



CLOUD AND API DEPLOYMENT

NAME: CATHERINE SANDA

BATCH CODE: LISUM06

SUBMISSION DATE: 03/02/2022

Acer

1. INTRODUCTION

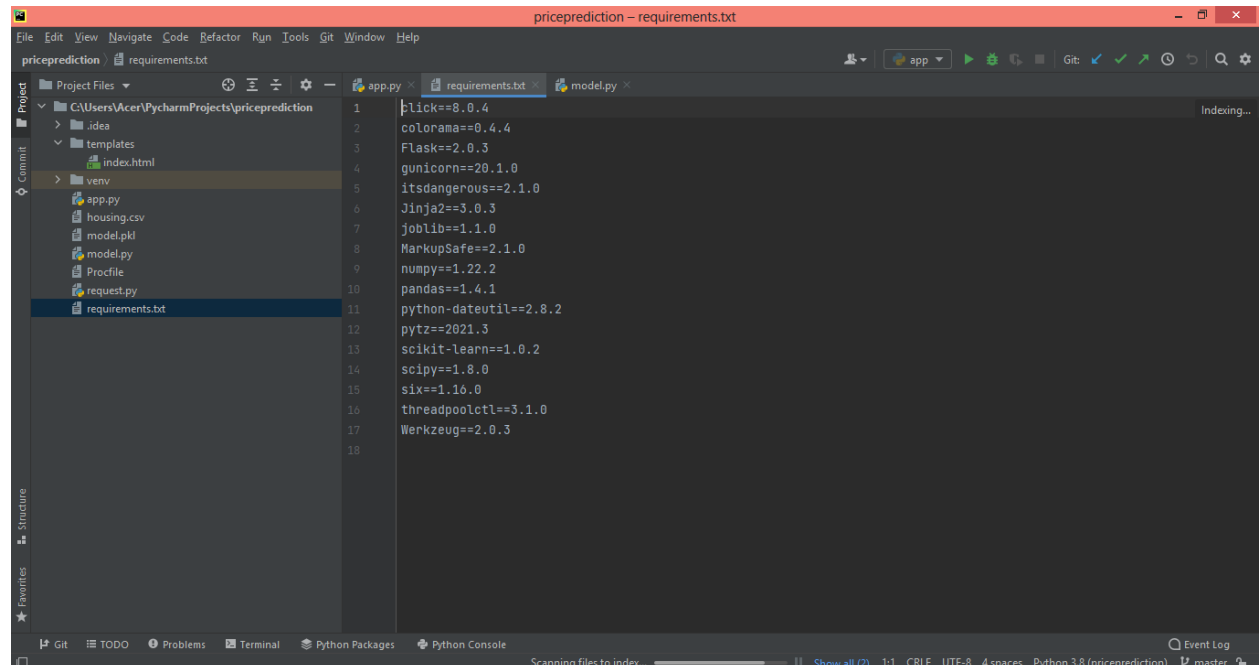
This document contains the steps carried out in the API deployment on Heroku.

I used Mozilla Firefox web browser, command prompt, PyCharm and python programming language as well as its different packages and libraries.

The files on <https://github.com/cate6495/pricepredict> contain the model that I deployed on Heroku.

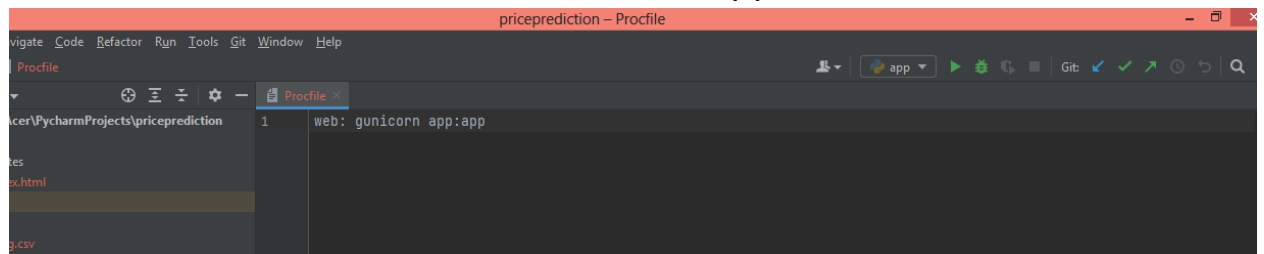
The repository with the app contains our model, requirements.txt file and a Procfile.

