

# **CSE5121 - DevOps & MLOps**

## **Activity 1**

## Connect GitHub with Heroku and generate a URL for the house rent prediction.

### Prerequisites:

VS Code  
VS Code Extension – Python  
Git – Desktop  
GitHub Account  
Heroku Account

### Step 1

#### Creation of ML Model and Pickle(.pkl) file

Note: After the successful completion, model.pkl will be generated.

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from sklearn.linear_model import LinearRegression
import pickle
```

```
dataset = pd.read_csv('house_rent.csv')
```

```
X = dataset.iloc[:, :3]
y = dataset.iloc[:, -1]
```

```
regressor = LinearRegression()
```

```
regressor.fit(X, y)
```

```
pickle.dump(regressor, open('model.pkl', 'wb'))
```

```
model = pickle.load(open('model.pkl', 'rb'))
```

```
print(model.predict([[1, 1, 2]]))
```

### Step 2

#### Creation of UI using HTML

Note: index.html file should be inside the templates directory

```
<!DOCTYPE html>
<html >
<body>
<div class="login">
    <h1>Prediction of House Rent</h1>
```

```
<form action="{{ url_for('predict')}}" method="post">
  <input type="text" name="city" placeholder="Name of the City" required="required"
/><br><br>
  <input type="text" name="type" placeholder="Type of house" required="required"
/><br><br>
  <input type="text" name="bhk" placeholder="No.of rooms"
required="required" /><br><br>

  <button type="submit" class="btn btn-primary btn-block btn-
large">Predict</button><br>
</form>

<br>
<br>
{{ prediction_text }}

</div>
</body>
</html>
```



## Prediction of House Rent


{{ prediction\_text }}

### Step 3

#### Creation of Flask File

**Note:** Here the name of the flask file will be app.py

```
import numpy as np
from flask import Flask, request, jsonify, render_template
import pickle
```

```
app = Flask(__name__)
model = pickle.load(open('model.pkl', 'rb'))
```

```
@app.route('/')
def home():
    return render_template('index.html')

@app.route('/predict',methods=['POST'])
def predict():
    int_features = [int(x) for x in request.form.values()]
    final_features = [np.array(int_features)]
    prediction = model.predict(final_features)

    output = round(prediction[0], 2)

    return render_template('index.html', prediction_text='House rent approx Rs
    {}'.format(output))

