Data Intake Report

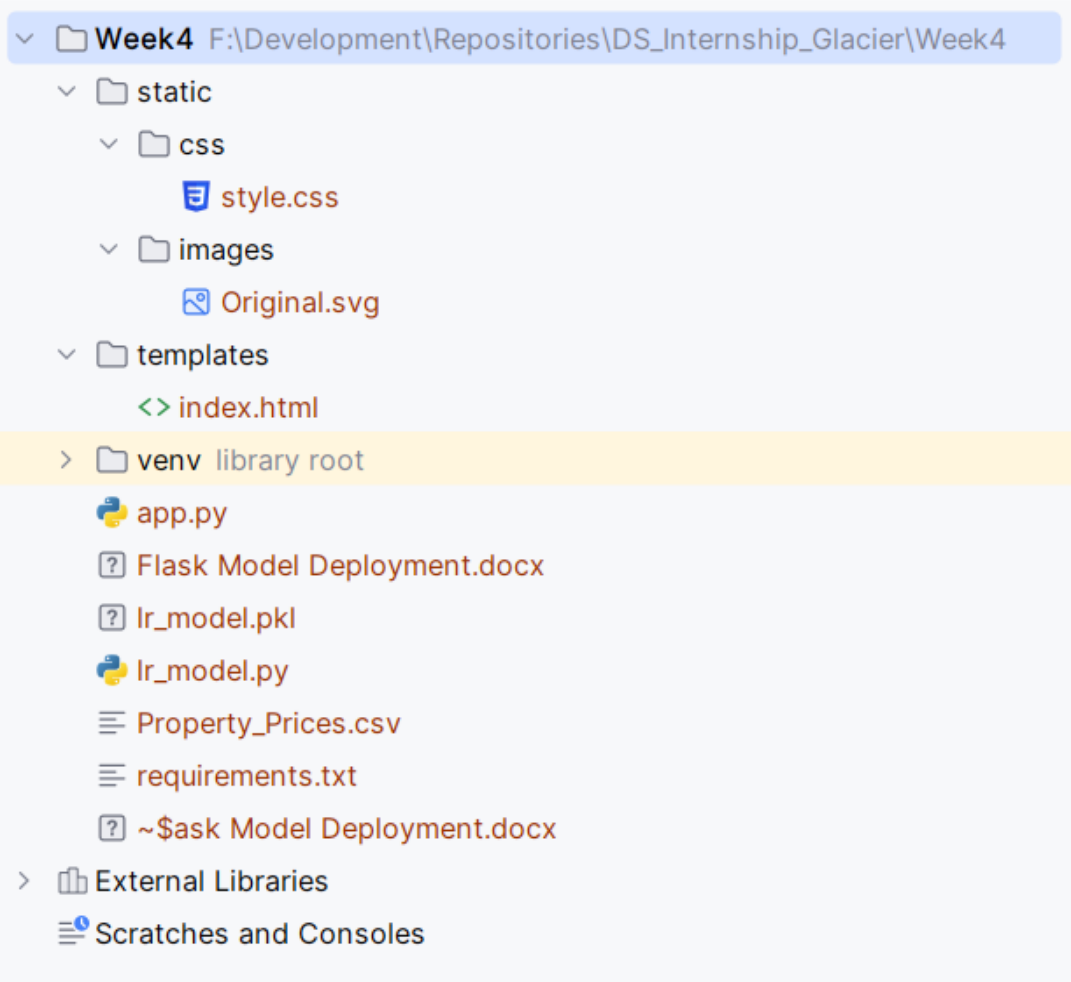
Name: Deploying a Flask Application on EC2
Report date: 05.0.2024
Internship Batch: LISUM30
Version:<1.0>
Data intake by: Olena Panchenko
Data intake reviewer: Data Glacier
Data storage location:

Tabular data details: Property_Prices

Total number of observations	17
Total number of files	1
Total number of features	5
Base format of the file	.csv
Size of the data	1KB

