfile
cd Dockerfile
touch Dockerfile
```

2. Then, we edit the ‘Dockerfile’ with the following configurations using the command:

```
vim Dockerfile
```

3. After completing the creation process of the Dockerfile, we have to build it from the terminal using the command:

```
sudo docker build -t <preferred image_name:tag> .
```



```
ILMI@tabassum17101130:~$ cd DockerFile
ILMI@tabassum17101130:~/DockerFile$ docker build -t myimage1:1.0 .
Sending build context to Docker daemon 2.56kB
Step 1/4 : From ubuntu
--> 1e4467b07108
Step 2/4 : MAINTAINER ILMI TABASSUM <ilmitabassum1997@gmail.com>
--> Running in 521e6030eb85
Removing intermediate container 521e6030eb85
--> a3507ede9121
Step 3/4 : RUN apt-get update
--> Running in 8935dc418a77
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [1078 B]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [189 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [39.1 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [53.2 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:12 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [39.1 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [408 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [17.3 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [183 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [3209 B]
Fetched 14.3 MB in 17s (849 kB/s)
Reading package lists...
Removing intermediate container 8935dc418a77
--> 3784fe68d055
Step 4/4 : CMD ["echo", "Hello EVERYONE ....! welcome to my First Docker Image "]
--> Running in 7787eb579593
Removing intermediate container 7787eb579593
```

Run a container as a single task, show outputs, show status of the all containers (using `docker ps -a`)

```
ILMI@tabassum17101130:~$ docker commit 9970d24f8e2d ilmitabassum/modified-ubuntu
sha256:7dc2b43fba775eb8f3ff57f86908ffde119c0a5f0d2875583466c37185fb7e95
ILMI@tabassum17101130:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ilmitabassum/modified-ubuntu   latest             7dc2b43fba77       12 seconds ago     73.9MB
myimage1             1.0                3e301622db73       3 days ago         96.4MB
ubuntu               latest             1e4467b07108       13 days ago        73.9MB
ILMI@tabassum17101130:~$ docker run -it -d ilmitabassum/modified-ubuntu
153e723ebd6e39121209571047e679ff0c51f637716fbae165a8c78834d8d5f7
ILMI@tabassum17101130:~$ docker run -it -d ilmitabassum/modified-ubuntu bash
bcfe7a9bbd7255f709aef03a16162c17f8e3e062e80daec258a0419944784186
```

Run a container in interactive mode and install different packages in the container. Show each step.

```
ILMI@tabassum17101130:~/DockerFile$ sudo docker run 3e301622db73
Hello EVERYONE ....! welcome to my First Docker Image
ILMI@tabassum17101130:~/DockerFile$ cd..
cd..: command not found
ILMI@tabassum17101130:~/DockerFile$ cd ..
ILMI@tabassum17101130:~$ sudo docker run -it 3e301622db73
Hello EVERYONE ....! welcome to my First Docker Image
ILMI@tabassum17101130:~$ sudo docker run -it ubuntu
root@c5a9095b3476:/# ls
bin    dev    home  lib32  libx32  mnt    proc  run    srv    tmp    var
boot  etc    lib   lib64  media   opt    root  sbin   sys    usr
root@c5a9095b3476:/#
```



```
ILMI@tabassum17101130:~$ sudo docker run -it ubuntu /bin/bash
root@247b6ccba0b1:/# cp /root/.
cp: missing destination file operand after '/root/.'
Try 'cp --help' for more information.
root@247b6ccba0b1:/# cp/root/
bash: cp/root/: No such file or directory
root@247b6ccba0b1:/# cat/etc/os-release
bash: cat/etc/os-release: No such file or directory
root@247b6ccba0b1:/# apt -get update
E: Command line option 'g' [from -get] is not understood in combination with the other options.
root@247b6ccba0b1:/# apt-get update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [111 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [62.6 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [39.1 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [1078 B]
Get:9 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [199 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:12 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [411 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [39.1 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [187 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [17.3 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [3209 B]
Fetched 14.4 MB in 6s (2597 kB/s)
```

Push your own image into Docker public registry/Hub.

Image 1:

