# Computer Networks – Lab Fall 2020

# Momina Atif Dar P18-0030

# Client Server Communication using Docker

#### **Server Side**

#### Container creation:

```
(base) momina@death-eater:~$ sudo docker run --name server-p180030 -it ubuntu root@dd7645bfb83e:/# _
```

### Starting container:

```
(base) momina@death-eater:~$ sudo docker start server-p180030 server-p180030
```

## Running container:

```
(base) momina@death-eater:~$ sudo docker exec -it server-p180030 bash
root@dd7645bfb83e:/# _
```

Installing vim:
(after apt-get update)

root@dd7645bfb83e:/# apt-get install vim Reading package lists... Done Building dependency tree Reading state information... Done

## Installing 'ifconfig' and other similar tools:

```
root@dd7645bfb83e:/# apt install inetutils-ping net-tools -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
   libidn11 netbase
The following NEW packages will be installed:
   inetutils-ping libidn11 net-tools netbase
0 upgraded, 4 newly installed, 0 to remove and 15 not upgraded.
Need to get 316 kB of archives.
```

### Installing python:

```
root@dd7645bfb83e:/# apt-get install python
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'python-is-python2' instead of 'python'
The following additional packages will be installed:
   libpython2-stdlib libpython2.7-minimal libpython2.7-stdlib python2
   python2-minimal python2.7 python2.7-minimal
Suggested packages:
   python2-doc python-tk python2.7-doc binutils binfmt-support
The following NEW packages will be installed:
   libpython2-stdlib libpython2.7-minimal libpython2.7-stdlib python-is-python2
   python2 python2-minimal python2.7 python2.7-minimal
0 upgraded, 8 newly installed, 0 to remove and 15 not upgraded.
```

## Checking the IP of server:

(172.17.0.4)

```
root@dd7645bfb83e:/# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
       inet 172.17.0.4 netmask 255.255.0.0 broadcast 172.17.255.255
       ether 02:42:ac:11:00:04 txqueuelen 0 (Ethernet)
       RX packets 23234 bytes 35400039 (35.4 MB)
       RX errors 0 dropped 0 overruns 0 frame 0
       TX packets 17127 bytes 1458651 (1.4 MB)
       TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
       inet 127.0.0.1 netmask 255.0.0.0
       loop txqueuelen 1000 (Local Loopback)
       RX packets 0 bytes 0 (0.0 B)
       RX errors 0 dropped 0 overruns 0 frame 0
       TX packets 0 bytes 0 (0.0 B)
       TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
root@dd7645bfb83e:/#
```

# Creating a server.py file:

```
import socket
s=socket.socket(socket.AF_INET, socket.SOCK_STREAM)
s.bind(("172.17.0.4",1024))
s.listen(5)
while True:
    clt, adr=s.accept()
    stradr=str(adr)
    print("connection to "+stradr+" established")
    string="this message is coming from Server side."
    arr=string.encode("utf-8")
    clt.send(arr)
```

#### **Client Side**

#### Creation of container:

```
(base) momina@death-eater:~$ sudo docker run --name client-p180030 -it ubuntu
root@eb8fffac4888:/# _
```

## Starting container:

```
(base) momina@death-eater:~$ sudo docker start client-p180030 client-p180030 (base) momina@death-eater:~$ _
```

#### Running container:

```
(base) momina@death-eater:~$ sudo docker exec -it client-p180030 bash root@eb8fffac4888:/# _
```

# Installing vim:

```
root@eb8fffac4888:/# apt-get install vim
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
alsa-topology-conf alsa-ucm-conf file libasound2 libasound2-data libcanberra0 libexpat1 l<sup>i</sup>
libltdl7 libmagic-mgc libmagic1 libmpdec2 libogg0 libpython3.8 libpython3.8-minimal
```

### Installing 'ifconfig' and other similar tools:

```
root@eb8fffac4888:/# apt install inetutils-ping net-tools -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
   libidn11 netbase
The following NEW packages will be installed:
   inetutils-ping libidn11 net-tools netbase
O upgraded, 4 newly installed, O to remove and 15 not upgraded.
```

### Installing python:

```
root@eb8fffac4888:/# apt-get install python
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'python-is-python2' instead of 'python'
The following additional packages will be installed:
  libpython2-stdlib libpython2.7-minimal libpython2.7-stdlib python2 python2-minimal python2.7
  python2.7-minimal
Suggested packages:
  python2-doc python-tk python2.7-doc binutils binfmt-support
The following NEW packages will be installed:
  libpython2-stdlib libpython2.7-minimal libpython2.7-stdlib python-is-python2 python2
  python2-minimal python2.7 python2.7-minimal
0 upgraded, 8 newly installed, 0 to remove and 15 not upgraded.
```

### Creating a client.py file:

## **Connection Established**

Server Side:

```
root@dd7645bfb83e:/# python server.py
connection to ('172.17.0.5', 43278) established
—
```

Client Side:

```
root@eb8fffac4888:/# python client.py
this message is coming from Server side.
root@eb8fffac4888:/# _
```