Table of Contents

1. Project Directory Structure



2. A list of dependencies and libraries used in this project

requirements.txt

```
blinker==1.7.0
click==8.1.7
colorama==0.4.6
Flask==3.0.2
itsdangerous==2.1.2
Jinja2==3.1.3
joblib==1.3.2
MarkupSafe==2.1.5
numpy==1.26.4
pandas==2.2.1
python-dateutil==2.8.2
pytz==2024.1
scikit-learn==1.4.1.post1
scipy==1.12.0
six==1.16.0
threadpoolctl==3.3.0
tzdata==2024.1
Werkzeug==3.0.1
```

3. Data

Bedrooms	Bathrooms	Floor Area(ft2)	Council Tax Band	Price(£)
3	1	1022	C	350000
5	3	2700	F	1500000
6	5	4300		1350000
7	5		F	1295000
3	1		A	260000
4	4		G	1200000
3	1		C	300000
7	2	4000	E	950000
5	3	3821	F	950000
6	3		F	925000
4	2	1283	F	925000
3	2		E	900000
2	2			325000
1	1			120000
2	1		A	120000
2	1		A	180000
1	1		A	90000

4. Data Preprocessing

lr_model.py

```python
import pandas as pd
import pickle
from sklearn.linear_model import LinearRegression

dataset = pd.read_csv('Property_Prices.csv')

dataset.loc[[13, 16], 'Floor Area(ft2)'] = 400
no_missing_area_data = dataset.loc[:, ['Bedrooms', 'Bathrooms', 'Floor Area(ft2)']].dropna(subset=['Floor Area(ft2)'])
missing_area_data = dataset.loc[:, ['Bedrooms', 'Bathrooms', 'Floor Area(ft2)']][dataset['Floor Area(ft2)'].isnull()]
no_missing_area_predictors = no_missing_area_data.drop(columns=['Floor Area(ft2)'])
no_missing_area_targets = no_missing_area_data['Floor Area(ft2)']
missing_area_predictors = missing_area_data.drop(columns=['Floor Area(ft2)'])

mv_model = LinearRegression()
mv_model.fit(no_missing_area_predictors, no_missing_area_targets)
predicted_areas = mv_model.predict(missing_area_predictors)
dataset.loc[dataset['Floor Area(ft2)'].isnull(), ['Floor Area(ft2)']] = predicted_areas

encoding_dict = {'A': 1, 'B': 2, 'C': 3, 'D': 4, 'E': 5, 'F': 6, 'G': 7, 'H': 8}
dataset['Council Tax Band'] = dataset['Council Tax Band'].map(encoding_dict)

mode_by_bedrooms = dataset.groupby('Bedrooms')['Council Tax Band'].transform(lambda x: x.mode().iloc[0])
dataset['Council Tax Band'] = dataset['Council Tax Band'].fillna(mode_by_bedrooms)
```

5. Model Training and Saving

```python
model_predictors = dataset.iloc[:, :4].values
model_targets = dataset.iloc[:, -1]
regressor = LinearRegression()
regressor.fit(model_predictors, model_targets)
pickle.dump(regressor, open('lr_model.pkl', 'wb'))
```