The requirements.txt file contains all the dependencies necessary, it tells Heroku that it will require all these libraries to run the app correctly.

A screenshot of the PyCharm IDE interface. The title bar reads "priceprediction - requirements.txt". The menu bar includes File, Edit, View, Navigate, Code, Refactor, Run, Tools, Git, Window, and Help. The left sidebar shows a project tree for "priceprediction" with folders like ".idea", "templates", and "venv", and files like "app.py", "housing.csv", "model.pkl", "model.py", "Procfile", "request.py", and "requirements.txt". The main editor window displays the contents of "requirements.txt" with line numbers 1 through 18. The bottom status bar shows "Scanning files to index...", "Show all (2)", "1:1", "CRLF", "UTF-8", "4 spaces", "Python 3.8 (priceprediction)", and "master".

```
1 click==8.0.4
2 colorama==0.4.4
3 Flask==2.0.3
4 gunicorn==20.1.0
5 itsdangerous==2.1.0
6 Jinja2==3.0.3
7 joblib==1.1.0
8 MarkupSafe==2.1.0
9 numpy==1.22.2
10 pandas==1.4.1
11 python-dateutil==2.8.2
12 pytz==2021.3
13 scikit-learn==1.0.2
14 scipy==1.8.0
15 six==1.16.0
16 threadpoolctl==3.1.0
17 Werkzeug==2.0.3
18
```

The Procfile tells Heroku how to run the app:



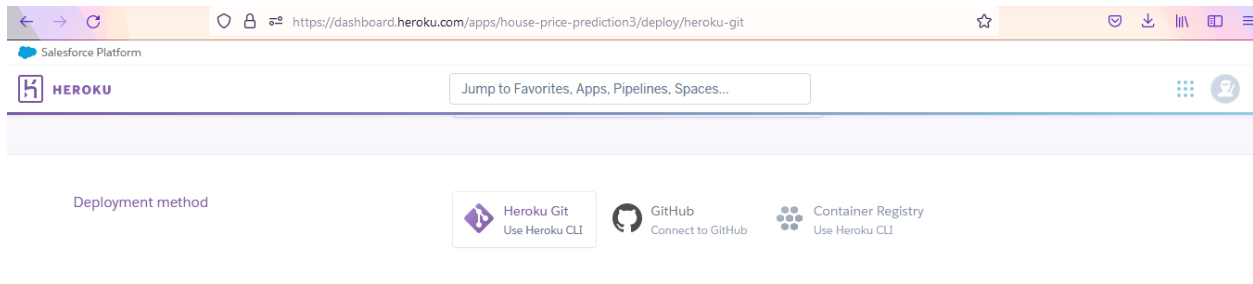
1. Below are the steps:

API DEPLOYMENT ON HEROKU USING HEROKU GIT

Create a new app on Heroku:

A screenshot of the Heroku dashboard's 'Create New App' page. The page has a light blue header with the Heroku logo and a search bar. Below the header, there's a 'Create New App' button. The main form area contains three fields: 'App name' with the value 'house-price-prediction3', 'Choose a region' with a dropdown menu showing 'United States', and an 'Add to pipeline...' button. At the bottom of the form is a purple 'Create app' button. The browser's address bar shows 'https://dashboard.heroku.com/new-app'.

2. Then download and install Heroku CLI



3. The following steps are provided in order to deploy:

Deploy using Heroku Git

Use git in the command line or a GUI tool to deploy this app.

Install the Heroku CLI

Download and install the [Heroku CLI](#).

