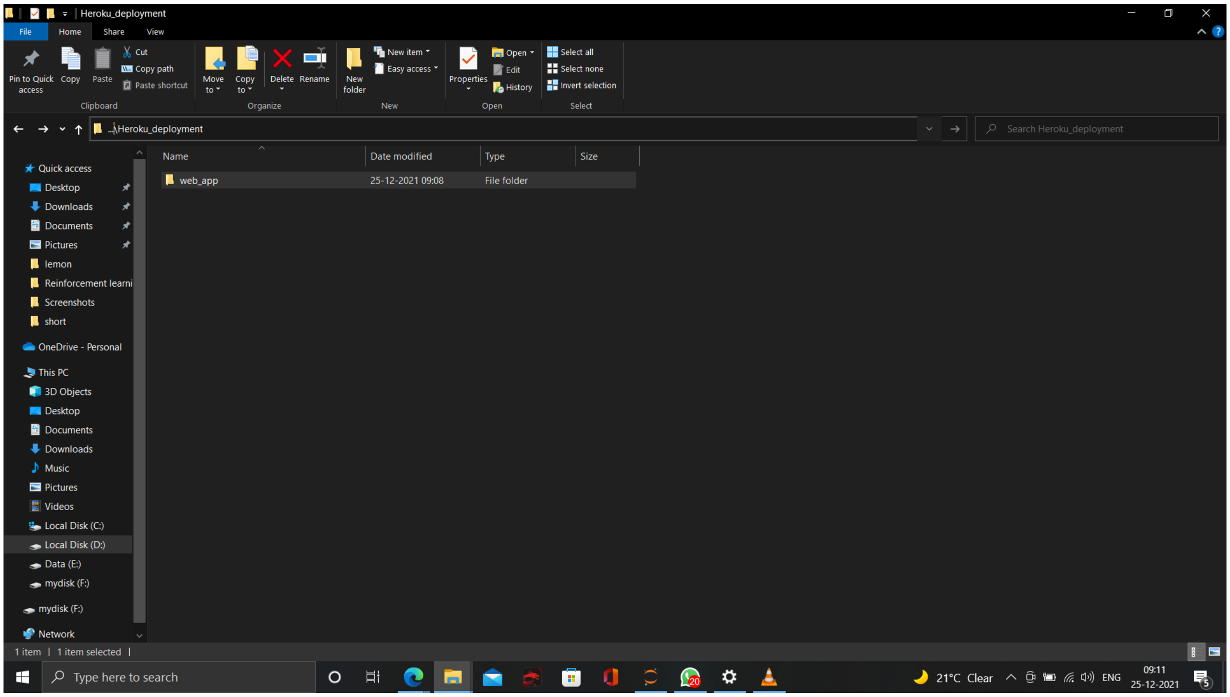
Streamlit web app deployment on Heroku cloud platform in detail

steps:

- create ready web app
- create heroku account
- installing git
- creating Procfile and stetup.sh
- creating envirnoment
- installing required packages on environment
- running the application again for ensuring any error
- after succssfull runnig creating requirements.txt file (pip freeze >requirements.txt)
- initializing git (git init)
- login heroku (heroku login)
- code adding to staging area ("git add *")
- commiting the whole code ("git commit -m "message")
- git fetch and push heroku master

Deployment of streamilit web app step wise

1. Create New directory(directory_name:Heroku_deployment) which can contain whole application file (app_directory_name:web_app)