6. HTML Template

index.html

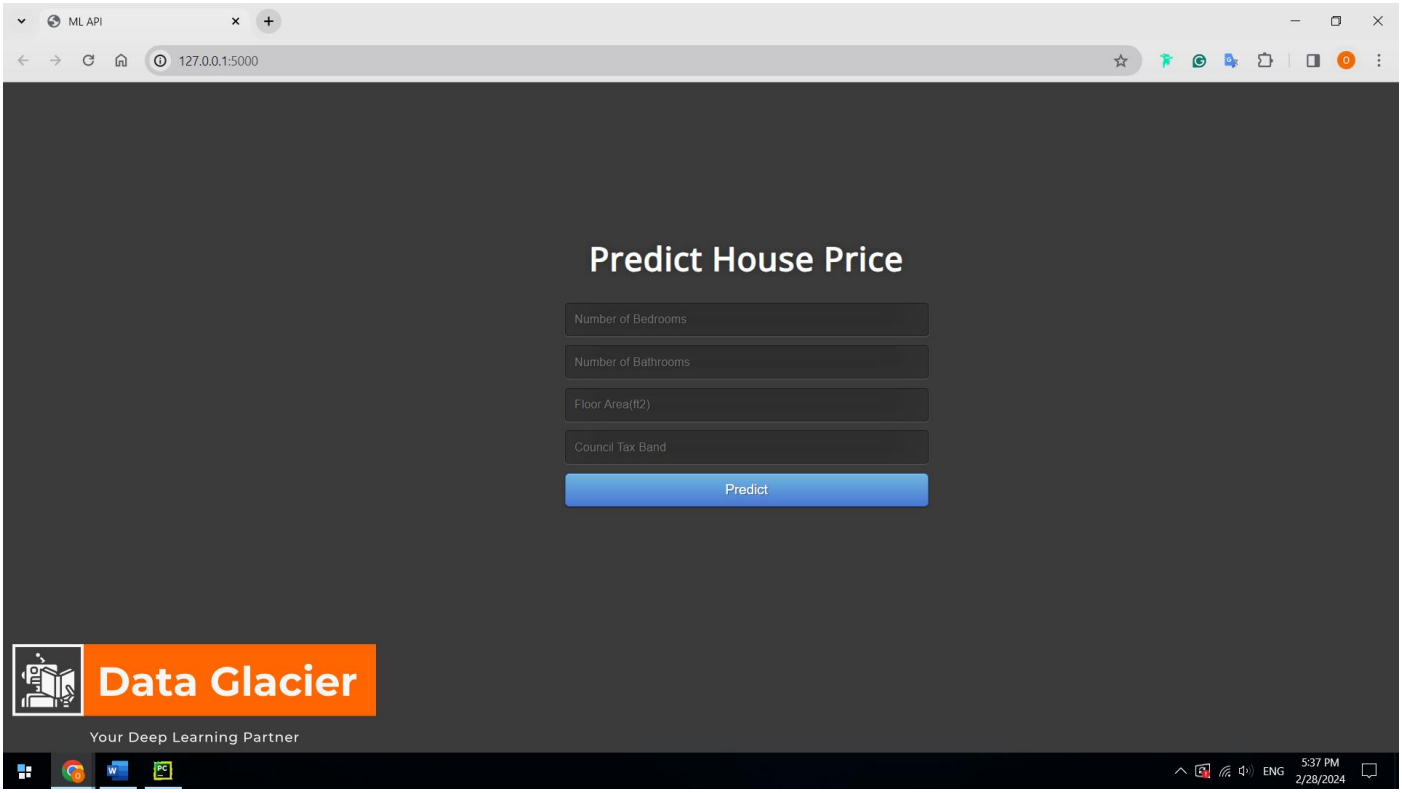
```
<!DOCTYPE html>
<html >
<head>
  <meta charset="UTF-8">
  <title>ML API</title>
  <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
<link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">

</head>

<body>
 <div class="login">
    <h1>Predict House Price</h1>

     <!-- Main Input For Receiving Query to our ML -->
    <form action="{{ url_for('predict')}}" method="post">
        <input type="text" name="Bedrooms" placeholder="Number of Bedrooms" required="required" />
        <input type="text" name="Bathrooms" placeholder="Number of Bathrooms" required="required" />
        <input type="text" name="Floor Area(ft2)" placeholder="Floor Area(ft2)" required="required" />
        <input type="text" name="Council Tax Band" placeholder="Council Tax Band" required="required" />

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

   <br>
   <br>
   {{ prediction_text }}

 </div>
 <img src="/static/images/Original.svg" style="..." alt="Company Logo"/>

</body>
</html>
```