If you haven't already, log in to your Heroku account and follow the prompts to create a new SSH public key.

```
$ heroku login
```

Create a new Git repository

Initialize a git repository in a new or existing directory

```
$ cd my-project/  
$ git init  
$ heroku git:remote -a house-price-prediction3
```

Deploy your application

Commit your code to the repository and deploy it to Heroku using Git.

```
$ git add .  
$ git commit -am "make it better"  
$ git push heroku master
```

4. Below are the results of the above code

```
Microsoft Windows [Version 6.2.9200]  
(c) 2012 Microsoft Corporation. All rights reserved.  
  
C:\Users\Acer>heroku login  
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/717a45cd-0b36-42  
5e-8981-8f31d7d7cd4a?requestor=SFMyNTY.g2gDbQAAA8xOTcuMTU2LjEzNy4xNTRuBgAlxNrfg  
AFiAAFRgA.jb0Y1LtT95nkNYcyWEOfHgWTFcId3_Tff0q0YjAZSP0  
Logging in... done  
Logged in as sandacate@gmail.com  
  
C:\Users\Acer>  
C:\Users\Acer>cd priceprediction  
  
C:\Users\Acer\priceprediction>git init  
Reinitialized existing Git repository in C:/Users/Acer/priceprediction/.git/  
  
C:\Users\Acer\priceprediction>heroku git:remote -a house-price-prediction3  
set git remote heroku to https://git.heroku.com/house-price-prediction3.git  
  
C:\Users\Acer\priceprediction>git add .  
  
C:\Users\Acer\priceprediction>git commit -am "make it better"  
On branch master  
nothing to commit, working tree clean  
  
C:\Users\Acer\priceprediction>git push heroku master
```