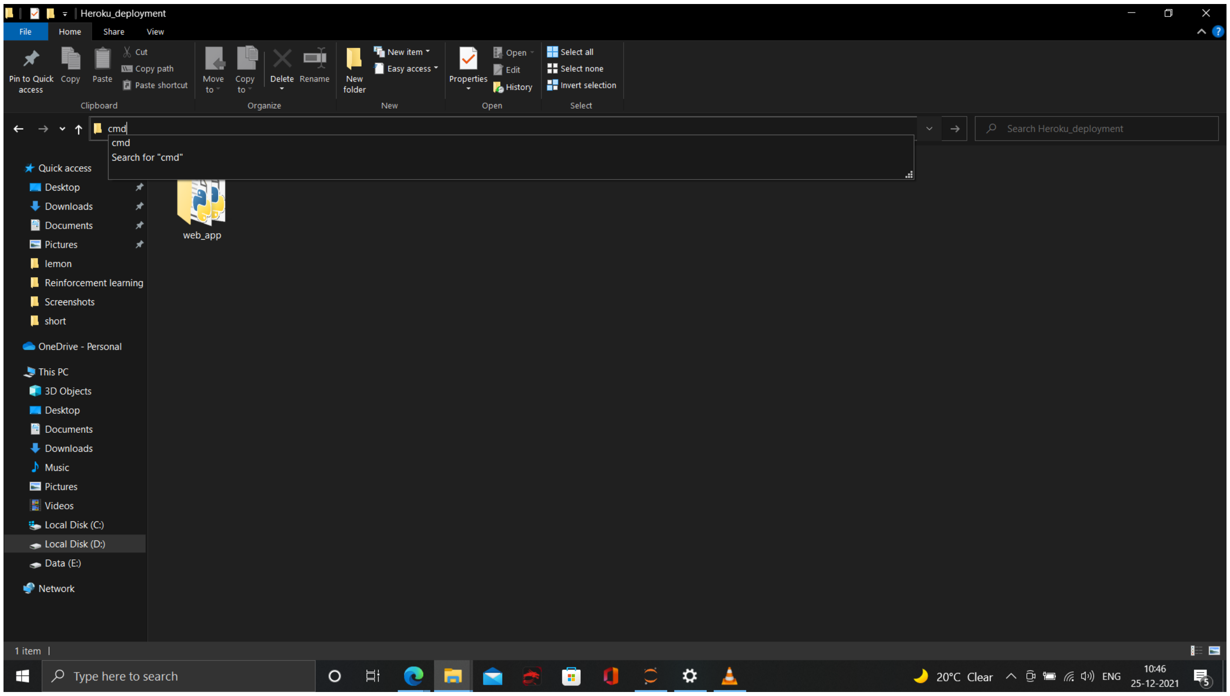


Name	Date modified	Type	Size
web_app	25-12-2021 09:08	File folder	

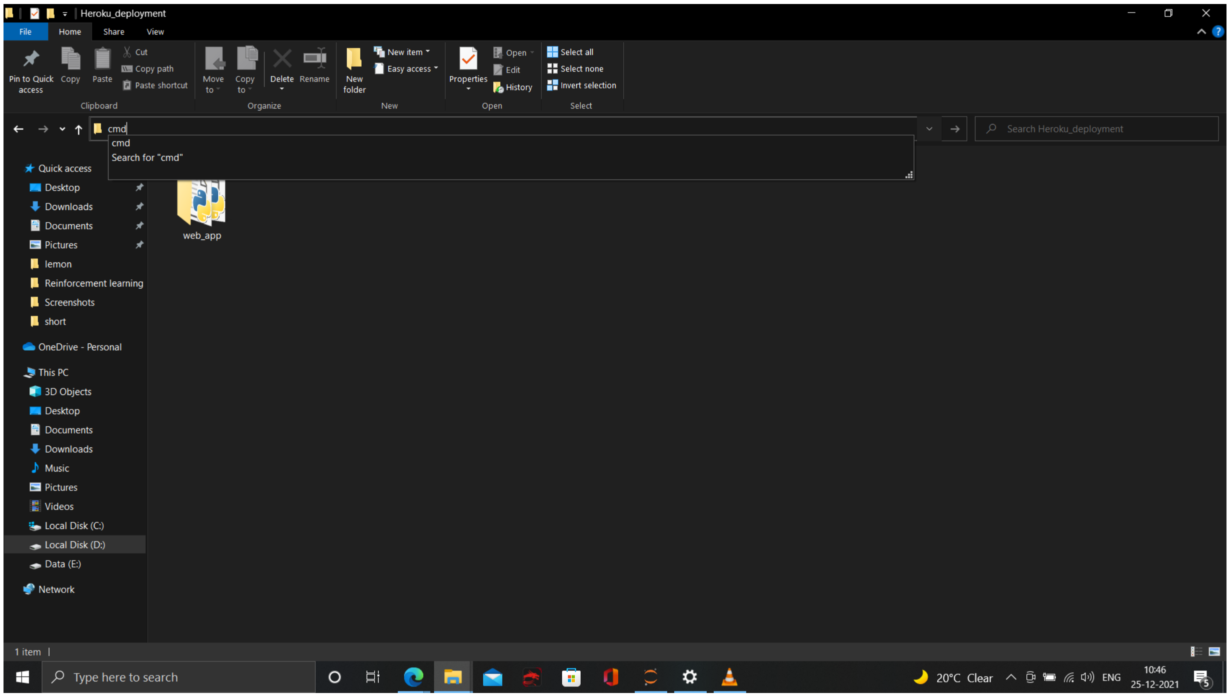
2. Creating new Vertual Environment

- First we have to open command prompt at the location of directory:Heroku_deployment present

  Type **"cmd"** and hit enter

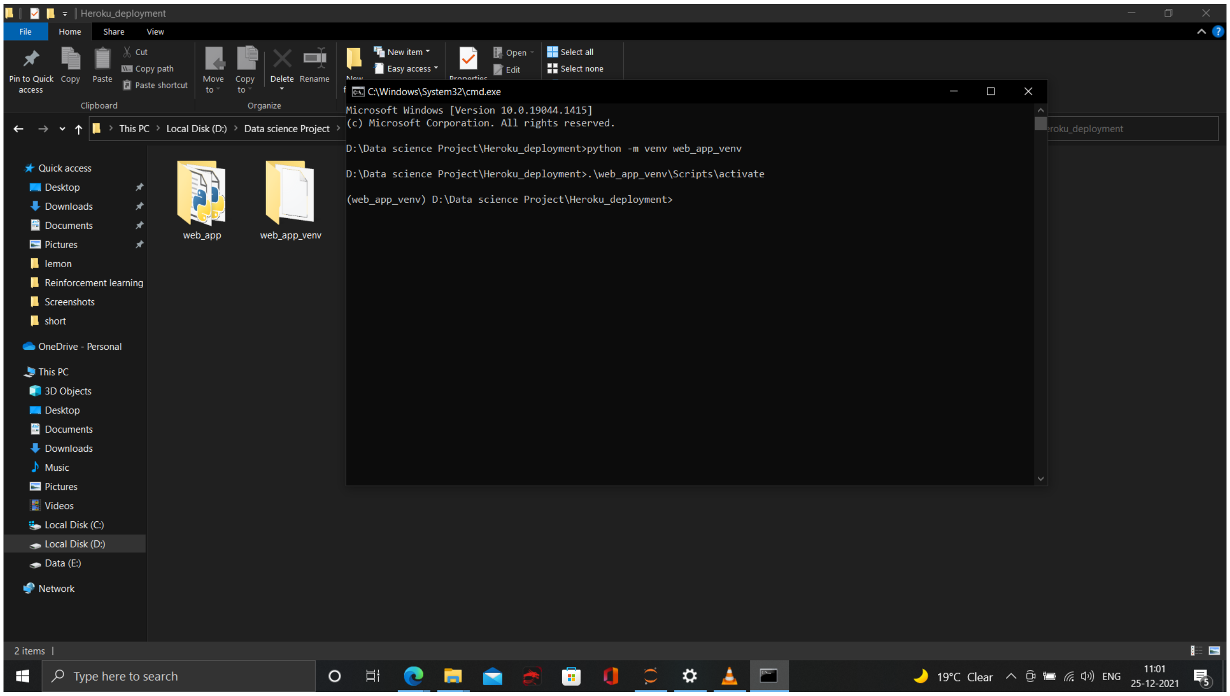


- To Creating a New Virtual Environment Exicute following cmd
  cmd:**python -m venv env_name**
  Note-"env_name" is the name of Virtual Environment directory



3. Activating created Vertual Environmrnt

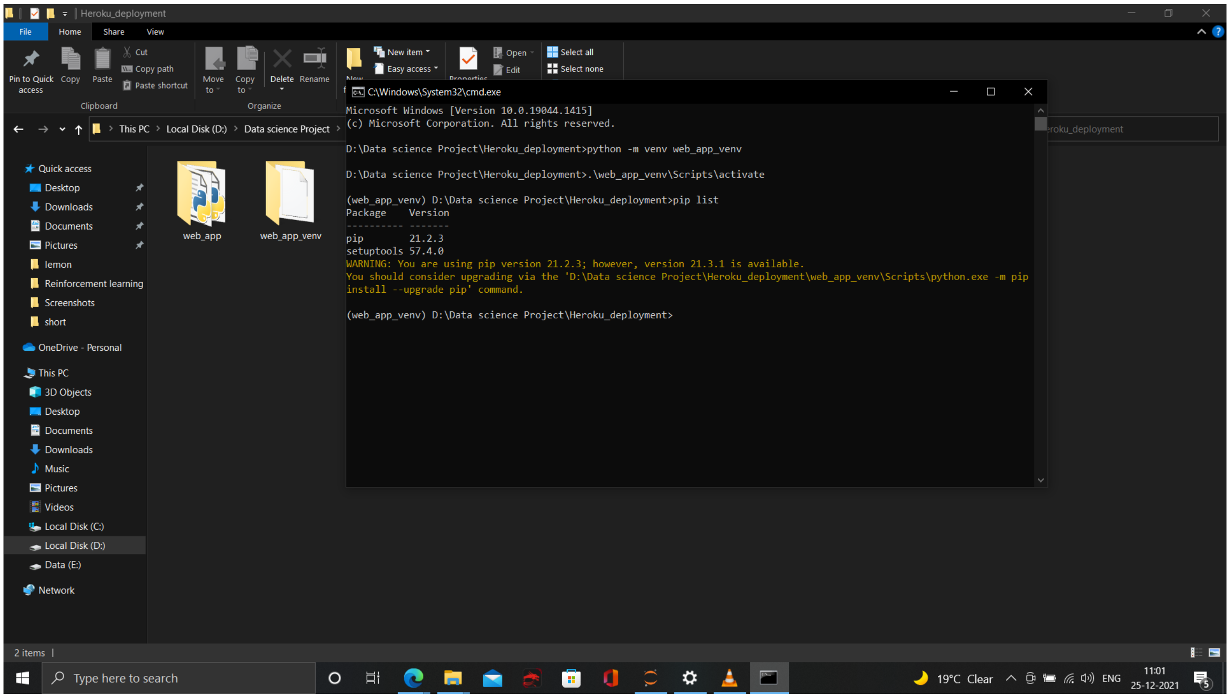
cmd:**.\env_name\Scripts\activate**



```
Microsoft Windows [Version 10.0.19044.1415]
(c) Microsoft Corporation. All rights reserved.

D:\Data science Project\Heroku_deployment>python -m venv web_app_venv

D:\Data science Project\Heroku_deployment>.\web_app_venv\Scripts\activate

(web_app_venv) D:\Data science Project\Heroku_deployment>
```

