

## 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 repository 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 python 3.8( 3.10 had errors when installing numpy).

```
MINGW64:/c:/Users/user/OneDrive/Desktop/Heroku/HerokuDeployment
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku
$ ls
HerokuDeployment/
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku
$ cd HerokuDeployment/
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ python -version
Unknown option: -e
usage: C:\Users\user\AppData\Local\Programs\Python\Python38\python.exe [option]
... [-c cmd | -m mod | file | -] [arg] ...
Try 'python -h' for more information.
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ python --version
Python 3.8.8rc1
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ pip install virtualenv
Collecting virtualenv
  Using cached virtualenv-20.4.3-py2.py3-none-any.whl (7.2 MB)
Collecting six<2,>=1.9.0
  Downloading six-1.15.0-py2.py3-none-any.whl (10 kB)
Collecting appdirs<2,>=1.4.3
  Downloading appdirs-1.4.4-py2.py3-none-any.whl (9.6 kB)
Collecting distlib<1,>=0.3.1
  Downloading distlib-0.3.1-py2.py3-none-any.whl (335 kB)
Collecting filelock<4,>=3.0.0
  Downloading filelock-3.0.12-py3-none-any.whl (7.6 kB)
Installing collected packages: six, appdirs, distlib, filelock, virtualenv
Successfully installed appdirs-1.4.4 distlib-0.3.1 filelock-3.0.12 six-1.15.0 vi
rtualenv-20.4.3
WARNING: You are using pip version 20.2.2, however version 21.0.1 is available
at https://pypi.org/project/pip/
```

