Web App and API deployment on Heroku

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Batch code: LISP01

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Submitted to: Data Glacier

Web App deployment

1. Make git repoitory and clone it locally.

2. Add application files.

3. Installing virtualenv package in order to create environment. I normally use anaconda environments, but I found it more difficult to deploy using anaconda environment, so I made Python environment. I installed pyton 3.8(3.10 had errors when installying numpy).
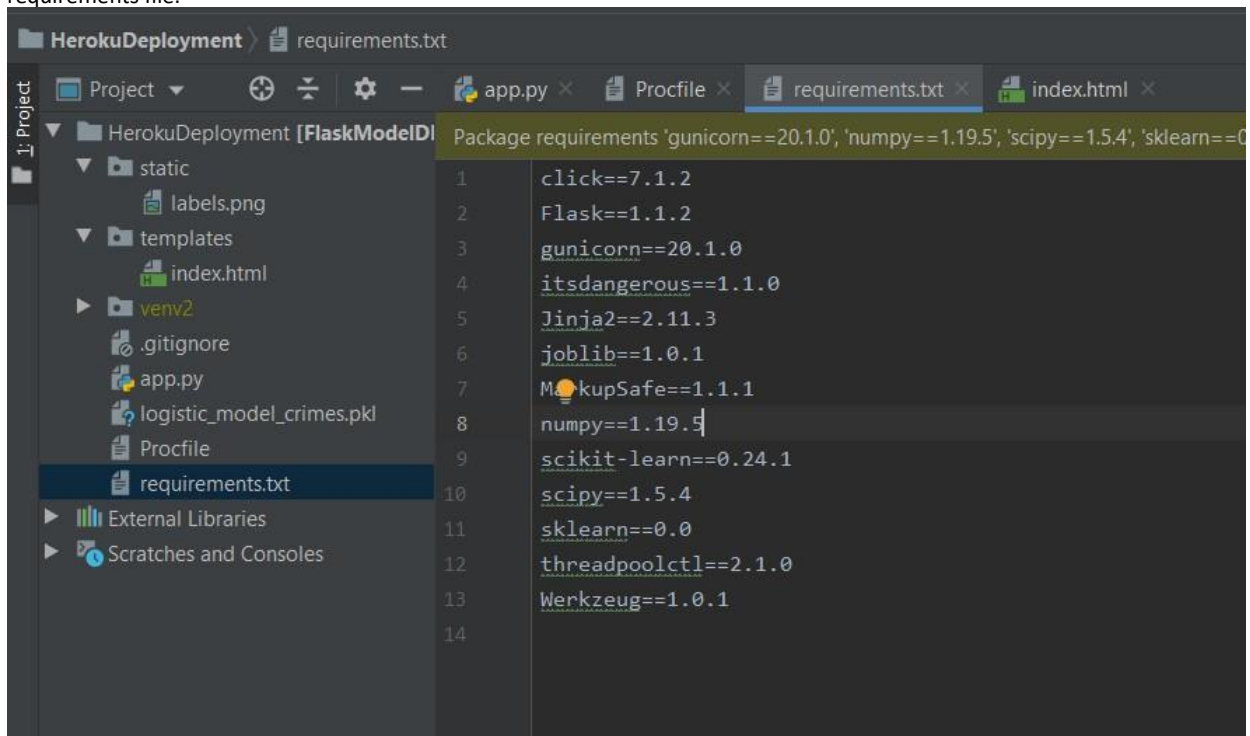
2. Activate and install libraries in order to be able to run app locally. Sometimes I downgraded libraries such as numpy and sklearn due to other deployment errors.

```
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ virtualenv venv2
created virtual environment CPython3.8.8.candidate.1-64 in 5040ms
  creator CPython3Windows(dest=C:\Users\user\OneDrive\Desktop\Heroku\HerokuDeplo
yment\venv2, clear=False, no_vcs_ignore=False, global=False)
  seeder FromAppData(download=False, pip=bundle, setuptools=bundle, wheel=bundle
, via=copy, app_data_dir=C:\Users\user\AppData\Local\pypa\virtualenv)
    added seed packages: pip==21.0.1, setuptools==54.1.2, wheel==0.36.2
  activators BashActivator,BatchActivator,FishActivator,PowerShellActivator,Pyth
onActivator,XonshActivator

user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ source venv2/Scripts/activate
(venv2)
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ pip install flask
Collecting flask
  Using cached Flask-1.1.2-py2.py3-none-any.whl (94 kB)
Collecting Jinja2>=2.10.1
  Using cached Jinja2-2.11.3-py2.py3-none-any.whl (125 kB)