4. Checking Present pakages

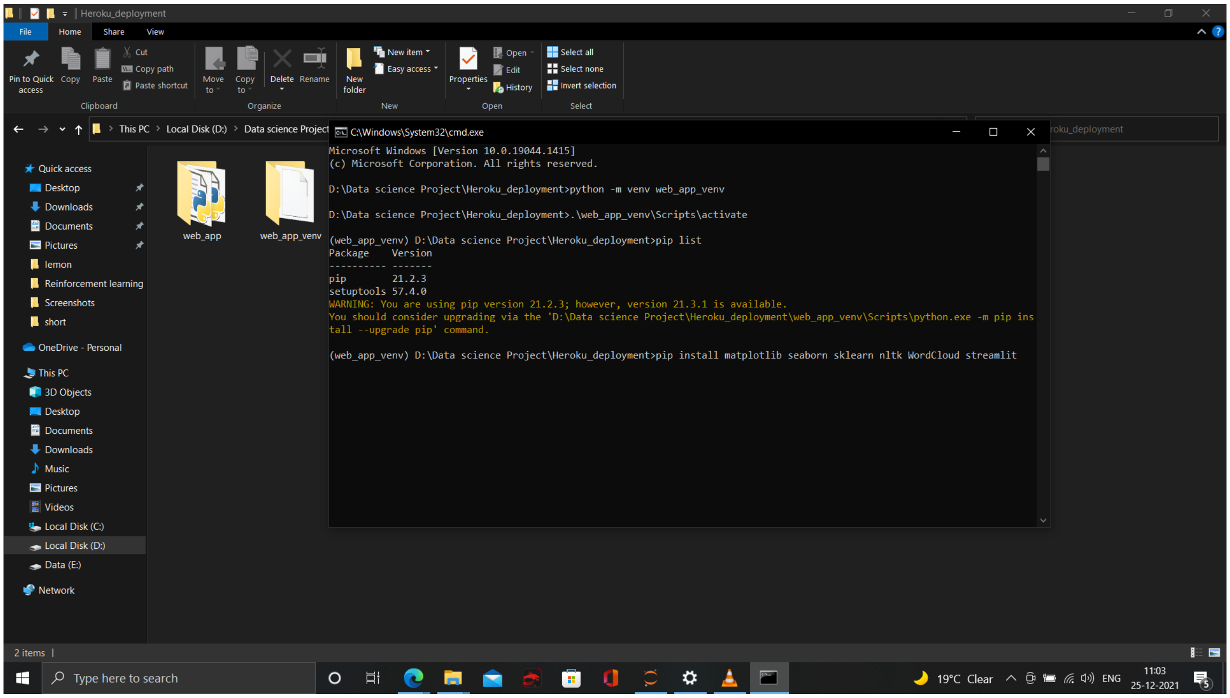
cmd:**pip list**



```
Microsoft Windows [Version 10.0.19044.1415]
(c) Microsoft Corporation. All rights reserved.

D:\Data science Project\Heroku_deployment>python -m venv web_app_venv

D:\Data science Project\Heroku_deployment>.\web_app_venv\Scripts\activate

(web_app_venv) D:\Data science Project\Heroku_deployment>pip list
Package    Version
---------- -------
pip        21.2.3
setuptools 57.4.0
WARNING: You are using pip version 21.2.3; however, version 21.3.1 is available.
You should consider upgrading via the 'D:\Data science Project\Heroku_deployment\web_app_venv\Scripts\python.exe -m pip
install --upgrade pip' command.

(web_app_venv) D:\Data science Project\Heroku_deployment>
```

5. Installing Required Dependencies

cmd:**pip install package_name1 package_name2 package_name3**
Note-"package_name1 package_name2 package_name3" Dependencies name



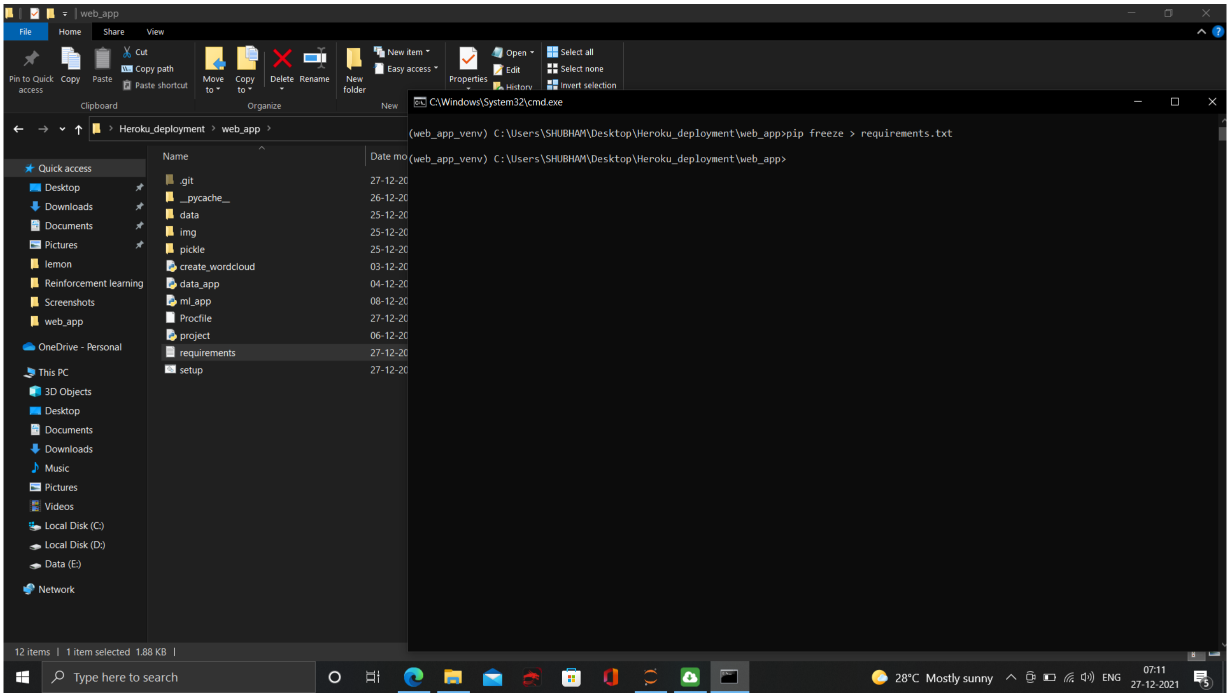
```
Microsoft Windows [Version 10.0.19044.1415]
(c) Microsoft Corporation. All rights reserved.

D:\Data science Project\Heroku_deployment>python -m venv web_app_venv

D:\Data science Project\Heroku_deployment>.\web_app_venv\Scripts\activate

(web_app_venv) D:\Data science Project\Heroku_deployment>pip list
Package    Version
---------- -------
pip        21.2.3
setuptools 57.4.0
WARNING: You are using pip version 21.2.3; however, version 21.3.1 is available.
You should consider upgrading via the 'D:\Data science Project\Heroku_deployment\web_app_venv\Scripts\python.exe -m pip ins
tall --upgrade pip' command.

(web_app_venv) D:\Data science Project\Heroku_deployment>pip install matplotlib seaborn sklearn nltk WordCloud streamlit
```