```
ILMI@tabassum17101130:~$ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
Digest: sha256:5d1d5407f353843ecf8b16524bc5565aa332e9e6a1297c73a92d3e754b8a636d
Status: Image is up to date for ubuntu:latest
docker.io/library/ubuntu:latest
ILMI@tabassum17101130:~$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
17101130/ilmitabassumbrac	5	b3c364aee617	16 minutes ago	73.9MB
ilmitabassum/17101130	2	e241edb2e072	49 minutes ago	73.9MB
ilmitabassum/17101130	latest	076a765c343b	2 hours ago	73.9MB
localhost	5000	7dc2b43fba77	26 hours ago	73.9MB
localhost:5000/myfirst17101130-image	latest	7dc2b43fba77	26 hours ago	73.9MB
localhost:5000/myimages	latest	7dc2b43fba77	26 hours ago	73.9MB
ilmitabassum/modified-ubuntu	latest	7dc2b43fba77	26 hours ago	73.9MB
kaviuln/centos-http	7	5d5cf836ca2c	2 days ago	323MB
nginx	latest	08393e824c32	3 days ago	132MB
ubuntu	latest	1e4467b07108	2 weeks ago	73.9MB
docker	latest	81f5749c9058	6 weeks ago	211MB
registry	latest	2d4f4b5309b1	7 weeks ago	26.2MB

```
ILMI@tabassum17101130:~$ docker run -it -d ubuntu
c43e53562f33d4ccf3eb1a83a7d47af4e6cc469a53baec27d6f46cb8b5af959e
ILMI@tabassum17101130:~$ docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAM
ES						
c43e53562f33	ubuntu	"/bin/bash"	53 seconds ago	Up 48 seconds		int
eresting_elbakyan						
042acc3a7f9a	ubuntu	"/bin/bash"	9 minutes ago	Up 9 minutes		obj
ective_vaughan						
42f7c44e8d22	ubuntu	"/bin/bash"	23 minutes ago	Up 23 minutes		wiz
ardly_jang						
bf43fd1cd178	ubuntu	"/bin/bash"	26 minutes ago	Up 26 minutes		gre
at_moser						
d1e07a70e8cd	ilmitabassum/17101130	"bash"	2 hours ago	Up 2 hours		obj

```
ILMI@tabassum17101130:~$ docker commit c43e53562f33 17101130/ilmitabassum123
sha256:50d06aebc4a51ad023ea82b02512f2987ad71fcae0dc5627e2010d6b606acfe
ILMI@tabassum17101130:~$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
17101130/ilmitabassum123	latest	50d06aebc4a5	9 seconds ago	73.9MB
17101130/ilmitabassumbrac	5	b3c364aee617	20 minutes ago	73.9MB
ilmitabassum/17101130	2	e241edb2e072	53 minutes ago	73.9MB
ilmitabassum/17101130	latest	076a765c343b	2 hours ago	73.9MB
ilmitabassum/modified-ubuntu	latest	7dc2b43fba77	26 hours ago	73.9MB
localhost	5000	7dc2b43fba77	26 hours ago	73.9MB
localhost:5000/myfirst17101130-image	latest	7dc2b43fba77	26 hours ago	73.9MB
localhost:5000/myimages	latest	7dc2b43fba77	26 hours ago	73.9MB
kaviuln/centos-http	7	5d5cf836ca2c	2 days ago	323MB
nginx	latest	08393e824c32	3 days ago	132MB
ubuntu	latest	1e4467b07108	2 weeks ago	73.9MB
docker	latest	81f5749c9058	6 weeks ago	211MB
registry	latest	2d4f4b5309b1	7 weeks ago	26.2MB

```
ILMI@tabassum17101130:~$ docker login
Authenticating with existing credentials...
Login Succeeded
ILMI@tabassum17101130:~$ docker push 17101130/ilmitabassum123
The push refers to repository [docker.io/17101130/ilmitabassum123]
095624243293: Pushed
a37e74863e72: Pushed
8eeb4a14bcb4: Pushed
ce3011290956: Pushed
latest: digest: sha256:2a9f2e7fae77ff404f49ed9b8e43c2ca998cffa2e5f910eb68fc44127e0e501 size: 1152
ILMI@tabassum17101130:~$ docker run -lt -d ubuntu
3143573d6ffc5ebda1aaf5484f0819e3c70fc05ac812e4b261e3d4d5f2c5bf8f
ILMI@tabassum17101130:~$ docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAM
ES						
3143573d6ffc	ubuntu	"/bin/bash"	38 seconds ago	Up 33 seconds		hop
eful_albattani						
c43e53562f33	ubuntu	"/bin/bash"	12 minutes ago	Up 12 minutes		int