if __name__ == "__main__":
    app.run(debug=True)
```

## Step 4

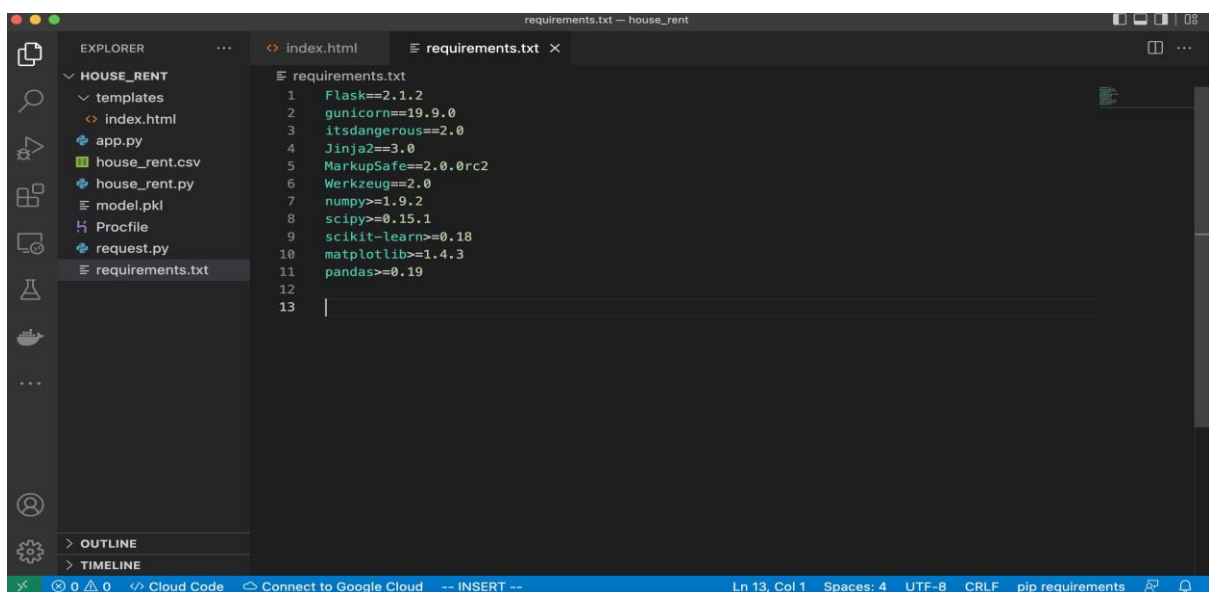
### Generate requirement file

#### Note

- Run the below script in VS Code terminal window of your project directory.
- After the successful completion, it generates a requirements.txt file.

i.pip install pipreqs

ii. pipreqs .

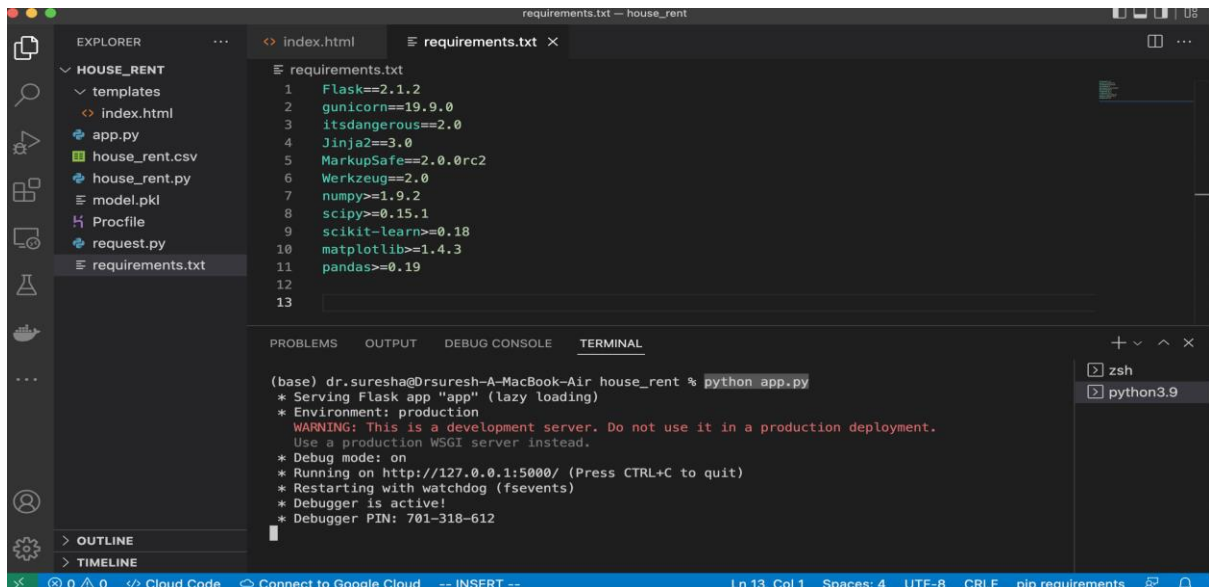


## Step 5

Compile all the above files into a single directory and name it HOUSE\_RENT

## Step 6

Run the following script in VS Code terminal  
 python app.py



The screenshot shows the VS Code interface with the 'requirements.txt' file open in the editor. The file contains the following dependencies:

```
1 Flask==2.1.2
2 gunicorn==19.9.0
3 itsdangerous==2.0
4 Jinja2==3.0
5 MarkupSafe==2.0.0rc2
6 Werkzeug==2.0
7 numpy>=1.9.2
8 scipy>=0.15.1
9 scikit-learn>=0.18
10 matplotlib>=1.4.3
11 pandas>=0.19
12
13
```

The terminal at the bottom shows the output of running 'python app.py' in a virtual environment:

```
(base) dr.suresha@Orsuresh-A-MacBook-Air house_rent % python app.py
* Serving Flask app "app" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: on
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with watchdog (fsevents)
* Debugger is active!
* Debugger PIN: 701-318-612
```



The screenshot shows a web browser at the address '127.0.0.1:5000/predict'. The page has the title 'Prediction of House Rent' and contains three input fields with the values '0', '1', and '4'. Below these fields is a 'Predict' button. The output of the prediction is displayed below the button:


House rent approx Rs 67307.69

## Step 7

Login into your GitHub account and Create New Repository Name it HouseRent and upload all the above files into the repository.








### Note

- index.html file should be uploaded inside the templates folder)
- After uploading all the files, commit the changes.



[Pull requests](#)
[Issues](#)
[Marketplace](#)
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**Recent Repositories** [New](#)

-  itsuresha/salarym13
-  itsuresha/new
-  itsuresha/newrep109
-  itsuresha/firstrepo
-  itsuresha/House\_rent
-  itsuresha/ML
-  itsuresha/MLGIT

**Recent activity**

When you take actions across GitHub, we'll provide links to that activity here.

**Following** **For you** [Beta](#)

**Introduce yourself**

The easiest way to introduce yourself on GitHub is by creating a README in a repository about you! You can start here:

```
itsuresha / README.md
```

- 1 - 🙋 Hi, I'm @itsuresha
- 2 - \*\* I'm interested in ...
- 3 - 🌱 I'm currently learning ...
- 4 - 💖 I'm looking to collaborate on ...
- 5 - 📫 How to reach me ...
- 6

[Dismiss this](#) [Continue](#)

**Discover interesting projects and people to populate your personal news feed.**

Your news feed helps you keep up with recent activity on repositories you [watch](#) or [star](#) and people you [follow](#).

**Our response to the war in Ukraine**

GitHub is united with the people of Ukraine and the international community.



[Read more](#)

**Latest changes**

- 4 days ago  
Dependabot alerts paused for malware advisories
- 5 days ago  
Autolinks with alphanumeric IDs
- 6 days ago  
The new GitHub Issues – June 30th update
- 7 days ago  
Dependabot alerts: Dependency scope filter via GraphQL API

[View changelog](#) →

**Owner \*** **Repository name \***

 itsuresha - /  

Great repository names: [HouseRent](#) is available. [ie. Need inspiration? How about super-ba](#)

**Description (optional)**

☒ **Public**  
Anyone on the internet can see this repository. You choose who can commit.


☐ **Private**  
You choose who can see and commit to this repository.

**Initialize this repository with:**  
Skip this step if you're importing an existing repository.

☒ **Add a README file**  
This is where you can write a long description for your project. [Learn more.](#)

**Add .gitignore**  
Choose which files not to track from a list of templates. [Learn more.](#)




**Choose a license**  
A license tells others what they can and can't do with your code. [Learn more.](#)

This will set  **main** as the default branch. Change the default name in your [settings](#).

**itsuresha / HouseRent** [Public](#)


[Code](#) [Issues](#) [Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) [Insights](#) [Settings](#)

[Go to file](#) [Add file](#) [Code](#)

 itsuresha	Initial commit	04e971a 1 minute ago	1 commit
	LICENSE	Initial commit	1 minute ago
	README.md	Initial commit	1 minute ago

**README.md**

**HouseRent**



[Pull requests](#)
[Issues](#)
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[Explore](#)

[itsuresha / HouseRent](#)
Public
Pin
Unwatch 1
Fork 0
Star 0

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[Settings](#)

[main](#)
1 branch
0 tags

Go to file
Add file
Code

itsuresha Initial commit
1 commit

LICENSE

Initial commit

now

README.md

Initial commit

now

README.md

HouseRent

### About

No description, website, or topics provided.


[Readme](#)  
[GPL-3.0 license](#)  
0 stars  
1 watching  
0 forks

### Releases

No releases published  
[Create a new release](#)









### Packages

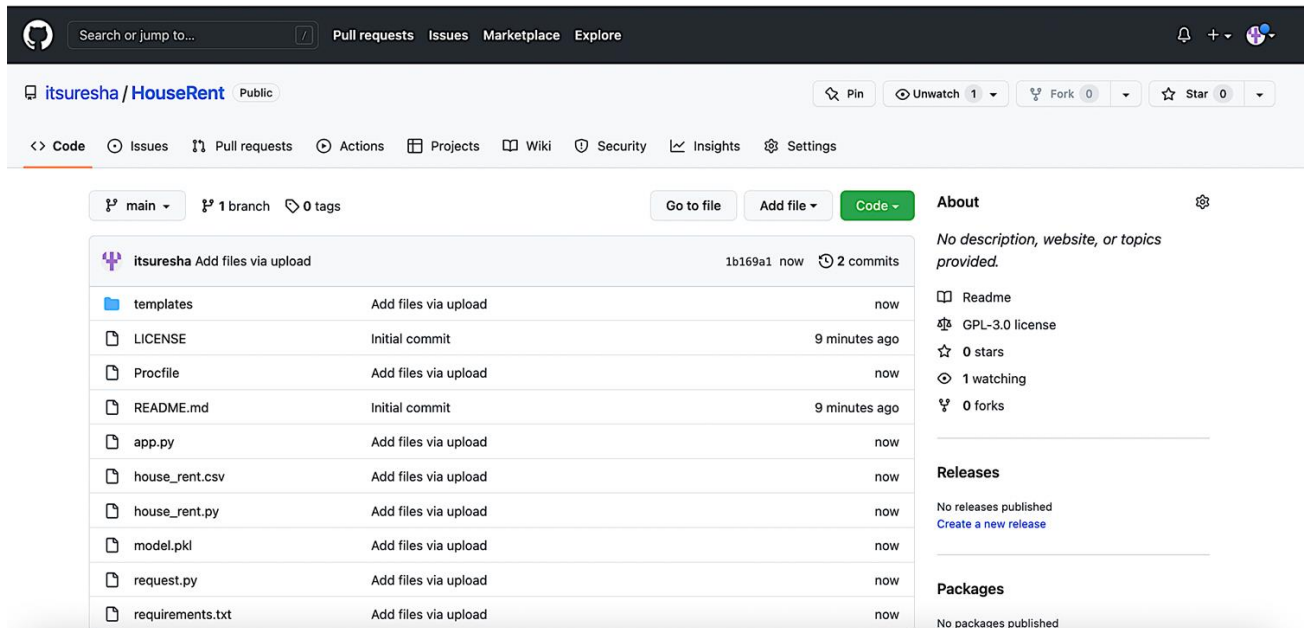
No packages published



Drag additional files here to add them to your repository

[Or choose your files](#)

 requirements.txt	×
 request.py	×
 Procfile	×
 model.pkl	×
 house_rent.py	×
 house_rent.csv	×
 app.py	×
 /templates/index.html	×

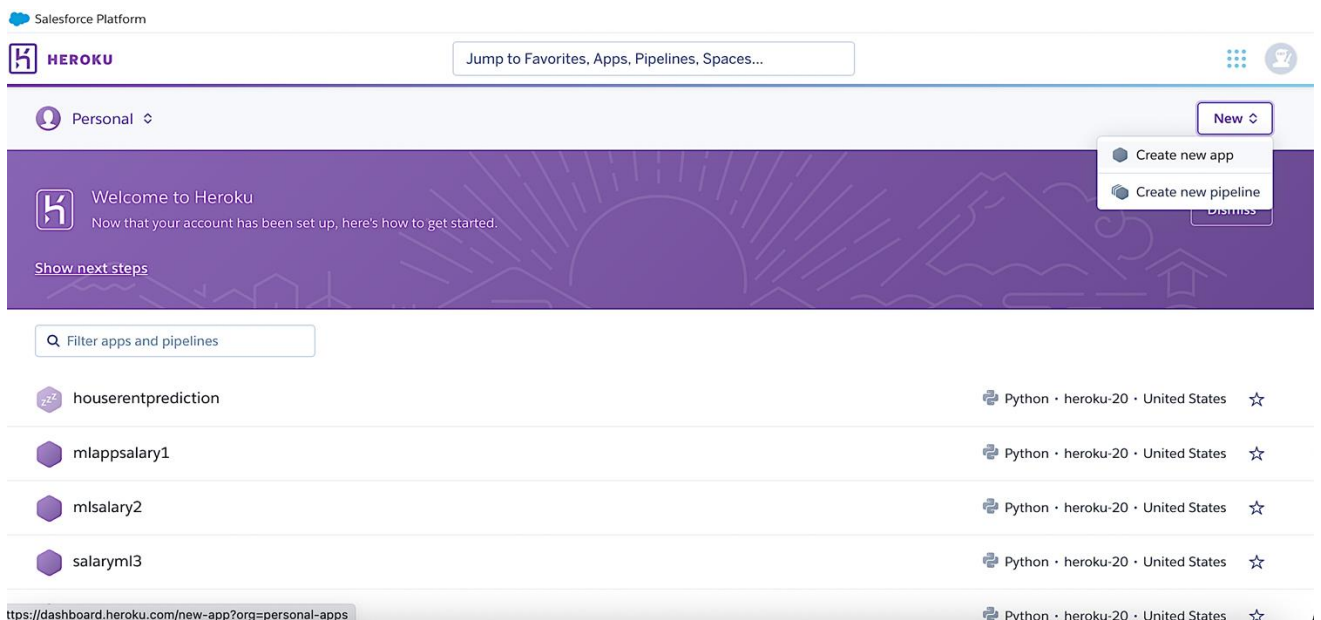


## Step 8

Login to Heroku Platform and Create a new app, name it HouseRent

### Note

- App name should be unique.