6. Ensuring runnig the app at local host for further process

cmd:**streamlit run app.py**
Note-"app.py" python file name

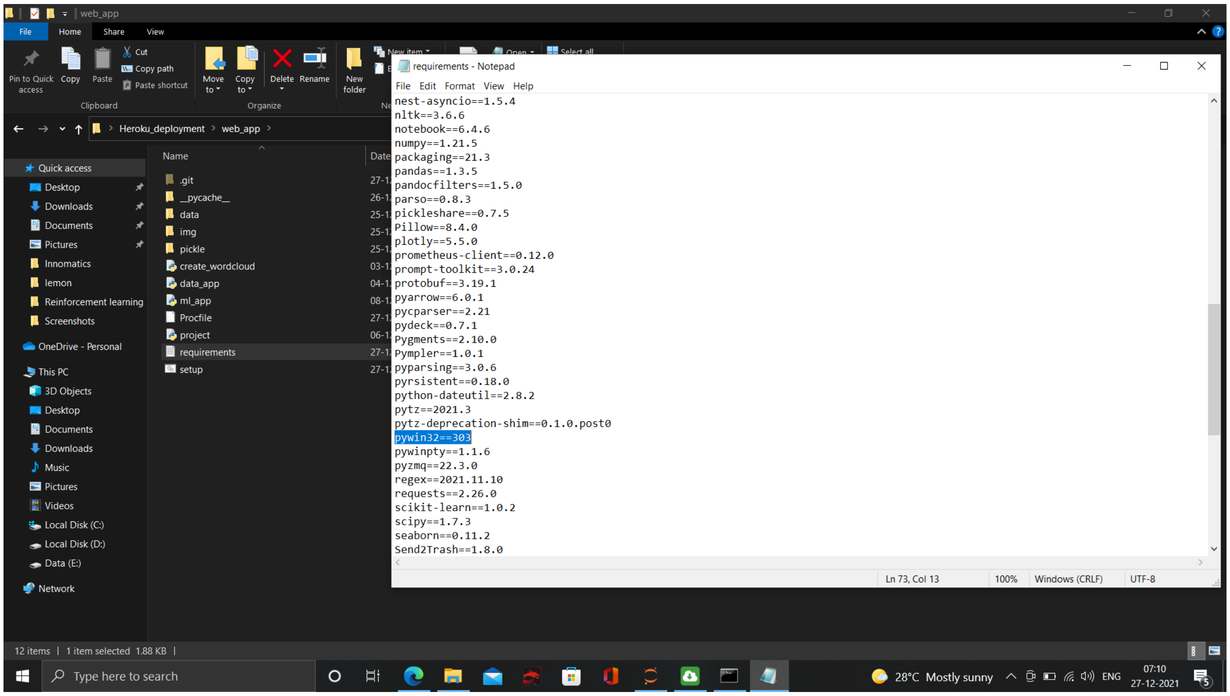
7. After succsefull run Creating requirements.txt file

cmd:**pip freeze > requirements.txt**
Note 1-"requirements.txt" can contains dependency name with their versions



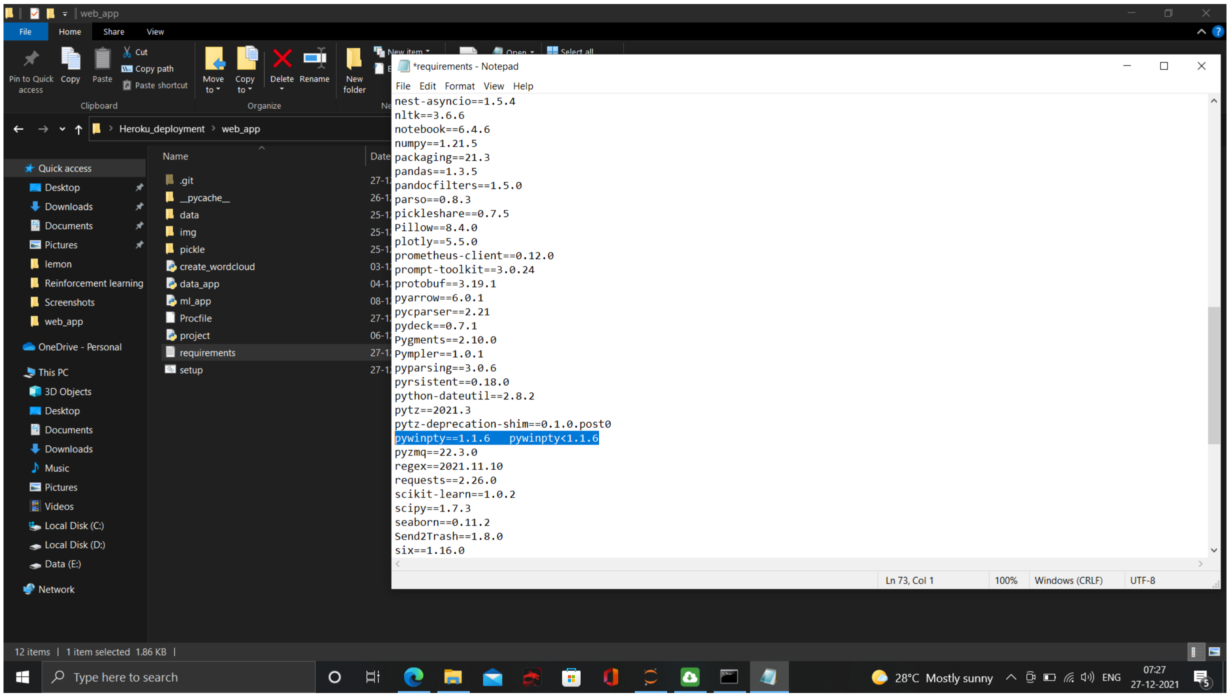
```
(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>pip freeze > requirements.txt

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>
```

Note 2-after creating "requirements.txt" file, Edit that file and remove "pywin32==303" because heroku runs on linux



```
nest-asyncio==1.5.4
nltk==3.6.6
notebook==6.4.6
numpy==1.21.5
packaging==21.3
pandas==1.3.5
pandocfilters==1.5.0
parso==0.8.3
pickleshare==0.7.5
Pillow==8.4.0
plotly==5.5.0
prometheus-client==0.12.0
prompt-toolkit==3.0.24
protobuf==3.19.1
pyarrow==6.0.1
pycparser==2.21
pydeck==0.7.1
Pygments==2.10.0
Pympler==1.0.1
pyparsing==3.0.6
pyrsistent==0.18.0
python-dateutil==2.8.2
pytz==2021.3
pytz-deprecation-shim==0.1.0.post0
pywin32==303
pywinpty==1.1.6
pyzmq==22.3.0
regex==2021.11.10
requests==2.26.0
scikit-learn==1.0.2
scipy==1.7.3
seaborn==0.11.2
Send2Trash==1.8.0
```

Note 3-after changing "pywin32==303" Replacing "pywinpty==1.1.6" to "pywinpty<1.1.6" this version not fetching well



```
nest-asyncio==1.5.4
nltk==3.6.6
notebook==6.4.6
numpy==1.21.5
packaging==21.3
pandas==1.3.5
pandocfilters==1.5.0
parso==0.8.3
pickleshare==0.7.5
Pillow==8.4.0
plotly==5.5.0
prometheus-client==0.12.0
prompt-toolkit==3.0.24
protobuf==3.19.1
pyarrow==6.0.1
pycparser==2.21
pydeck==0.7.1
Pygments==2.10.0
Pympler==1.0.1
pyparsing==3.0.6
pyrsistent==0.18.0
python-dateutil==2.8.2
pytz==2021.3
pytz-deprecation-shim==0.1.0.post0
pywinpty==1.1.6   pywinpty<1.1.6
pyzmq==22.3.0
regex==2021.11.10
requests==2.26.0
scikit-learn==1.0.2
scipy==1.7.3
seaborn==0.11.2
Send2Trash==1.8.0
six==1.16.0
```

Note 2-Replacing "click==8.0.3" to "click==7.1.2" this version not fetching well ![title](heroku\solving click.png)