Collecting itsdangerous>=0.24
  Using cached itsdangerous-1.1.0-py2.py3-none-any.whl (16 kB)
Collecting click>=5.1
  Using cached click-7.1.2-py2.py3-none-any.whl (82 kB)
Collecting Werkzeug>=0.15
  Using cached Werkzeug-1.0.1-py2.py3-none-any.whl (298 kB)
Collecting MarkupSafe>=0.23
  Downloading MarkupSafe-1.1.1-cp38-cp38-win_amd64.whl (16 kB)
Installing collected packages: MarkupSafe, Werkzeug, Jinja2, itsdangerous, click
, flask
Successfully installed Jinja2-2.11.3 MarkupSafe-1.1.1 Werkzeug-1.0.1 click-7.1.2
  flask-1.1.2 itsdangerous-1.1.0
(venv2)
```
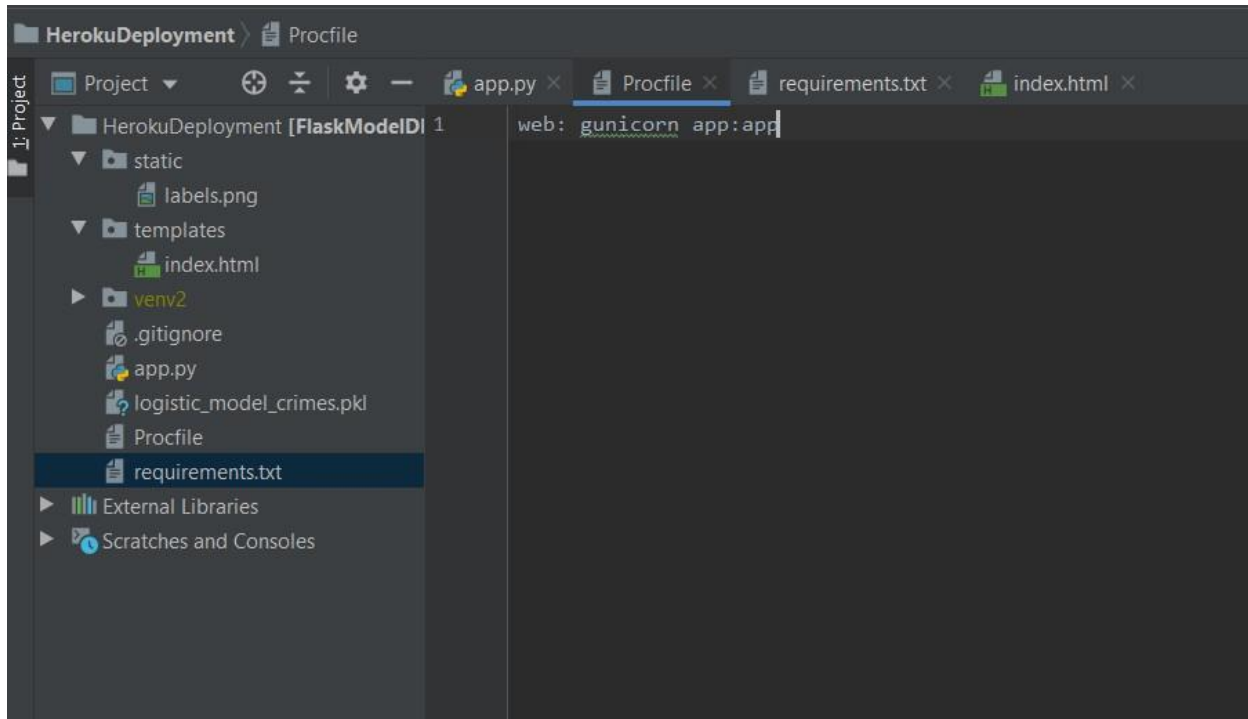
4. After installing all packages, I used the command pip freeze > requirements.txt in order to create the requirements file.

```
HerokuDeployment  requirements.txt

Project                          app.py    Procfile    requirements.txt    index.html

HerokuDeployment [FlaskModelDI    Package requirements 'gunicorn==20.1.0', 'numpy==1.19.5', 'scipy==1.5.4', 'sklearn==0

  static                      1   click==7.1.2
    labels.png                2   Flask==1.1.2
  templates                   3   gunicorn==20.1.0
    index.html                4   itsdangerous==1.1.0
  venv2                       5   Jinja2==2.11.3
  .gitignore                  6   joblib==1.0.1
  app.py                      7   MarkupSafe==1.1.1
  logistic_model_crimes.pkl   8   numpy==1.19.5
  Procfile                    9   scikit-learn==0.24.1
  requirements.txt            10  scipy==1.5.4
  External Libraries          11  sklearn==0.0
  Scratches and Consoles      12  threadpoolctl==2.1.0
                              13  Werkzeug==1.0.1
                              14
```