Command Prompt



```
C:\Users\Acer\priceprediction>git commit -am "make it better"
On branch master
nothing to commit, working tree clean

C:\Users\Acer\priceprediction>git push heroku master
Enumerating objects: 3521, done.
Counting objects: 100% (3521/3521), done.
Delta compression using up to 2 threads
Compressing objects: 100% (3487/3487), done.
Writing objects: 100% (3521/3521), 24.03 MiB | 292.00 KiB/s, done.
Total 3521 (delta 178), reused 0 (delta 0), pack-reused 0
remote: Compressing source files... done.
remote: Building source:
remote:
remote: -----> Building on the Heroku-20 stack
remote: -----> Determining which buildpack to use for this app
remote: -----> Python app detected
remote: -----> No Python version was specified. Using the buildpack default: python-3.10.4
remote: To use a different version, see: https://devcenter.heroku.com/articles/python-runtimes
remote: -----> Installing python-3.10.4
remote: -----> Installing pip 22.0.4, setuptools 60.10.0 and wheel 0.37.1
remote: -----> Installing SQLite3
remote: -----> Installing requirements with pip
remote: Collecting click==8.0.4
remote:   Downloading click-8.0.4-py3-none-any.whl (97 kB)
remote: Collecting colorama==0.4.4
remote:   Downloading colorama-0.4.4-py2.py3-none-any.whl (16 kB)
remote: Collecting Flask==2.0.3
remote:   Downloading Flask-2.0.3-py3-none-any.whl (95 kB)
remote: Collecting gunicorn==20.1.0
remote:   Downloading gunicorn-20.1.0-py3-none-any.whl (79 kB)
remote: Collecting itsdangerous==2.1.0
remote:   Downloading itsdangerous-2.1.0-py3-none-any.whl (15 kB)
remote: Collecting Jinja2==3.0.3
remote:   Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)
remote: Collecting joblib==1.1.0
remote:   Downloading joblib-1.1.0-py2.py3-none-any.whl (306 kB)
remote: Collecting MarkupSafe==2.1.0
remote:   Downloading MarkupSafe-2.1.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (25 kB)
remote: Collecting numpy==1.22.2
remote:   Downloading numpy-1.22.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (16.8 MB)
remote: Collecting pandas==1.4.1
remote:   Downloading pandas-1.4.1-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.7 MB)
remote: Collecting python-dateutil==2.8.2
remote:   Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
remote: Collecting pytz==2021.3
remote:   Downloading pytz-2021.3-py2.py3-none-any.whl (503 kB)
remote: Collecting scikit-learn==1.0.2
remote:   Downloading scikit_learn-1.0.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (26.5 MB)
remote: Collecting scipy==1.8.0
```

```
Command Prompt - git push heroku master

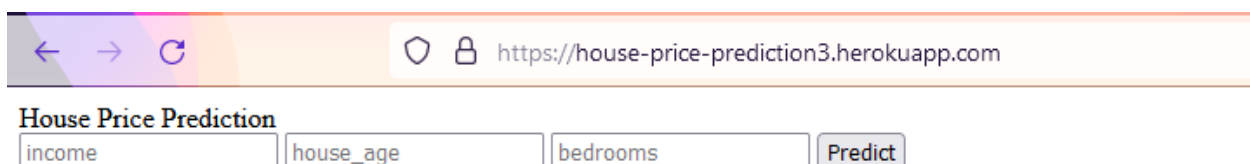
remote: Building source:
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remote: -----> Determining which buildpack to use for this app
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remote: To use a different version, see: https://devcenter.heroku.com/articles/python-runtimes
remote: -----> Installing python-3.10.4
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remote:   Downloading Jinja2-3.0.3-py3-none-any.whl (133 kB)
remote: Collecting joblib==1.1.0
remote:   Downloading joblib-1.1.0-py2.py3-none-any.whl (306 kB)
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remote:   Downloading MarkupSafe-2.1.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (25 kB)
remote: Collecting numpy==1.22.2
remote:   Downloading numpy-1.22.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (16.8 MB)
remote: Collecting pandas==1.4.1
remote:   Downloading pandas-1.4.1-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.7 MB)
remote: Collecting python-dateutil==2.8.2
remote:   Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
remote: Collecting pytz==2021.3
remote:   Downloading pytz-2021.3-py2.py3-none-any.whl (503 kB)
remote: Collecting scikit-learn==1.0.2
remote:   Downloading scikit_learn-1.0.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (26.5 MB)
remote: Collecting scipy==1.8.0
remote:   Downloading scipy-1.8.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (42.3 MB)
remote: Collecting six==1.16.0
remote:   Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
remote: Collecting threadpoolctl==3.1.0
```

```

remote:      Collecting pytz==2021.3
remote:      Downloading pytz-2021.3-py2.py3-none-any.whl (503 kB)
remote:      Collecting scikit-learn==1.0.2
remote:      Downloading scikit_learn-1.0.2-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (26.5 MB)
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remote:      Collecting six==1.16.0
remote:      Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
remote:      Collecting threadpoolctl==3.1.0
remote:      Downloading threadpoolctl-3.1.0-py3-none-any.whl (14 kB)
remote:      Collecting Werkzeug==2.0.3
remote:      Downloading Werkzeug-2.0.3-py3-none-any.whl (289 kB)
remote:      Installing collected packages: pytz, Werkzeug, threadpoolctl, six, numpy, MarkupSafe, joblib, itsdangerous, gunicorn, colorama, click, scipy, python-dateutil, Jinja2, scikit-learn, pandas, Flask
remote:      Successfully installed Flask-2.0.3 Jinja2-3.0.3 MarkupSafe-2.1.0 Werkzeug-2.0.3 click-8.0.4 colorama-0.4.4 gunicorn-20.1.0 itsdangerous-2.1.0 joblib-1.1.0 numpy-1.22.2 pandas-1.4.1 python-dateutil-2.8.2 pytz-2021.3 scikit-learn-1.0.2 scipy-1.8.0 six-1.16.0 threadpoolctl-3.1.0
remote: -----> Discovering process types
remote:      Procfile declares types -> web
remote: -----> Compressing...
remote:      Done: 191.7M
remote: -----> Launching...
remote:      Released v3
remote:      https://house-price-prediction3.herokuapp.com/ deployed to Heroku
remote:
remote: Verifying deploy... done.
To https://git.heroku.com/house-price-prediction3.git
 * [new branch]      master -> master

```

5. Click on the link: <https://house-price-prediction3.herokuapp.com/>



House Price Prediction

income house_age bedrooms Predict

6. Testing the results of house-price-prediction3



House Price Prediction

79545.45857 5.682861322 4.09 Predict

The house price should be \$[1370200.22774155]