```
ILMI@tabassum17101130:~$ docker commit c43e53562f33 17101130/ilmitabassum123
sha256:50d06aebc4a51ad023ea82b02512f2987ad71fcae0dc5627e2010d6b606acfe
ILMI@tabassum17101130:~$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
17101130/ilmitabassum123	latest	50d06aebc4a5	9 seconds ago	73.9MB
17101130/ilmitabassumbrac	5	b3c364aee617	20 minutes ago	73.9MB
ilmitabassum/17101130	2	e241edb2e072	53 minutes ago	73.9MB
ilmitabassum/17101130	latest	076a765c343b	2 hours ago	73.9MB
ilmitabassum/modified-ubuntu	latest	7dc2b43fba77	26 hours ago	73.9MB
localhost	5000	7dc2b43fba77	26 hours ago	73.9MB
localhost:5000/myfirst17101130-image	latest	7dc2b43fba77	26 hours ago	73.9MB
localhost:5000/myimages	latest	7dc2b43fba77	26 hours ago	73.9MB
kaviuln/centos-http	7	5d5cf836ca2c	2 days ago	323MB
nginx	latest	08393e824c32	3 days ago	132MB
ubuntu	latest	1e4467b07108	2 weeks ago	73.9MB
docker	latest	81f5749c9058	6 weeks ago	211MB
registry	latest	2d4f4b5309b1	7 weeks ago	26.2MB

```
ILMI@tabassum17101130:~$ docker login
Authenticating with existing credentials...
Login Succeeded
ILMI@tabassum17101130:~$ docker push 17101130/ilmitabassum123
The push refers to repository [docker.io/17101130/ilmitabassum123]
095624243293: Pushed
a37e74863e72: Pushed
8eeb4a14bcb4: Pushed
ce3011290956: Pushed
latest: digest: sha256:2a9f2e7fae77ff404f49ed9b8e43c2ca998cffa2e5f910eb68fc44127e0e501 size: 1152
ILMI@tabassum17101130:~$
```

How to make your own private registry

```
ILMI@tabassum17101130:~$ docker-compose version
docker-compose version 1.17.1, build unknown
docker-py version: 2.5.1
CPython version: 2.7.17
OpenSSL version: OpenSSL 1.1.1 11 Sep 2018
ILMI@tabassum17101130:~$ sudo systemctl start docker
ILMI@tabassum17101130:~$ sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable docker
ILMI@tabassum17101130:~$ mkdir -p /docker_data/certs/
```