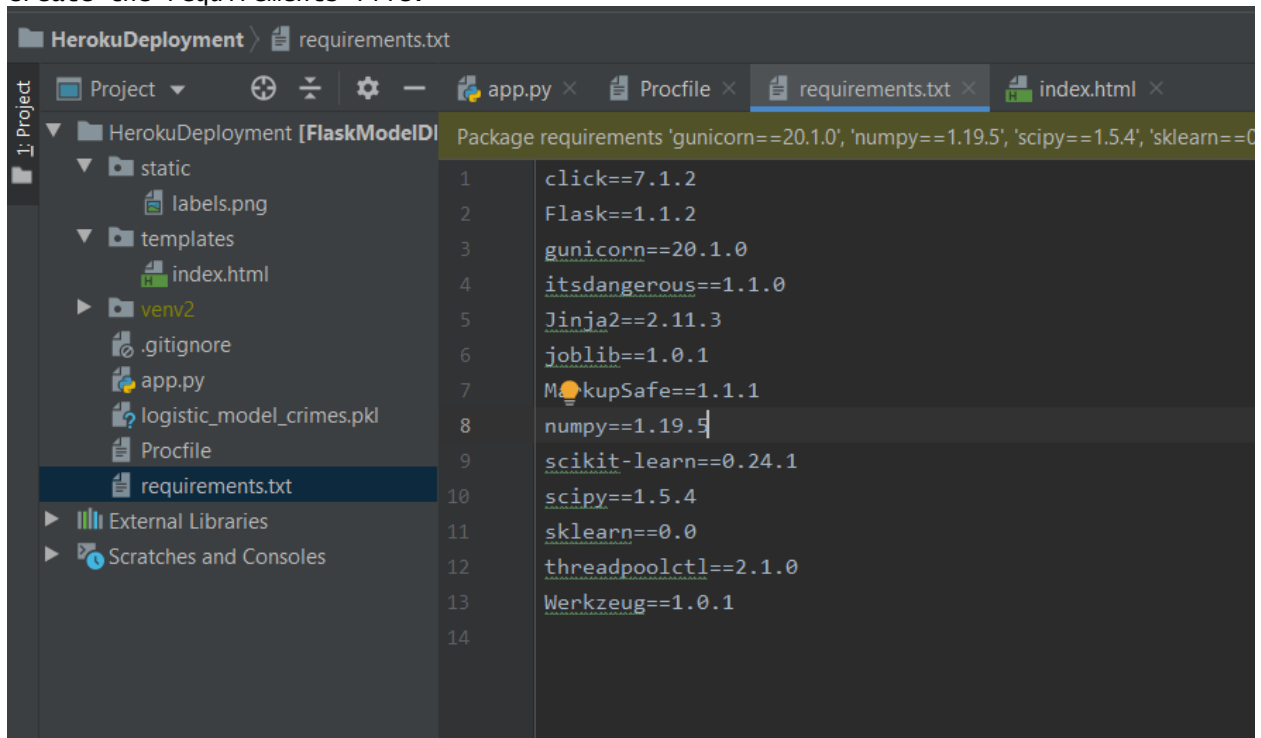
2. Activate and install libraries in order to be able to run app locally. Sometimes I downgraded libraries such as numpy and sklearn due to other deployment errors.

```
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\HerokuDeployment\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, PythonActivator, XonshActivator

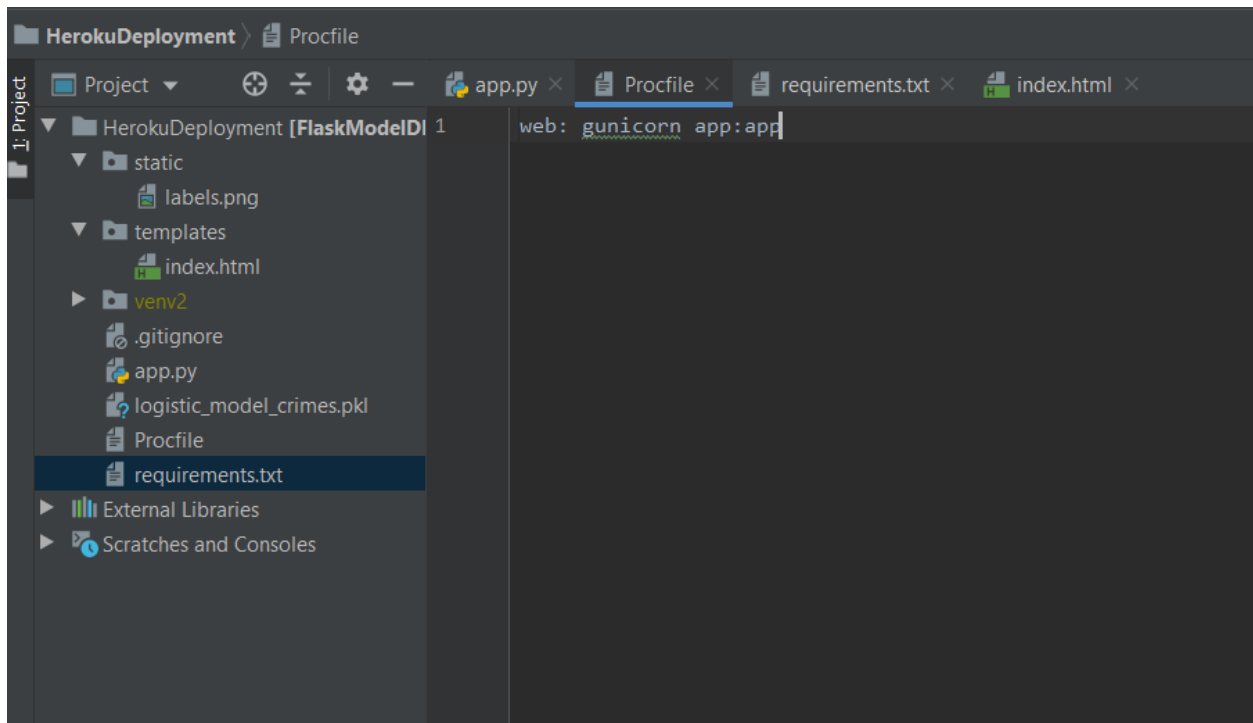
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ source venv2/Scripts/activate
(venv2)

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.



5. Then I created the Procfile



6. I installed heroku cli. After that I run