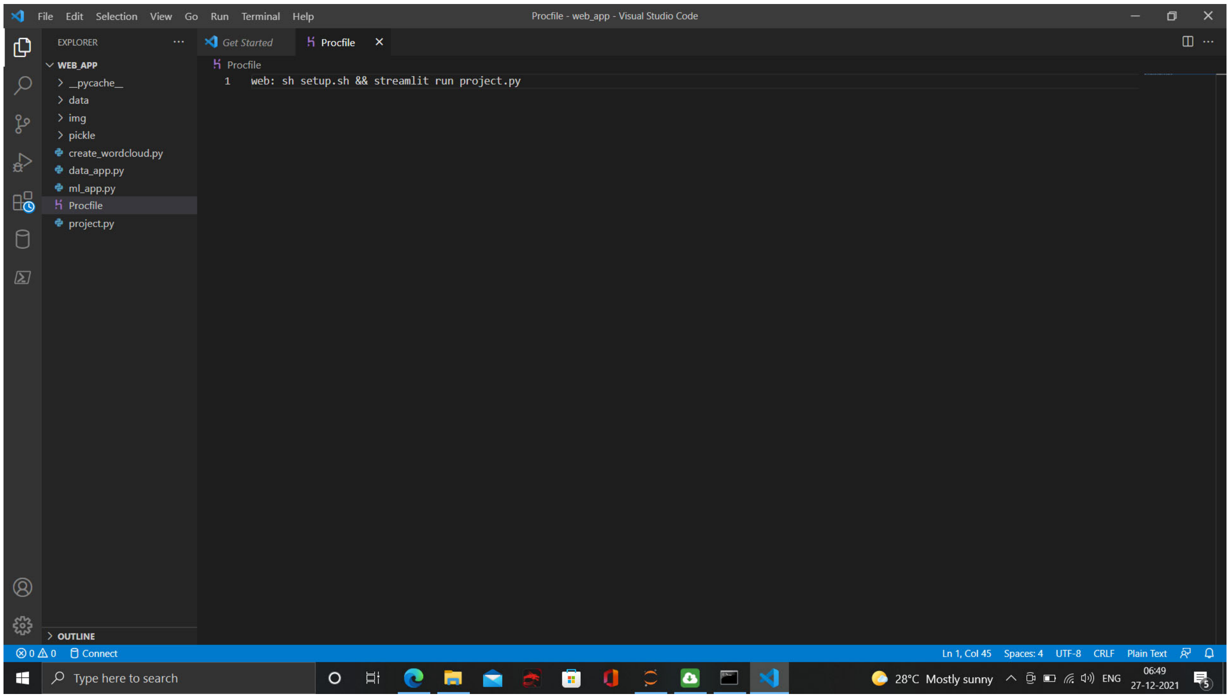
8. Creating file Procfile by using vs code or in cmd:touch Procfile

Procfile contains

web: sh setup.sh && streamlit run app.py

Note-"setup.sh" only required for streamlit app, for flask and Django and any other framework use following

web: gunicorn app:app


Procfile - web_app - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
WEB_APP
pycache
data
img
pickle
create_wordcloud.py
data_app.py
ml_app.py
Procfile
project.py
OUTLINE
Get Started
Procfile
Ln 1, Col 45 Spaces: 4 UTF-8 CRLF Plain Text

```
web: sh setup.sh && streamlit run project.py
```

9. Creating file setup.sh by using vs code or in cmd:touch Procfile

Setup.sh contains

mkdir -p ~/.streamlit/
echo "

[general]\n

email = "[your@gmail.com (mailto:your@gmail.com)](mailto:your@gmail.com)"\n

" > ~/.streamlit/credentials.toml
echo "

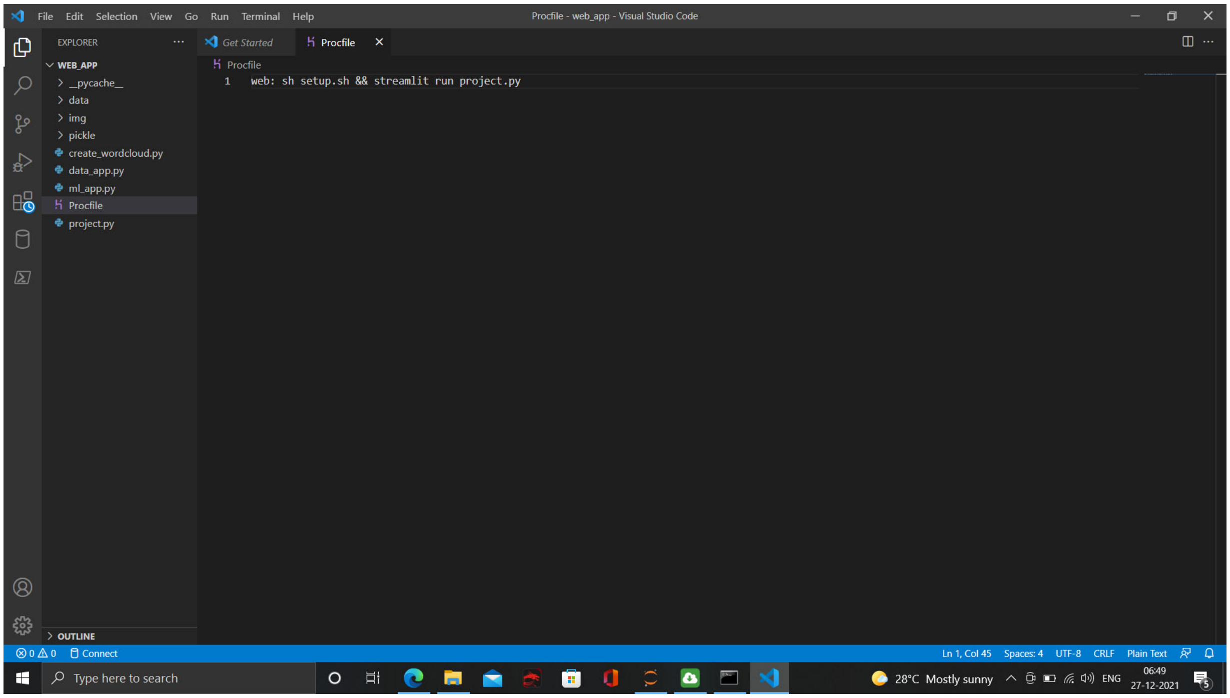
[server]\n

headless = true\n

enableCORS=false\n

port = $PORT\n

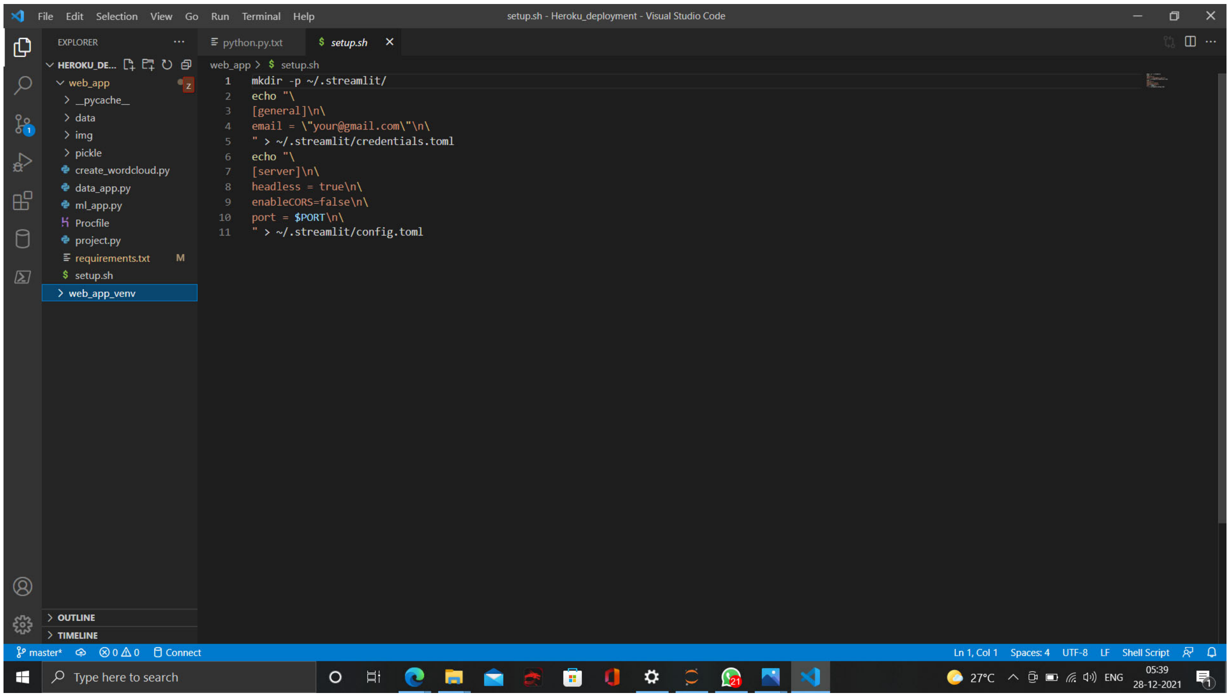
" > ~/.streamlit/config.toml



```
web: sh setup.sh && streamlit run project.py
```