Making a directory for Docker data and images

```
ILMI@tabassum17101130:~$ sudo openssl req -newkey rsa:4096 -nodes -sha256 -keyout /docker_data/certs/domain.key -x509 -days 365 -out /docker_data/certs/domain.crt
Can't load /home/ilmi/.rnd into RNG
140561691795904:error:2406F079:random number generator:RAND_load_file:Cannot open file:../crypto/rand/randfile.c:88:Filename=/home/ilmi/.rnd
Generating a RSA private key
.....++++
.....++++
writing new private key to '/docker_data/certs/domain.key'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields, there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:Bangladesh
string is too long, it needs to be no more than 2 bytes long
Country Name (2 letter code) [AU]:BN
State or Province Name (full name) [Some-State]:DHAKA
Locality Name (eg, city) []:DHAKA
Organization Name (eg, company) [Internet Widgits Pty Ltd]:BRACU
Organizational Unit Name (eg, section) []:BRACU
Common Name (e.g. server FQDN or YOUR name) []:tabassum17101130.ilmi.net
Email Address []:ilmitabassum1997
```

```
ILMI@tabassum17101130:~$ docker search registry
NAME                                DESCRIPTION                                STARS     OFFICIAL    AUTOMATED
registry                            The Docker Registry 2.0 implementation for s... 3047      [OK]
distribution/registry              WARNING: NOT the registry official image!!! ... 57
stefanscherer/registry-windows    Containerized docker registry for Windows Se... 32
budry/registry-arm                Docker registry build for Raspberry PI 2 and... 18
deis/registry                      Docker image registry for the Deis open sour... 12
jc21/registry-ui                  A nice web interface for managing your Docke... 11
anoxis/registry-cli               You can list and delete tags from your priva... 10
vmware/registry                   6
pallet/registry-swift              Add swift storage support to the official do... 4
allngeek/registry                 A specialization of registry:2 configured fo... 4
arm32v6/registry                  The Docker Registry 2.0 implementation for s... 3
goharbor/registry-photon          2
conjurinc/registry-oauth-server   Docker registry authn/authz server backed by... 1
concourse/registry-image-resource 1
ibmcom/registry                   Docker Image for IBM Cloud private-CE (Commu... 1
metadata/registry                 Metadata Registry is a tool which helps you ... 1
webhippie/registry                Docker images for Registry                  1
kontena/registry                  Kontena Registry                          0
dwpdigital/registry-image-resource Concourse resource type                    0
gisjedi/registry-proxy            Reverse proxy of registry mirror image gisje... 0
lorieri/registry-ceph             Ceph Rados Gateway (and any other S3 compati... 0
convox/registry                   0
pivnet/registry-gcloud-image      0
digillect/registry-cleaner        Tool to remove unused images from Docker reg... 0
upmcenterprises/registry-creds    0

ILMI@tabassum17101130:~$ docker run -d -p 5000:5000 \
> -v /docker_data/images:/var/lib/registry \
> -v /docker_data/certs:/certs \
> -e REGISTRY_HTTP_TLS_CERTIFICATE=/certs/domain.crt \
> -e REGISTRY_HTTP_TLS_KEY=/certs/domain.key \
> --restart on-failure \
> --name myregistry \
> docker search registry
```

Pushing image in private registry

```

ILMI@tabassum17101130:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ilmitabassum/modified-ubuntu   latest             7dc2b43fba77       23 hours ago       73.9MB
myimage1              1.0                3e301622db73       4 days ago         96.4MB
ubuntu               latest             1e4467b07108       2 weeks ago        73.9MB
docker               latest             81f5749c9058       6 weeks ago        211MB
registry             latest             2d4f4b5309b1       7 weeks ago        26.2MB
ILMI@tabassum17101130:~$ docker tag ilmitabassum/modified-ubuntu localhost:5000
ILMI@tabassum17101130:~$ docker tag ilmitabassum/modified-ubuntu localhost:5000/ myimages
"docker tag" requires exactly 2 arguments.
See 'docker tag --help'.

Usage:  docker tag SOURCE_IMAGE[:TAG] TARGET_IMAGE[:TAG]

Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE
ILMI@tabassum17101130:~$ docker tag ilmitabassum/modified-ubuntu localhost:5000/myimages
ILMI@tabassum17101130:~$ docker tag myimage1 localhost:5000/myimages
Error response from daemon: No such image: myimage1:latest
ILMI@tabassum17101130:~$ docker push localhost:5000/myimages
The push refers to repository [localhost:5000/myimages]
4da48ab4828d: Pushed
095624243293: Pushed
a37e74863e72: Pushed
8eeb4a14bcb4: Pushed
ce3011290956: Pushed
latest: digest: sha256:1dab4ec1b739526c6854caa8070b9ba665597fdf7f654ad6ea5fa85d30f31dd3 size: 1359
ILMI@tabassum17101130:~$ cd ~/docker_data/images/docker/registry/v2/repositories/

```

Create a small website or app with minimal functionality (Could be a simple HTML website that has a button which opens a static image/file) inside Docker container.