- In the Heroku free account, we can create up to 5 applications.





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Create New App

App name

houserent1 

houserent1 is available

Choose a region

 United States 

Add to pipeline...

Create app

## Step 9

Connect Heroku with the GitHub repository in the Deployment method.

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together and promote code between them.

 [Learn more.](#)

apps, and create apps for new pull requests.

 [Learn more.](#)

 Choose a pipeline 

Deployment method



Heroku Git  
Use Heroku CLI



GitHub  
Connect to GitHub



Container Registry  
Use Heroku CLI

Connect to GitHub

Connect this app to GitHub to enable code diffs and deploys.

Search for a repository to connect to

 itsuresha  house 

Missing a GitHub organization? [Ensure Heroku Dashboard has team access.](#)


 itsuresha/HouseRent 

 itsuresha/House\_rent 

## Step 10

Choose the Manual Deployment method and select your project main/master branch accordingly and start to Deploy


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 **HEROKU**

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Every push to the branch you specify here will deploy a new version of this app. **Deploys happen automatically:** be sure that this branch is always in a deployable state and any tests have passed before you push. [Learn more.](#)

**Choose a branch to deploy**

 main

☐ Wait for CI to pass before deploy

Only enable this option if you have a Continuous Integration service configured on your repo.

**Enable Automatic Deploys**

---


**Manual deploy**

Deploy the current state of a branch to this app.

**Deploy a GitHub branch**

This will deploy the current state of the branch you specify below. [Learn more.](#)

**Choose a branch to deploy**

 main **Deploy Branch**


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## Step 11


After the successful deployment, it generates the URL for the prediction.

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 **HEROKU**

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 main **Deploy Branch**

**Receive code from GitHub** 

**Build main 1b169a16**

```

-----> Compressing...
Done: 152.3M
-----> Launching...
Released v5
https://houseent1.herokuapp.com/ deployed to Heroku
This app is using the Heroku-20 stack, however a newer stack is available.
To upgrade to Heroku-22, see:
https://devcenter.heroku.com/articles/upgrading-to-the-latest-stack
  
```

☒ Autoscroll with output [View build log](#)

**Release phase**

**Deploy to Heroku**

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### Manual deploy

Deploy the current state of a branch to this app.

### Deploy a GitHub branch

This will deploy the current state of the branch you specify below. [Learn more.](#)

#### Choose a branch to deploy

Receive code from GitHub



Build **main** 1b169a16



Release phase



Deploy to Heroku



Your app was successfully deployed.

[View](#)

houserent1.herokuapp.com/predict



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## Prediction of House Rent




House rent approx Rs 36153.85