10. Creating file Procfile by using vs code or in cmd:touch Procfile

Procfile contains this file **web: sh setup.sh && streamlit run project.py**



```
mkdir -p ~/.streamlit/
echo "\
[general]\n\
email = \"your@gmail.com\"\n\
" > ~/.streamlit/credentials.toml
echo "\
[server]\n\
headless = true\n\
enableCORS=false\n\
port = $PORT\n\
" > ~/.streamlit/config.toml
```

11. login in Heorku by this cmd

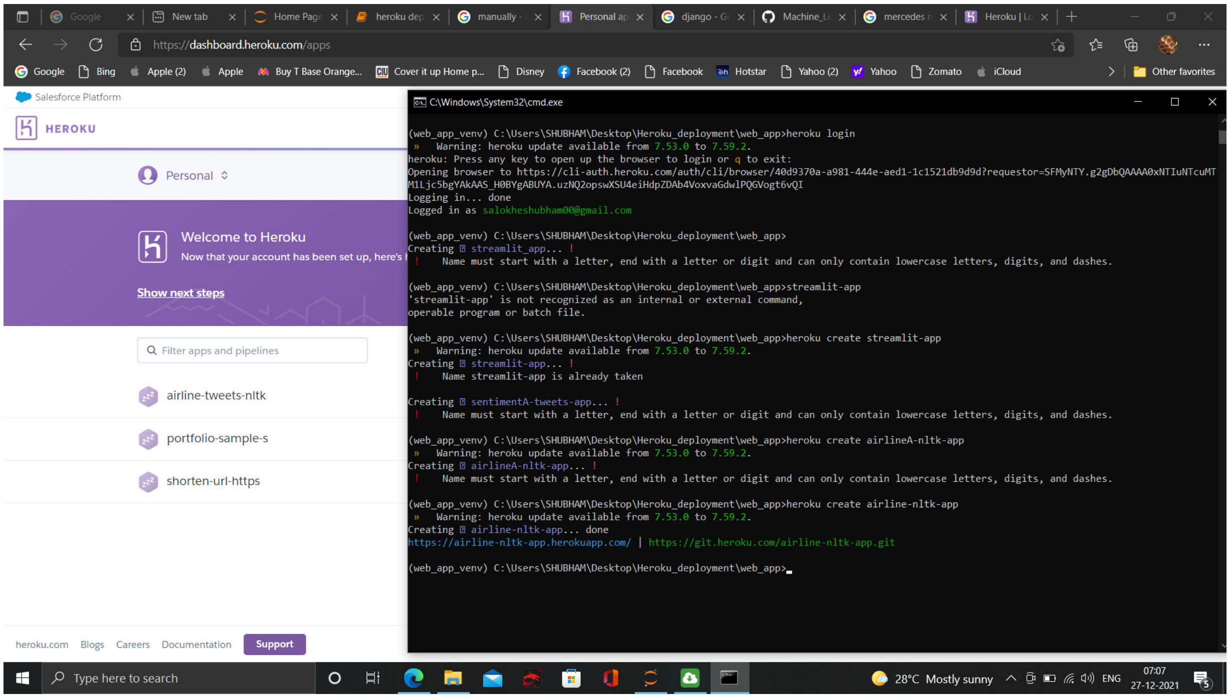
cmd:**heroku login**

Note-This cmd redirecting to heroku login page

12. Creating new app in heroku page with unique name

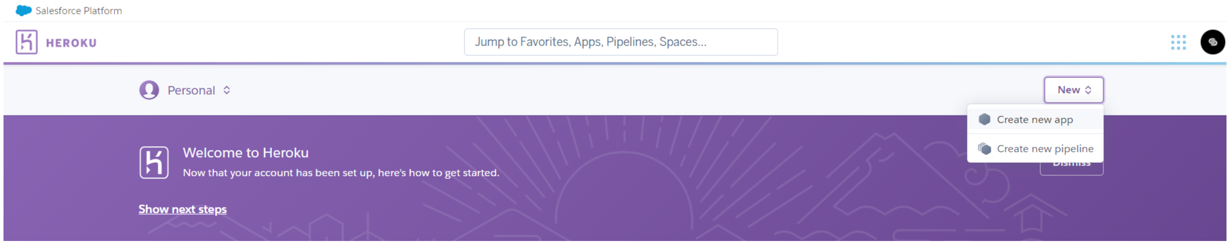
cmd:**heroku create app_name**

Note-"app_name" application name



```
(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>heroku login
 »   Warning: heroku update available from 7.53.0 to 7.59.2.
heroku: Press any key to open up the browser to login or q to exit:
Opening browser to https://cli-auth.heroku.com/auth/cli/browser/40d9370a-a981-444e-aed1-1c1521db9d9d?requestor=SFMyNTY.g2gDbQAAAA0xNTIuNTcuMT
M1Ljc5bgYAkAAS_H0BYgABUYA.uzNQ2opswXSU4eiHdpZDAb4VoxvaGdwlPQGVogt6vQI
Logging in... done
Logged in as salokheshubham00@gmail.com

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>
Creating ⬢ streamlit_app... !
 !    Name must start with a letter, end with a letter or digit and can only contain lowercase letters, digits, and dashes.

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>streamlit-app
'streamlit-app' is not recognized as an internal or external command,
operable program or batch file.

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>heroku create streamlit-app
 »   Warning: heroku update available from 7.53.0 to 7.59.2.
Creating ⬢ streamlit-app... !
 !    Name streamlit-app is already taken

Creating ⬢ sentimentA-tweets-app... !
 !    Name must start with a letter, end with a letter or digit and can only contain lowercase letters, digits, and dashes.

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>heroku create airlineA-nltk-app
 »   Warning: heroku update available from 7.53.0 to 7.59.2.
Creating ⬢ airlineA-nltk-app... !
 !    Name must start with a letter, end with a letter or digit and can only contain lowercase letters, digits, and dashes.

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>heroku create airline-nltk-app
 »   Warning: heroku update available from 7.53.0 to 7.59.2.
Creating ⬢ airline-nltk-app... done
https://airline-nltk-app.herokuapp.com/ | https://git.heroku.com/airline-nltk-app.git

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>
```

Either go with this way or create manually application name by visiting heroku.com



