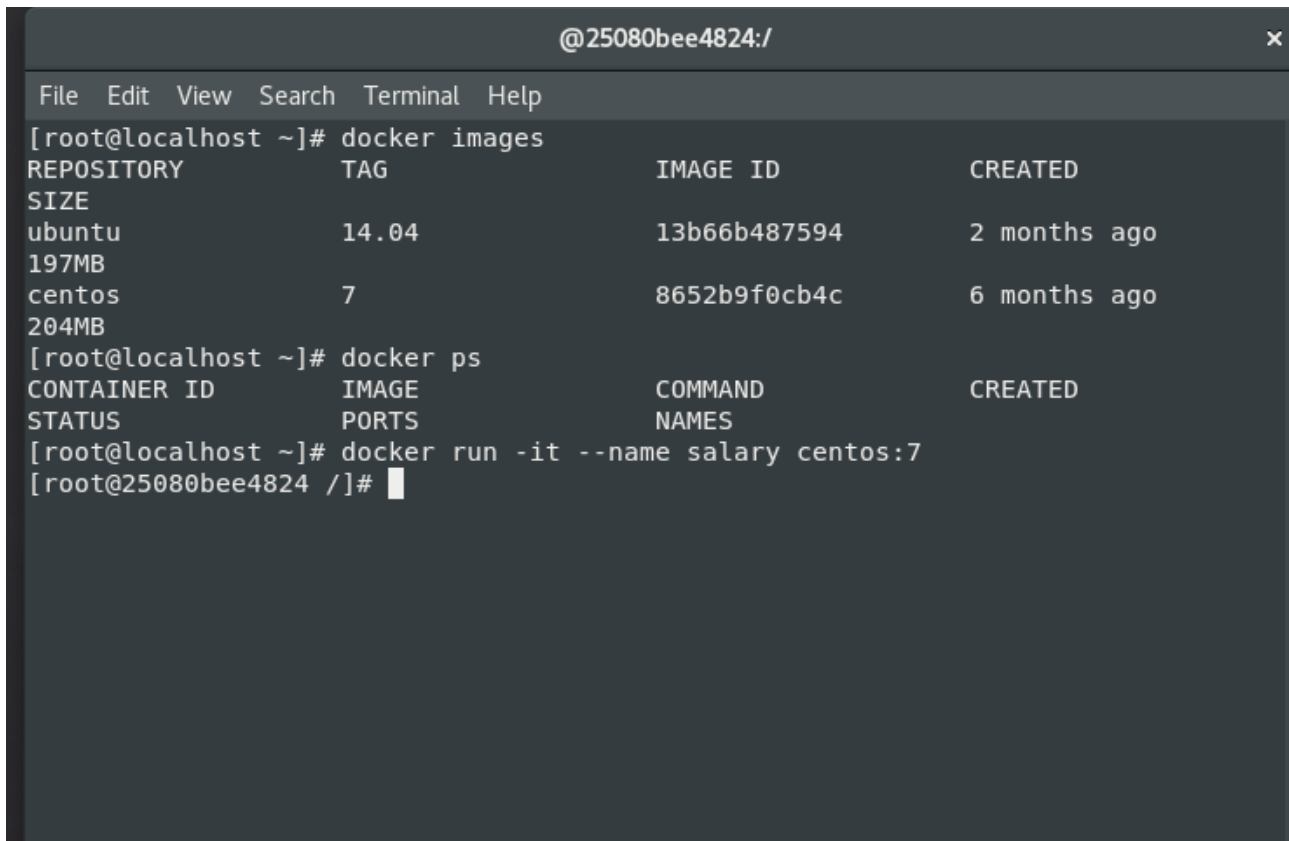


Step1: Pull the docker container image of CentOS image from DockerHub using the following command:

**# docker run -it --name <container\_name> centos:7**

A terminal window titled "@25080bee4824:/" with a close button in the top right corner. The terminal has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The user runs the command "docker images", which displays a table of installed Docker images. The table has columns for "REPOSITORY", "TAG", "IMAGE ID", and "CREATED". It lists "ubuntu" (tag 14.04, image ID 13b66b487594, created 2 months ago) and "centos" (tag 7, image ID 8652b9f0cb4c, created 6 months ago). The user then runs "docker ps", which shows no running containers. Finally, the user runs "docker run -it --name salary centos:7", and the prompt changes to "[root@25080bee4824 /]#" with a cursor.

```
[root@localhost ~]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
ubuntu              14.04              13b66b487594       2 months ago
197MB
centos               7                  8652b9f0cb4c       6 months ago
204MB
[root@localhost ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS             PORTS              NAMES
[root@localhost ~]# docker run -it --name salary centos:7
[root@25080bee4824 /]#
```

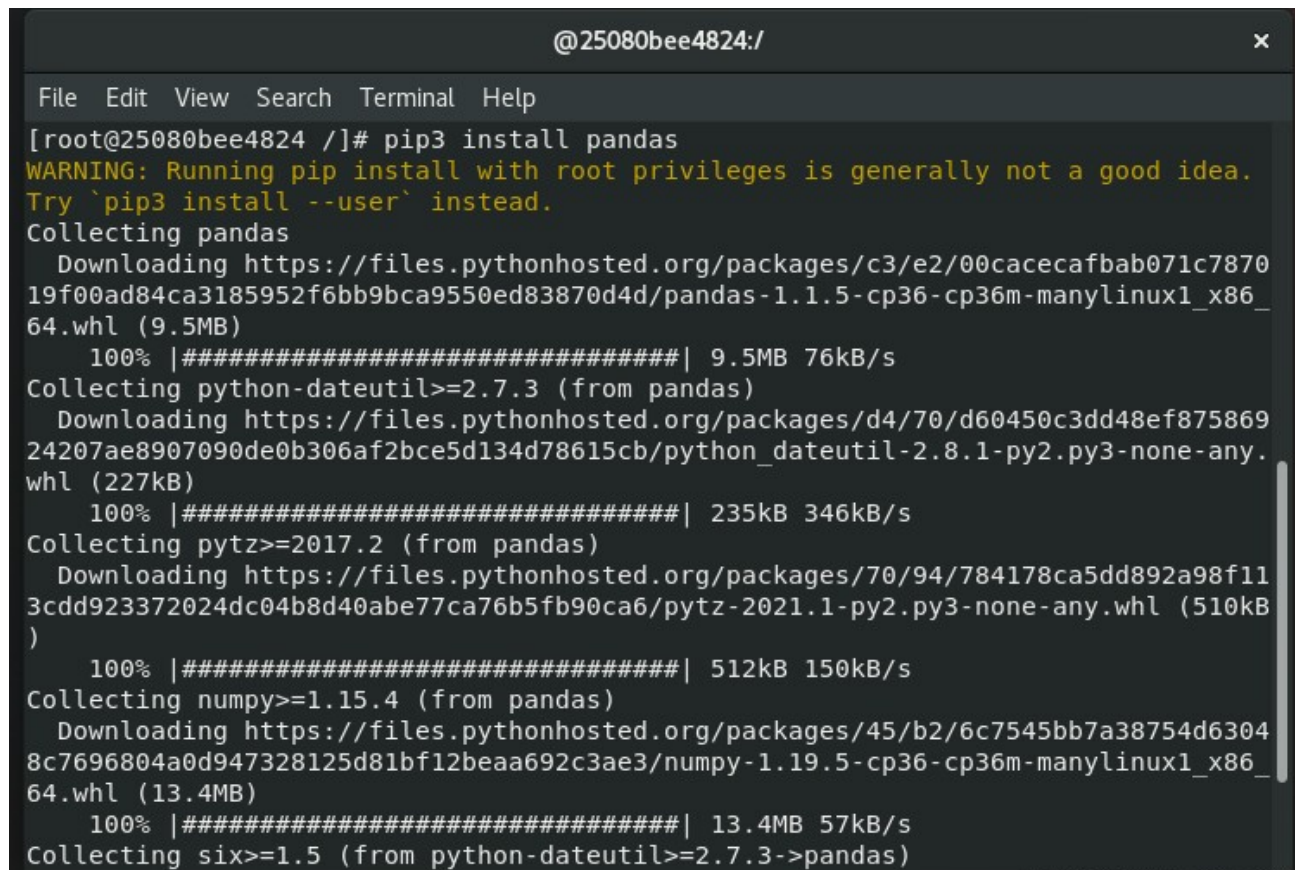
Step2: Install the Python software on the top of docker container using the following command:

**# yum install python36 -y**

```
@25080bee4824:/
File Edit View Search Terminal Help
[root@25080bee4824 /]# yum install python36 -y
Loaded plugins: fastestmirror, ovl
Determining fastest mirrors
 * base: centos.excellmedia.net
 * extras: centos.excellmedia.net
 * updates: centos.excellmedia.net
base | 3.6 kB 00:00
extras | 2.9 kB 00:00
updates | 2.9 kB 00:00
(1/4): extras/7/x86_64/primary_db | 236 kB 00:01
(2/4): base/7/x86_64/group_gz | 153 kB 00:02
(3/4): updates/7/x86_64/primary_db | 8.0 MB 00:06
(4/4): base/7/x86_64/primary_db | 6.1 MB 00:10
Resolving Dependencies
--> Running transaction check
---> Package python3.x86_64 0:3.6.8-18.el7 will be installed
--> Processing Dependency: python3-libs(x86-64) = 3.6.8-18.el7 for package: python3-3.6.8-18.el7.x86_64
--> Processing Dependency: python3-setuptools for package: python3-3.6.8-18.el7.x86_64
--> Processing Dependency: python3-pip for package: python3-3.6.8-18.el7.x86_64
--> Processing Dependency: libpython3.6m.so.1.0()(64bit) for package: python3-3.6.8-18.el7.x86_64
--> Running transaction check
```

Step3: Installing pandas on centOS to run the python code.

command to install pandas is **# pip3 install pandas**



```
@25080bee4824:/
File Edit View Search Terminal Help
[root@25080bee4824 /]# pip3 install pandas
WARNING: Running pip install with root privileges is generally not a good idea.
Try `pip3 install --user` instead.
Collecting pandas
  Downloading https://files.pythonhosted.org/packages/c3/e2/00cacecafbab071c7870
19f00ad84ca3185952f6bb9bca9550ed83870d4d/pandas-1.1.5-cp36-cp36m-manylinux1_x86_
64.whl (9.5MB)
    100% |#####| 9.5MB 76kB/s
Collecting python-dateutil>=2.7.3 (from pandas)
  Downloading https://files.pythonhosted.org/packages/d4/70/d60450c3dd48ef875869
24207ae8907090de0b306af2bce5d134d78615cb/python_dateutil-2.8.1-py2.py3-none-any.
whl (227kB)
    100% |#####| 235kB 346kB/s
Collecting pytz>=2017.2 (from pandas)
  Downloading https://files.pythonhosted.org/packages/70/94/784178ca5dd892a98f11
3cdd923372024dc04b8d40abe77ca76b5fb90ca6/pytz-2021.1-py2.py3-none-any.whl (510kB
)
    100% |#####| 512kB 150kB/s
Collecting numpy>=1.15.4 (from pandas)
  Downloading https://files.pythonhosted.org/packages/45/b2/6c7545bb7a38754d6304
8c7696804a0d947328125d81bf12beaa692c3ae3/numpy-1.19.5-cp36-cp36m-manylinux1_x86_
64.whl (13.4MB)
    100% |#####| 13.4MB 57kB/s
Collecting six>=1.5 (from python-dateutil>=2.7.3->pandas)
```

Step4: Installing scikit-learn on CentOS to run the python code.