5. Then I created the Procfile

6. I installed heroku cli. After that I run

git add .

git commit -m

git push heroku main

7. App running

Here are the encoding that you should use:

```
ASSAULT                                      1
BATTERY                                      2
BURGLARY                                     3
CONCEALED CARRY LICENSE VIOLATION            4
CRIM SEXUAL ASSAULT                          5
CRIMINAL DAMAGE                              6
CRIMINAL SEXUAL ASSAULT                      7
CRIMINAL TRESPASS                            8
DECEPTIVE PRACTICE                           9
GAMBLING                                     10
HOMICIDE                                     11
HUMAN TRAFFICKING                            12
INTERFERENCE WITH PUBLIC OFFICER             13
INTIMIDATION                                 14
KIDNAPPING                                   15
LIQUOR LAW VIOLATION                         16
MOTOR VEHICLE THEFT                          17
NARCOTICS                                    18
NON - CRIMINAL                               19
NON-CRIMINAL                                 20
NON-CRIMINAL (SUBJECT SPECIFIED)             21
OBSCENITY                                    22
OFFENSE INVOLVING CHILDREN                   23
OTHER NARCOTIC VIOLATION                     24
OTHER OFFENSE                                25
PROSTITUTION                                 26
PUBLIC INDECENCY                             27
PUBLIC PEACE VIOLATION                       28
RITUALISM                                    29
ROBBERY                                      30
SEX OFFENSE                                  31
STALKING                                     32
THEFT                                        33
WEAPONS VIOLATION                            34
```

Predict arrest True or False according to the crime type

| CrimeTye | Predict |

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Predict arrest True or False according to the crime type

| CrimeTye | Predict |

Prediction: No arrest

App deployment

1. Create new api

```
@app.route('/predict/arrest/<int:crime_type>', methods=['POST'])
def predictArrest(crime_type):
    final = np.array(crime_type).reshape(-1, 1)
    prediction = model.predict(final)[0]
    if prediction == 0:
        prediction = 'No arrest'
    else:
        prediction = "Yes, it will lead to arrest"
    return prediction

if __name__ == '__main__':
    app.run(port=8081, debug=True)
```

2. Test it with Postman
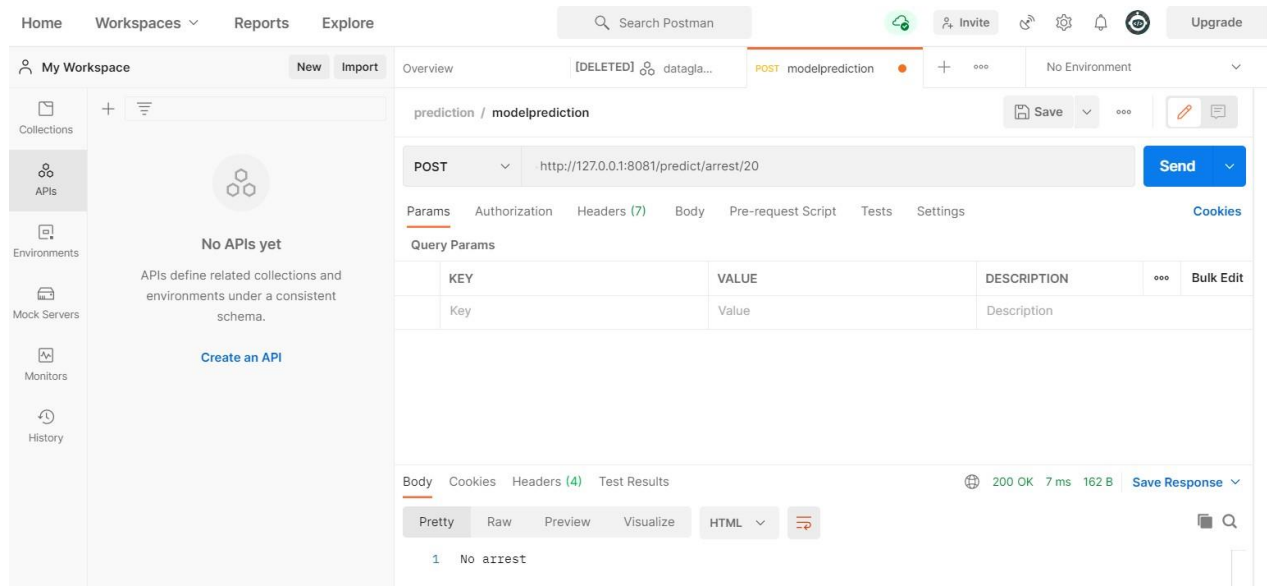
3. Deploy on Heroku

Git add

Git commit

Git push heroku main

4. Test again with Postman