```
(venv2)
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ heroku login
heroku: Press any key to open up the browser to login or q to exit: i
Opening browser to https://cli-auth.heroku.com/auth/cli/browser/3c9b491a-d7bf-4d
c1-b003-61d2e3160021?requestor=SFMyNTY.g2gDbQAAAA44NS4xODYuMjI2LjE3OW4GAMF1Wnp4A
WIAAVGA.PZuu6jO6eXmg76wQO13U_iNgvE1AN-piK0dWSlJtmRQ
heroku: Waiting for login...
Logging in... done
Logged in as larisapopa4@gmail.com
^C^CTerminate batch job (Y/N)? y
y
(venv2)
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ heroku create
Creating app... done, lit-island-42304
https://lit-island-42304.herokuapp.com/ | https://git.heroku.com/lit-island-4230
4.git
(venv2)
user@DESKTOP-VJPPTD7 MINGW64 ~/OneDrive/Desktop/Heroku/HerokuDeployment (main)
$ heroku rename predictarrest
Renaming predictcrimesarrest to predictarrest... done
https://predictarrest.herokuapp.com/ | https://git.heroku.com/predictarrest.git
! Don't forget to update git remotes for all other local checkouts of the
```

git add .

git commit -m

git push heroku main

## 7. App running

← → ↻ predictarrest.herokuapp.com

**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**

← → ↻ predictarrest.herokuapp.com

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## Predict arrest True or False according to the crime type

Prediction: No arrest

## App deployment

### 1.Create new appi

```
Project ▾
HerokuDeployment [FlaskModelID]
  static
  templates
  index.html
  venv2
  .gitignore
  app.py
  logistic_model_crimes.pkl
  Procfile
  requirements.txt
External Libraries
Scratches and Consoles

app.py x Procfile x requirements.txt x index.html x
Package requirements 'gunicorn==20.1.0', 'numpy==1.19.5', 'scipy==1.5.4', 'sklearn==0.0' are not satisfied

24
25
26 @app.route('/predictArrest/<int:crime_type>', methods=['POST'])
27 def predictArrest(crime_type):
28     final = np.array(crime_type).reshape(-1, 1)
29     prediction = model.predict(final)[0]
30     if prediction == 0:
31         prediction = 'No arrest'
32     else:
33         prediction = "Yes, it will lead to arrest"
34     return prediction
35
36 if __name__ == '__main__':
37     app.run(port=8081, debug=True)
38
```

## 2.Test it with Postman

The screenshot shows the Postman application interface. On the left sidebar, under 'My Workspace', there are options for Collections, APIs, Environments, Mock Servers, Monitors, and History. The main area displays a POST request to the URL `http://127.0.0.1:8081/predict/arrest/20`. The request is saved under the collection 'prediction / modelprediction'. The response is a 200 OK status with a response time of 7 ms and a body of 'No arrest'.

KEY	VALUE	DESCRIPTION
Key	Value	Description

Body: 200 OK 7 ms 162 B

1 No arrest

## 3.Deploy on Heroku

Git add

Git commit

Git push heroku main

## 4.Test again with Postman

The screenshot shows the Postman application interface. On the left sidebar, under 'My Workspace', there are options for Collections, APIs, Environments, Mock Servers, Monitors, and History. The main area displays a POST request to the URL `https://predictarrest.herokuapp.com/predict/arrest/2`. The request is saved under the collection 'https://predictarrest.herokuapp.com/predict/arrest/2'. The response is a 200 OK status with a response time of 719 ms and a body of 'No arrest'.

KEY	VALUE	DESCRIPTION
Key	Value	Description

Body: 200 OK 719 ms 182 B

1 No arrest