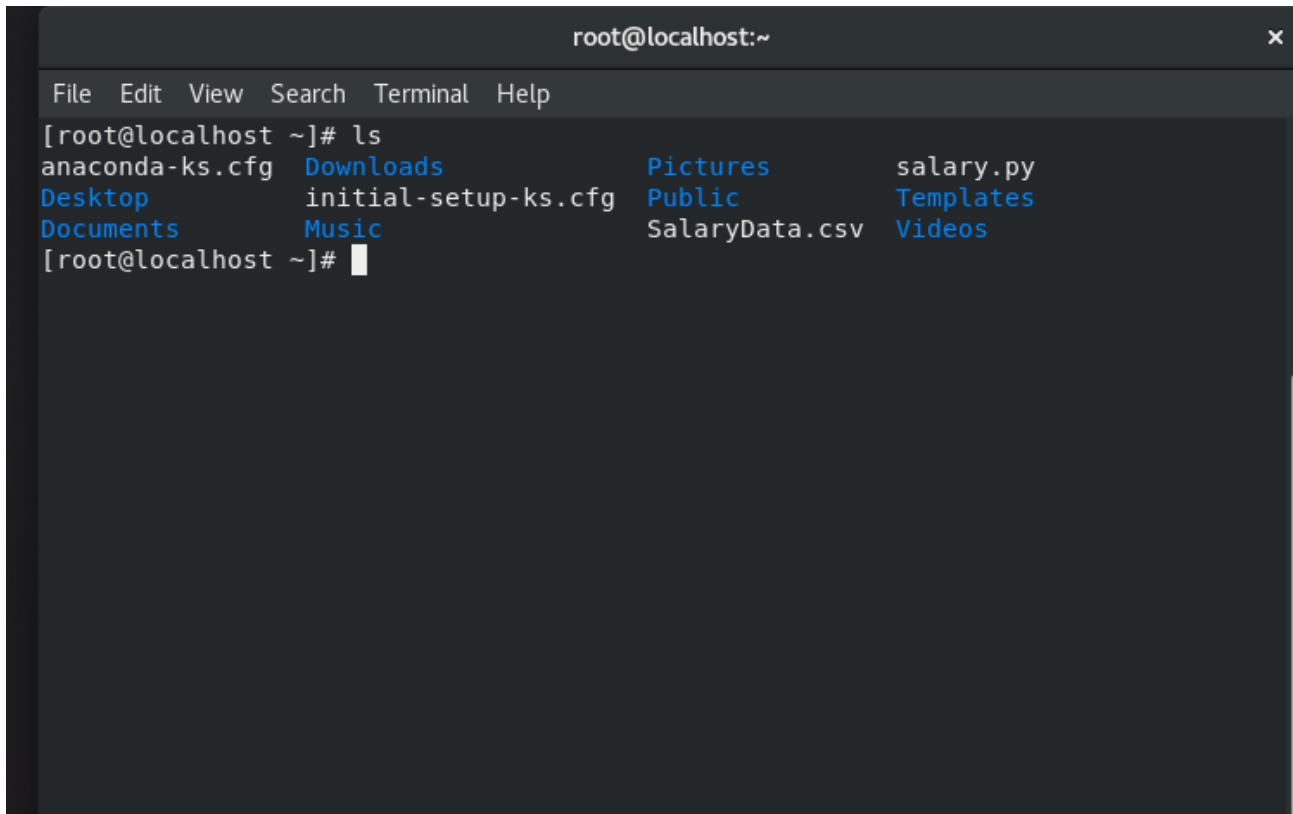
Command to install scikit-learn is **# pip3 install scikit-learn**

```
@25080bee4824:/
File Edit View Search Terminal Help
[root@25080bee4824 /]# pip3 install scikit-learn
WARNING: Running pip install with root privileges is generally not a good idea.
Try `pip3 install --user` instead.
Collecting scikit-learn
  Downloading https://files.pythonhosted.org/packages/f5/ef/bcd79e8d59250d6e8478
eb1290dc6e05be42b3be8a86e3954146adbc171a/scikit_learn-0.24.2-cp36-cp36m-manyl
x1_x86_64.whl (20.0MB)
    100% |#####| 20.0MB 40kB/s
Collecting joblib>=0.11 (from scikit-learn)
  Downloading https://files.pythonhosted.org/packages/55/85/70c6602b078bd9e6f3da
4f467047e906525c355a4dacd4f71b97a35d9897/joblib-1.0.1-py3-none-any.whl (303kB)
    100% |#####| 307kB 500kB/s
Requirement already satisfied: numpy>=1.13.3 in /usr/local/lib64/python3.6/site-
packages (from scikit-learn)
Collecting threadpoolctl>=2.0.0 (from scikit-learn)
  Downloading https://files.pythonhosted.org/packages/f7/12/ec3f2e203afa394a1499
11729357aa48affc59c20e2c1c8297a60f33f133/threadpoolctl-2.1.0-py3-none-any.whl
Collecting scipy>=0.19.1 (from scikit-learn)
  Downloading https://files.pythonhosted.org/packages/c8/89/63171228d5ced148f5ce
d50305c89e8576ffc695a90b58fe5bb602b910c2/scipy-1.5.4-cp36-cp36m-manylinux1_x86_6
4.whl (25.9MB)
    100% |#####| 25.9MB 32kB/s
Installing collected packages: joblib, threadpoolctl, scipy, scikit-learn
```

