

COMP 6231 – Distributed System Design  
Assignment-3  
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## Task 2

USED IPs:

Client1: 172.17.0.6

Client2: 172.17.0.7

Client3: 172.17.0.8

USED Ports:

Client1: 52540

Client2: 39658

Client3: 41950

Serve IP and Ports (IP,Ports) : (172.17.0.2, 50091)

Storage location: /Users/princeghoghari/Downloads/Q1/ Combined\_Flights\_2021.csv

### List of Commands used:

MPI Container:

1) docker pull dhna/mpi4py: The docker pull command is used to download a particular image, or set of images (i.e., a repository). If no tag is provided, Docker Engine uses the :latest tag as a default.

2) docker pull husseinabdallah2/mpi4py-cluster:master

3) docker run --name Assign3\_MPI\_40216962 --mount type=bind,source=/Users/princeghoghari/Downloads/Q1,target=/Assign3\_MPI -it dhna/mpi4py bash → It will create an container to run particular task

Worker Node:

1) docker pull dhna/mpi4py

2) docker pull husseinabdallah2/mpi4py-cluster:master

3) `docker run --name Assign3_MPI_40216962_worker1 --mount type=bind,source=/Users/princeghoghari/Downloads/Q1,target=/Assign3_MPI -it assign3_40216962_MPI-img bash =>` For the same as mentioned above but its for worker 1.

4) `docker run --name Assign3_MPI_40216962_worker2 --mount type=bind,source=/Users/princeghoghari/Downloads/Q1,target=/Assign3_MPI -it assign3_40216962_MPI-img bash => bash =>` For the same as mentioned above but its for worker 2.

5) `docker run --name Assign3_MPI_40216962_worker3 --mount type=bind,source=/Users/princeghoghari/Downloads/Q1,target=/Assign3_MPI -it assign3_40216962_MPI-img bash => bash =>` For the same as mentioned above but its for worker 3.

- ⇒ `passwd` : The `passwd` command changes passwords for user accounts.
- ⇒ `apt-get update`: This command is used to download package information from all configured sources.
- ⇒ `service ssh start` : The `ssh` order gives a safe encoded association between two hosts over an uncertain organization. Access to the terminal, file transfers, and tunneling of other applications are all possible with this connection.
- ⇒ `mpiexec` : Python files that make use of `mpi` are executed by means of the `mpiexec` command. It takes `-n`, which indicates the number of nodes that will be created, with one master and others serving as workers.

## Log file:

```
(base) princeghoghari@Princes-MBP ~ % docker run --name Assign3_MPI --mount
type=bind,source=/Users/princeghoghari/Downloads/Q1,target=/Assign3_MPI_40216962 -it
dhna/mpi4py bash
WARNING: The requested image's platform (linux/amd64) does not match the detected host
platform (linux/arm64/v8) and no specific platform was requested
root@4a748c622cc9:/# ls
Assign3_MPI_40216962 dev lib libx32 opt run sys var
bin          etc lib32 media proc sbin tmp
boot         home lib64 mnt  root srv  usr
root@4a748c622cc9:/# cd Assign3_MPI_40216962/
root@4a748c622cc9:/Assign3_MPI_40216962# ls
```

Combined\_Flights\_2021.csv T3.py

root@4a748c622cc9:/Assign3\_MPI\_40216962# mpirun -n 2 python T3.py

Traceback (most recent call last):

File "T3.py", line 3, in <module>

from tqdm import tqdm

ModuleNotFoundError: No module named 'tqdm'

Traceback (most recent call last):

File "T3.py", line 3, in <module>

from tqdm import tqdm

ModuleNotFoundError: No module named 'tqdm'

root@4a748c622cc9:/Assign3\_MPI\_40216962# import tqdm

bash: import: command not found

root@4a748c622cc9:/Assign3\_MPI\_40216962# pip install tqdm

Collecting tqdm

Downloading tqdm-4.64.1-py2.py3-none-any.whl (78 kB)

 78 kB 813 kB/s

Installing collected packages: tqdm

Successfully installed tqdm-4.64.1

root@4a748c622cc9:/Assign3\_MPI\_40216962# mpirun -n 4 python T3.py

Worker 1 is assigned chunk info [6311871, 1]

/Users/princeghoghari/Downloads/Q1/Combined\_Flights\_2021.csv

mpirun -n 4 python T3.py

Worker 1 is assigned chunk info [2103956, 1]

/Users/princeghoghari/Downloads/Q1/Combined\_Flights\_2021.csv

Worker slave 1 is done. Sending back to master

Worker 2 is assigned chunk info [2103957, 2103957]

/Users/princeghoghari/Downloads/Q1/Combined\_Flights\_2021.csv Worker slave 2 is done.

Sending back to master

Worker 3 is assigned chunk info [None, 4207914]

/Users/princeghoghari/Downloads/Q1/Combined\_Flights\_2021.csv

Worker slave 3 is done. Sending back to master

received from Worker slave 1

received from Worker slave 2

received from Worker slave 3

100%|██████████| 3/3 [00:00<00:00, 1300.42it/s]

'Southwest Airlines Co.' airline had Maximum Cancelled flights in Sept 2021.

Time taken for doing task with 4 workers : 22.427978992462158

done.