- First, we have to make a docker image from docker file with the HTML file in the same directory.
- After that we have to run the container from the image assigning a particular port for the website to run.
- Then, we have to open the port from our browser.

```
ILMI@tabassum17101130:~$ cd Desktop
ILMI@tabassum17101130:~/Desktop$ mkdir Ilmi17101130_Docker
ILMI@tabassum17101130:~/Desktop$ ls
hello.odt  Ilmi17101130_Docker
ILMI@tabassum17101130:~/Desktop$ cd Ilmi17101130_Docker
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ touch index.html
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ touch index2.html
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ ls
index2.html  index.html
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ cd ..
ILMI@tabassum17101130:~/Desktop$ cd Ilmi17101130_Docker
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ vim Dockerfile
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ cat Dockerfile
From nginx:alpine

Maintainer Ilmi Tabassum

Copy ./user/share/nginx/html
```

```
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ vim index.html
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ cat index.html
<html>
    <head> <title> Ilmi Tabassum</title> </head>
    <body> <a. href ="index2.html"><button>Enter</button></a>
        <p>Welcome! I am Ilmi.To enter click the button.<p>
    </body>
</html>

ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ sudo vim index2.html
[sudo] password for ilmi:
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ docker run -d -P --name web nginx
d9aa87d23c8c6bc3484d00f614bda9a8eb7d72424a1449ec66b86bc0a8543e6f
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ docker-machine ip default
docker-machine: command not found
ILMI@tabassum17101130:~/Desktop/Ilmi17101130_Docker$ sudo snap install docker
docker 19.03.11 from Canonical✓ installed
```

```
ILMI@tabassum17101130:~/Desktop/website$ touch dockerfile
ILMI@tabassum17101130:~/Desktop/website$ vim dockerfile
ILMI@tabassum17101130:~/Desktop/website$ cat dockerfile
FROM ubuntu
RUN apt-get update
RUN apt-get install nginx -y
COPY index.html /var/www/html/
EXPOSE 80
CMD ["nginx","-g","daemon off;"]
ILMI@tabassum17101130:~/Desktop/website$ sudo docker build -t nginx .
[sudo] password for ilmi:
```

```

ILMI@midterm-tabassum17101130:~/Desktop/static_app$ ls
Dockerfile index2.html index.html
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ cat index2.html
<p> Ilni Tabassum Id= 17101130 </p>

ILMI@midterm-tabassum17101130:~/Desktop/static_app$ cat docfile
cat: docfile: No such file or directory
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ cat Dockerfile
From nginx
COPY . /usr/share/nginx/html

ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker run -d --name container -p 80:80 static_app:v1
Unable to find image 'static_app:v1' locally
docker: Error response from daemon: pull access denied for static_app, repository does not exist or may require 'docker login': denied: reques
ted access to the resource is denied.
See 'docker run --help'.
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker build -t static_app:v1 .
Sending build context to Docker daemon  4.096kB
Step 1/2 : From nginx
--> 4bb46517cac3
Step 2/2 : COPY . /usr/share/nginx/html
--> e10d5811c063
Successfully built e10d5811c063
Successfully tagged static_app:v1

```

```

ILMI@tabassum17101130:~/Desktop/website$ sudo docker run -d --name ngxcontainer2 -p 8000:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
bf5952930446: Pull complete
ba755a256dfe: Pull complete
c57dd87d0b93: Pull complete
d7fbf29df889: Pull complete
1f1070938ccd: Pull complete
Digest: sha256:36b74457bccb56fbf8b05f79c85569501b721d4db813b684391d63e02287c0b2
Status: Downloaded newer image for nginx:latest
ca12c7079452352699a61cd45e74be1daf56339be7da75f61846399ad67e23d9
ILMI@tabassum17101130:~/Desktop/website$ curl localhost:8000
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

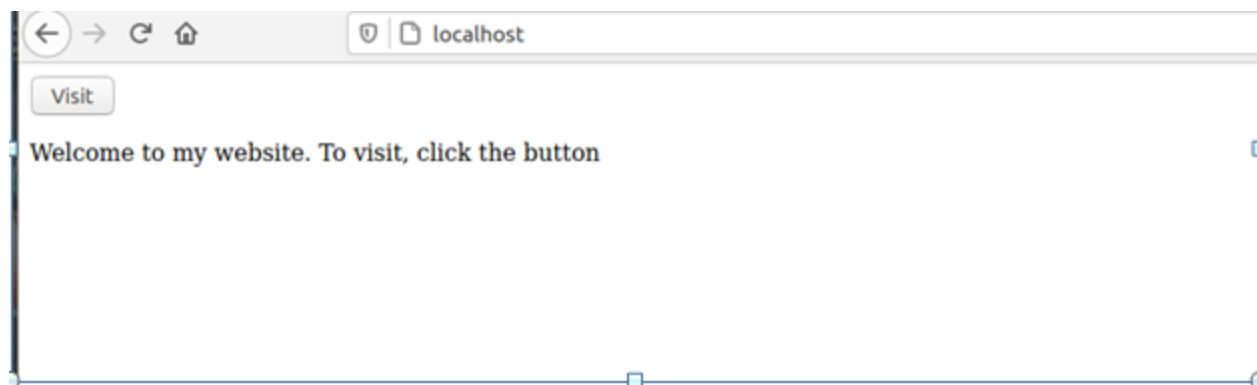
<p><em>Thank you for using nginx.</em></p>
</body>
</html>