Step5: Transfer the copy of the files(salary.py,SalaryData.csv) from the base OS (ubuntu) to redhat OS.

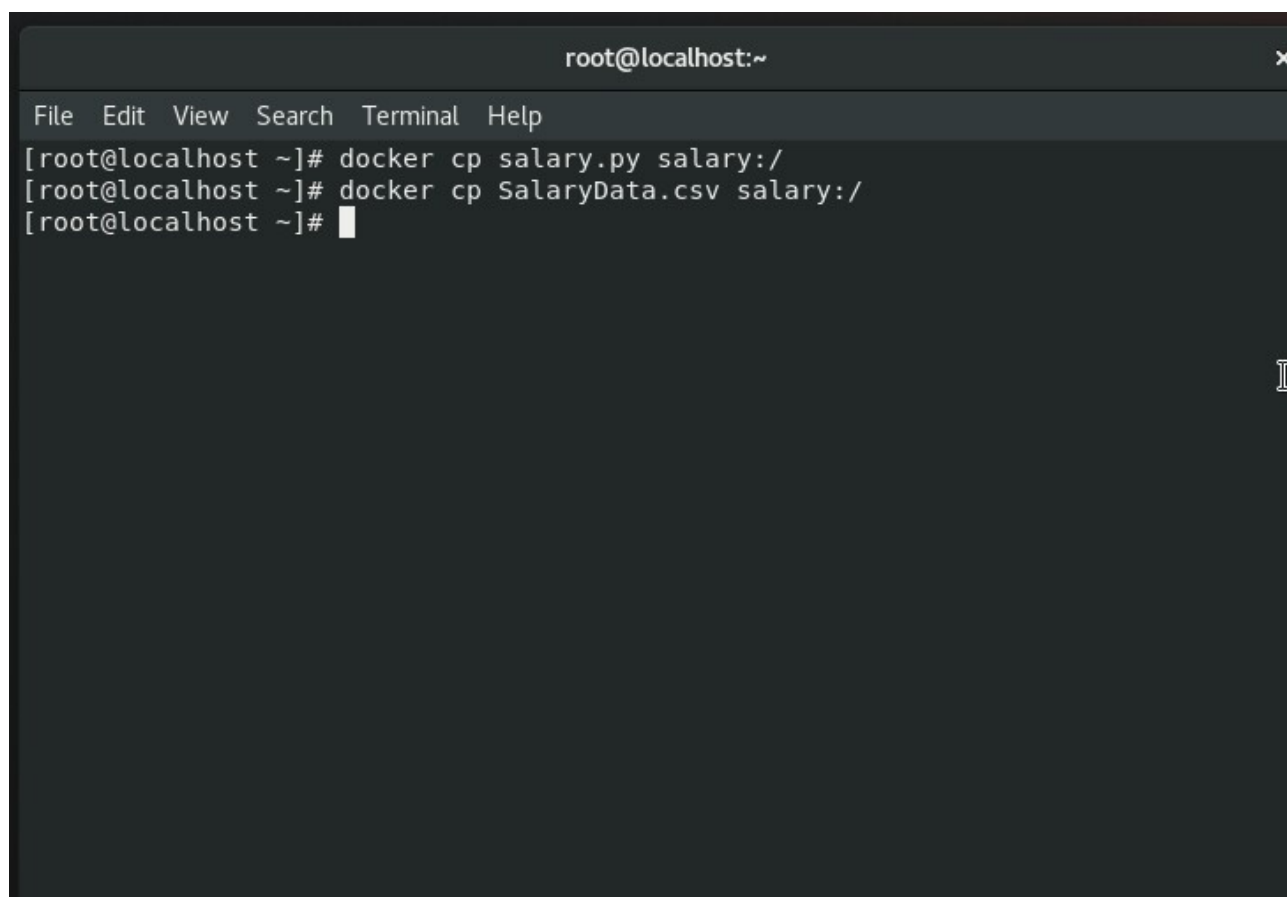
```
student@srilekha-reddy: ~/Desktop/ml
File Edit View Search Terminal Help
student@srilekha-reddy:~/Desktop/ml$ scp salary.py root@192.168.43.161:/root
root@192.168.43.161's password:
salary.py
student@srilekha-reddy:~/Desktop/ml$ scp SalaryData.csv root@192.168.43.161:/root
root@192.168.43.161's password:
SalaryData.csv
student@srilekha-reddy:~/Desktop/ml$
```