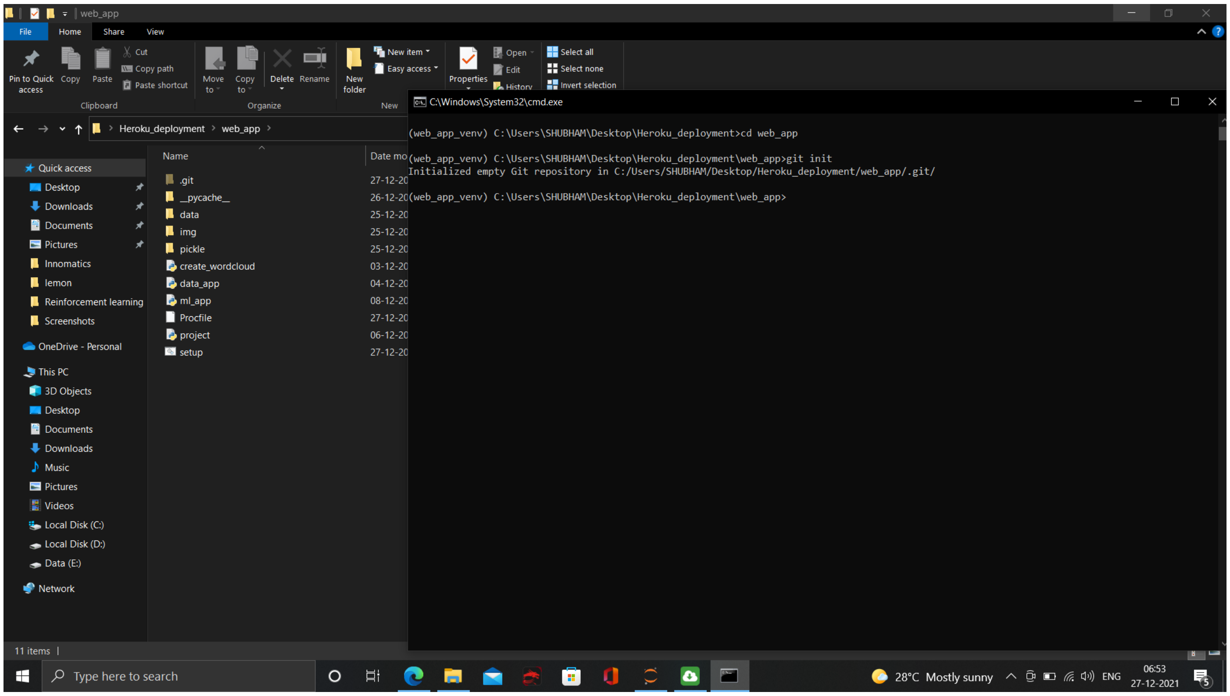
Welcome to Heroku

Now that your account has been set up, here's how to get started.

13. Initializing git

cmd:**git init**

Note-initialize git in the directory (change directory)

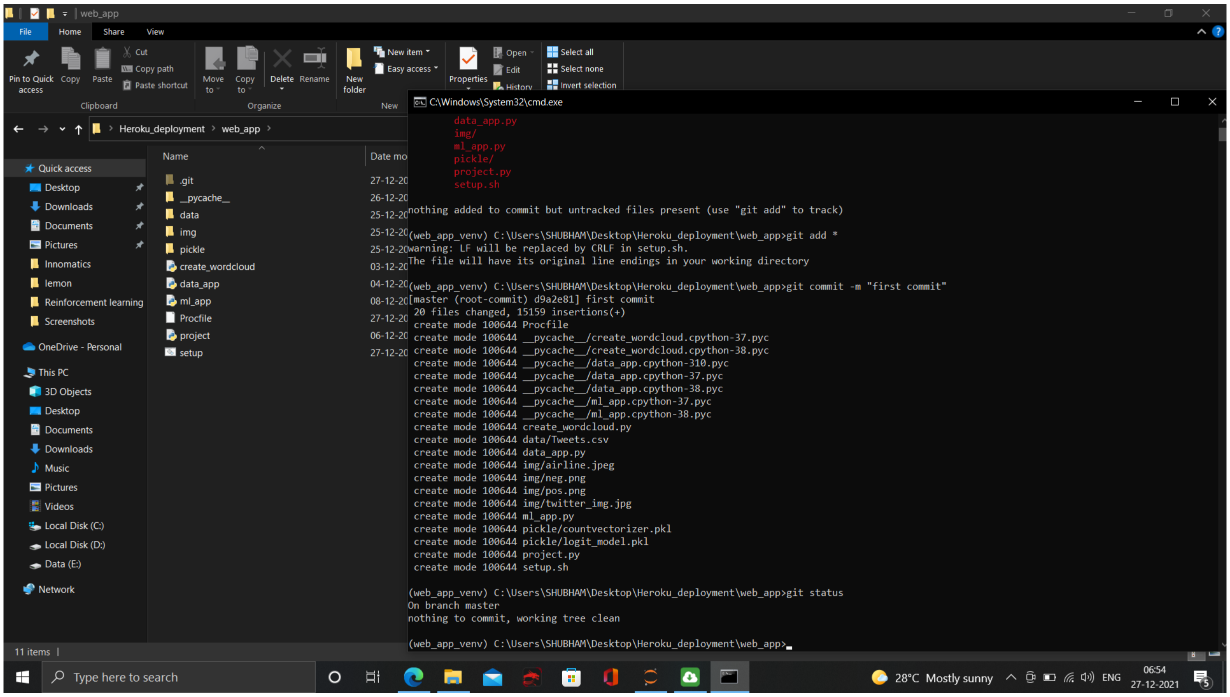


```
(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment>cd web_app

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>git init
Initialized empty Git repository in C:/Users/SHUBHAM/Desktop/Heroku_deployment/web_app/.git/

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>
```

14. adding and commiting all files

cmd:**git add ***

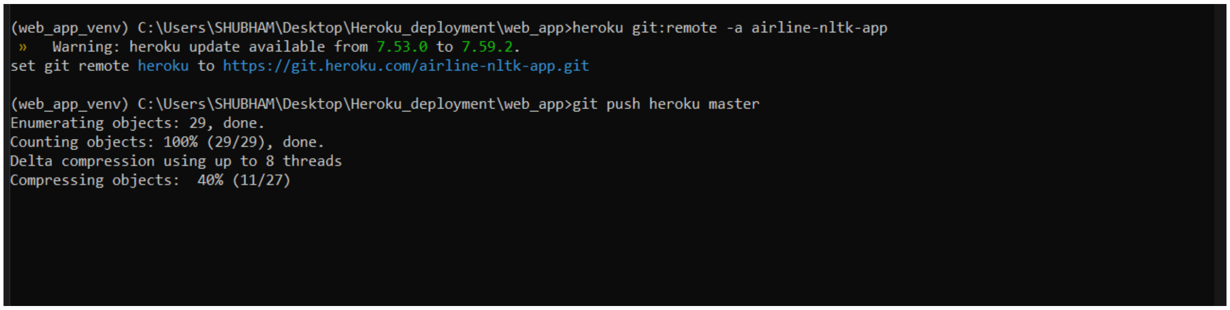
cmd:**git commit -m "meassage"**



```
        data_app.py
        img/
        ml_app.py
        pickle/
        project.py
        setup.sh

nothing added to commit but untracked files present (use "git add" to track)

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>git add *
warning: LF will be replaced by CRLF in setup.sh.
The file will have its original line endings in your working directory

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>git commit -m "first commit"
[master (root-commit) d9a2e81] first commit
 20 files changed, 15159 insertions(+)
 create mode 100644 Procfile
 create mode 100644 __pycache__/create_wordcloud.cpython-37.pyc
 create mode 100644 __pycache__/create_wordcloud.cpython-38.pyc
 create mode 100644 __pycache__/data_app.cpython-310.pyc
 create mode 100644 __pycache__/data_app.cpython-37.pyc
 create mode 100644 __pycache__/data_app.cpython-38.pyc
 create mode 100644 __pycache__/ml_app.cpython-37.pyc
 create mode 100644 __pycache__/ml_app.cpython-38.pyc
 create mode 100644 create_wordcloud.py
 create mode 100644 data/Tweets.csv
 create mode 100644 data_app.py
 create mode 100644 img/airline.jpeg
 create mode 100644 img/neg.png
 create mode 100644 img/pos.png
 create mode 100644 img/twitter_img.jpg
 create mode 100644 ml_app.py
 create mode 100644 pickle/countvectorizer.pkl
 create mode 100644 pickle/logit_model.pkl
 create mode 100644 project.py
 create mode 100644 setup.sh

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>git status
On branch master
nothing to commit, working tree clean

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>
```