```



```
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker run -d --name container -p 80:80 static_app:v1
Unable to find image 'static_app:v1' locally
docker: Error response from daemon: pull access denied for static_app, repository does not exist or may require 'docker login': denied: requested access to the resource is denied.
See 'docker run --help'.
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker build -t static_app:v1 .
Sending build context to Docker daemon 4.096kB
Step 1/2 : From nginx
----> 4bb46517cac3
Step 2/2 : COPY . /usr/share/nginx/html
----> e10d5811c063
Successfully built e10d5811c063
Successfully tagged static_app:v1
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker images | grep nginx
nginx          latest          4bb46517cac3    2 weeks ago    133MB
nginx          <none>          08393e824c32    3 weeks ago    132MB
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker images | grep static
static_app     v1             e10d5811c063    53 seconds ago 133MB
static_app     v1             a5df02446ff2    3 hours ago    133MB
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker run -d --name container -p 80:80 static_app:v1
64364c516b561b02025ce5ff56a4587a691a1325021804eedacd0e83b221b3e4
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES
64364c516b56   static_app:v1  "/docker-entrypoint...." 9 seconds ago  Up 3 seconds  0.0.0.0:80->80/tcp       container
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker logs container
/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: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: 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: Configuration complete; ready for start up
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker stop app-container
Error response from daemon: No such container: app-container
ILMI@midterm-tabassum17101130:~/Desktop/static_app$ docker run -d --name container -p 80:80 static_app:v1
docker: Error response from daemon: Conflict. The container name "/container" is already in use by container "64364c516b561b02025ce5ff56a4587a691a1325021804eedacd0e83b221b3e4". You have to remove (or rename) that container to be able to reuse that name.
```

ILMI Tabassum Id= 17101130



Migrate the new container having the application into another machine.

```
maharab@kibria-17101319:~$ sudo docker pull 17101130/ilmitabassum123
Using default tag: latest
latest: Pulling from 17101130/ilmitabassum123
3ff22d22a855: Already exists
e7cb79d19722: Already exists
323d0d660b6a: Already exists
b7f616834fd0: Already exists
Digest: sha256:2a9f2e7fae77ff404f49ed9b8e43c2ca998cffca2e5f910eb68fc44127e0e501
Status: Downloaded newer image for 17101130/ilmitabassum123:latest
docker.io/17101130/ilmitabassum123:latest
maharab@kibria-17101319:~$
```

```
maharab@kibria-17101319:~$ sudo docker pull 17101130/ilmitabassumimage
[sudo] password for maharab:
Using default tag: latest
latest: Pulling from 17101130/ilmitabassumimage
Digest: sha256:0da3b3178016176a815c2e3219e2fabb2e3419ba809fe957ffecbb12d61371e1
Status: Image is up to date for 17101130/ilmitabassumimage:latest
docker.io/17101130/ilmitabassumimage:latest
```

```
maharab@kibria-17101319:~$ sudo docker pull 17101130/ilmitabassumimage
[sudo] password for maharab:
Using default tag: latest
latest: Pulling from 17101130/ilmitabassumimage
Digest: sha256:0da3b3178016176a815c2e3219e2fabb2e3419ba809fe957ffecbb12d61371e1
Status: Image is up to date for 17101130/ilmitabassumimage:latest
docker.io/17101130/ilmitabassumimage:latest
```