Step6: Verify the transeferred files(salary.py,SalaryData.csv) in redhat OS using #ls command.



```
root@localhost:~  
File Edit View Search Terminal Help  
[root@localhost ~]# ls  
anaconda-ks.cfg  Downloads          Pictures           salary.py  
Desktop          initial-setup-ks.cfg Public            Templates  
Documents        Music             SalaryData.csv   Videos  
[root@localhost ~]#
```

Step7: Transfer the files from the redhat OS to docker.

A terminal window titled 'root@localhost:~' with a standard menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows three commands being executed: 'docker cp salary.py salary:/', 'docker cp SalaryData.csv salary:/', and a final prompt '[root@localhost ~]#'.

```
root@localhost:~
File Edit View Search Terminal Help
[root@localhost ~]# docker cp salary.py salary:/
[root@localhost ~]# docker cp SalaryData.csv salary:/
[root@localhost ~]#
```



Step8: Verify the transeferred files in Docker using #ls command and run the machine learning model(salary.py) on CentOS.

```
@25080bee4824:/
File Edit View Search Terminal Help
[root@25080bee4824 /]# ls
SalaryData.csv  anaconda-post.log  bin  dev  etc  home  lib  lib64  media  mnt
opt  proc  root  run  salary.csv  salary.py  sbin  srv  sys  tmp  usr  var
[root@25080bee4824 /]# python3 salary.py
[[44692.12484158]]
[root@25080bee4824 /]# python3 salary.py
[[44692.12484158]]
[root@25080bee4824 /]# cat salary.py
import pandas
ds=pandas.read_csv('SalaryData.csv')
x=ds['YearsExperience']
y=ds['Salary']
x=x.values
y=y.values
x=x.reshape(-1,1)
y=y.reshape(-1,1)

from sklearn.linear_model import LinearRegression
model=LinearRegression()
model.fit(x,y)
print(model.predict([[2]]))
[root@25080bee4824 /]# python3 salary.py
[[44692.12484158]]
[root@25080bee4824 /]#
```