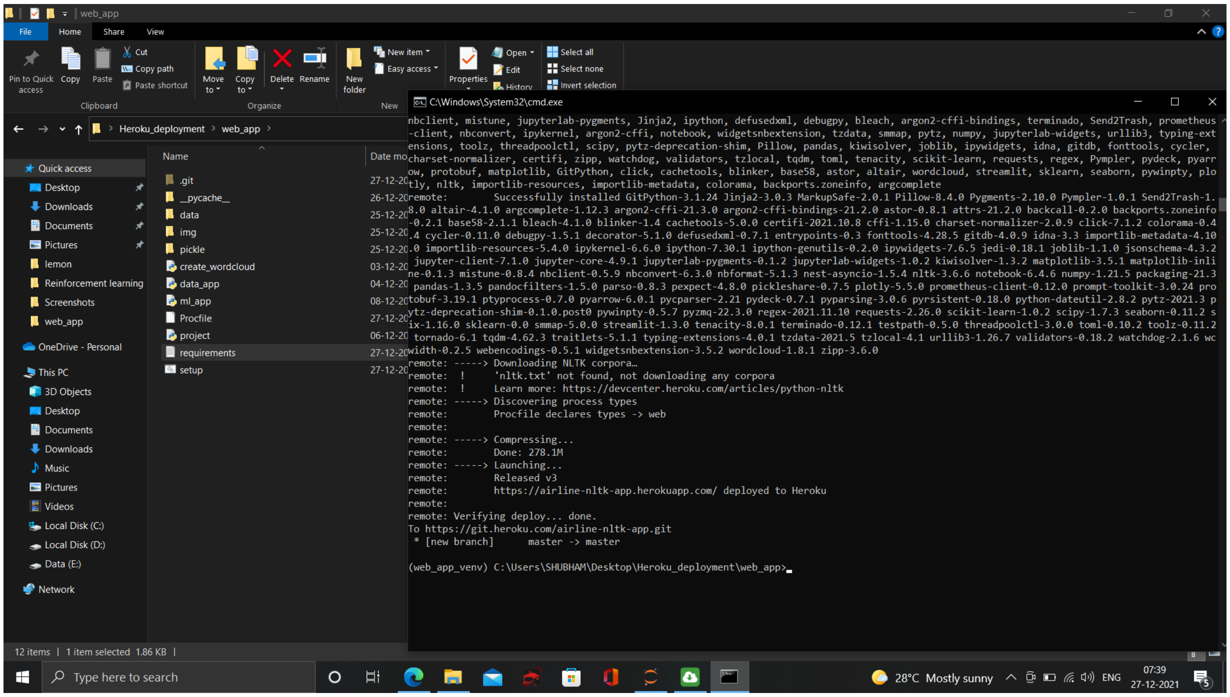
15. Fetching and pushing with heroko application

cmd:**heroku git:remote -a app_name**
cmd:**git push heroku master**



```
(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>heroku git:remote -a airline-nltk-app
 »   Warning: heroku update available from 7.53.0 to 7.59.2.
set git remote heroku to https://git.heroku.com/airline-nltk-app.git

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>git push heroku master
Enumerating objects: 29, done.
Counting objects: 100% (29/29), done.
Delta compression using up to 8 threads
Compressing objects:  40% (11/27)
```

16.Installation successful



```
nbclient, mistune, jupyterlab-pygments, Jinja2, ipython, defusedxml, debugpy, bleach, argon2-cffi-bindings, terminado, Send2Trash, prometheus
-client, nbconvert, ipykernel, argon2-cffi, notebook, widgetsnbextension, tzdata, smmap, pytz, numpy, jupyterlab-widgets, urllib3, typing-ext
ensions, toolz, threadpoolctl, scipy, pytz-deprecation-shim, Pillow, pandas, kiwisolver, joblib, ipywidgets, idna, gitdb, fonttools, cycler,
charset-normalizer, certifi, zipp, watchdog, validators, tzlocal, tqdm, toml, tenacity, scikit-learn, requests, regex, Pympler, pydeck, pyarr
ow, protobuf, matplotlib, GitPython, click, cachetools, blinker, base58, astor, altair, wordcloud, streamlit, sklearn, seaborn, pywinpty, plo
tly, nltk, importlib-resources, importlib-metadata, colorama, backports.zoneinfo, argcomplete
remote:        Successfully installed GitPython-3.1.24 Jinja2-3.0.3 MarkupSafe-2.0.1 Pillow-8.4.0 Pygments-2.10.0 Pympler-1.0.1 Send2Trash-1.
8.0 altair-4.1.0 argcomplete-1.12.3 argon2-cffi-21.3.0 argon2-cffi-bindings-21.2.0 astor-0.8.1 attrs-21.2.0 backcall-0.2.0 backports.zoneinfo
-0.2.1 base58-2.1.1 bleach-4.1.0 blinker-1.4 cachetools-5.0.0 certifi-2021.10.8 cffi-1.15.0 charset-normalizer-2.0.9 click-7.1.2 colorama-0.4
.4 cycler-0.11.0 debugpy-1.5.1 decorator-5.1.0 defusedxml-0.7.1 entrypoints-0.3 fonttools-4.28.5 gitdb-4.0.9 idna-3.3 importlib-metadata-4.10
.0 importlib-resources-5.4.0 ipykernel-6.6.0 ipython-7.30.1 ipython-genutils-0.2.0 ipywidgets-7.6.5 jedi-0.18.1 joblib-1.1.0 jsonschema-4.3.2
 jupyter-client-7.1.0 jupyter-core-4.9.1 jupyterlab-pygments-0.1.2 jupyterlab-widgets-1.0.2 kiwisolver-1.3.2 matplotlib-3.5.1 matplotlib-inli
ne-0.1.3 mistune-0.8.4 nbclient-0.5.9 nbconvert-6.3.0 nbformat-5.1.3 nest-asyncio-1.5.4 nltk-3.6.6 notebook-6.4.6 numpy-1.21.5 packaging-21.3
 pandas-1.3.5 pandocfilters-1.5.0 parso-0.8.3 pexpect-4.8.0 pickleshare-0.7.5 plotly-5.5.0 prometheus-client-0.12.0 prompt-toolkit-3.0.24 pro
tobuf-3.19.1 ptyprocess-0.7.0 pyarrow-6.0.1 pycparser-2.21 pydeck-0.7.1 pyparsing-3.0.6 pyrsistent-0.18.0 python-dateutil-2.8.2 pytz-2021.3 p
ytz-deprecation-shim-0.1.0.post0 pywinpty-0.5.7 pyzmq-22.3.0 regex-2021.11.10 requests-2.26.0 scikit-learn-1.0.2 scipy-1.7.3 seaborn-0.11.2 s
ix-1.16.0 sklearn-0.0 smmap-5.0.0 streamlit-1.3.0 tenacity-8.0.1 terminado-0.12.1 testpath-0.5.0 threadpoolctl-3.0.0 toml-0.10.2 toolz-0.11.2
 tornado-6.1 tqdm-4.62.3 traitlets-5.1.1 typing-extensions-4.0.1 tzdata-2021.5 tzlocal-4.1 urllib3-1.26.7 validators-0.18.2 watchdog-2.1.6 wc
width-0.2.5 webencodings-0.5.1 widgetsnbextension-3.5.2 wordcloud-1.8.1 zipp-3.6.0
remote: -----> Downloading NLTK corpora…
remote:  !     'nltk.txt' not found, not downloading any corpora
remote:  !     Learn more: https://devcenter.heroku.com/articles/python-nltk
remote: -----> Discovering process types
remote:        Procfile declares types -> web
remote:
remote: -----> Compressing...
remote:        Done: 278.1M
remote: -----> Launching...
remote:        Released v3
remote:        https://airline-nltk-app.herokuapp.com/ deployed to Heroku
remote:
remote: Verifying deploy... done.
To https://git.heroku.com/airline-nltk-app.git
 * [new branch]      master -> master

(web_app_venv) C:\Users\SHUBHAM\Desktop\Heroku_deployment\web_app>
```