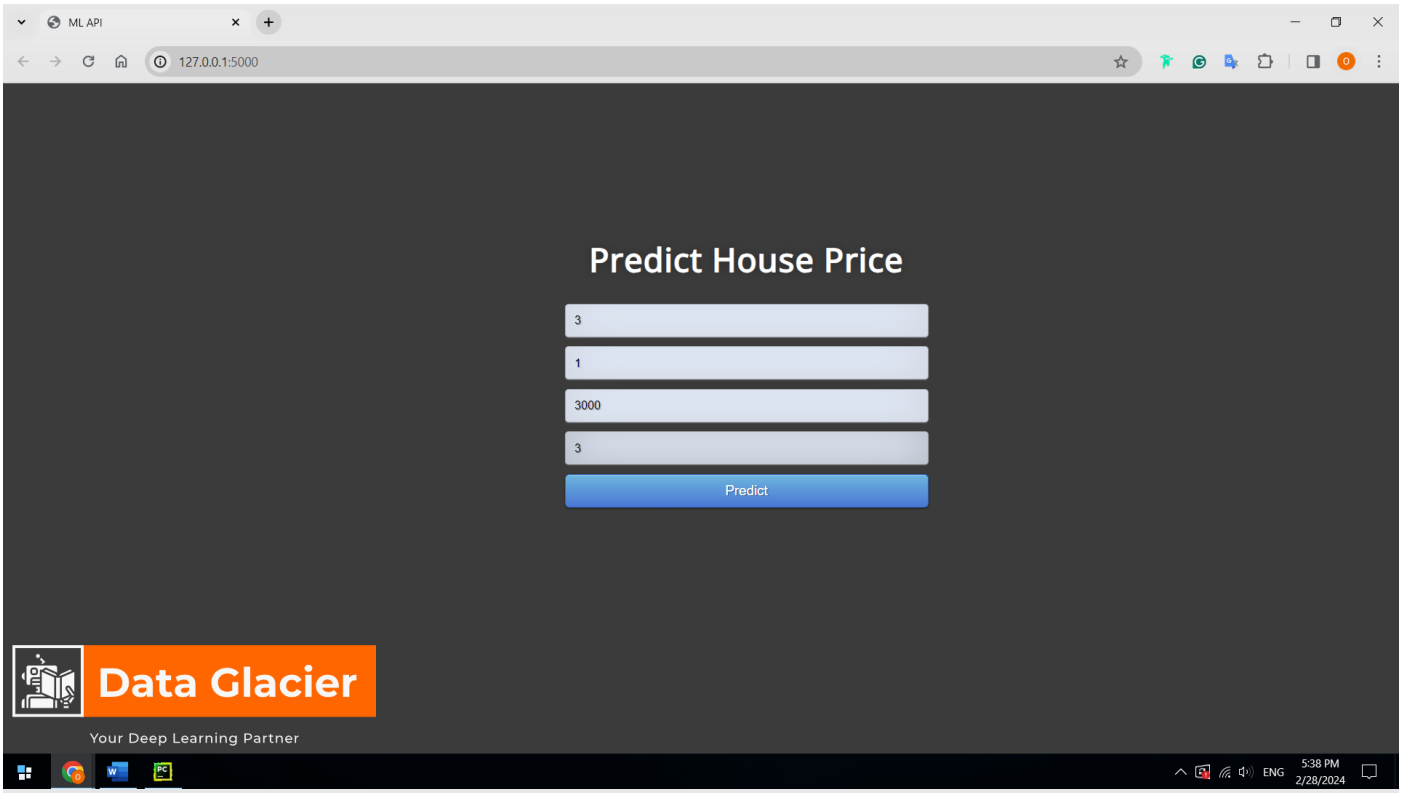
7. API Deployment

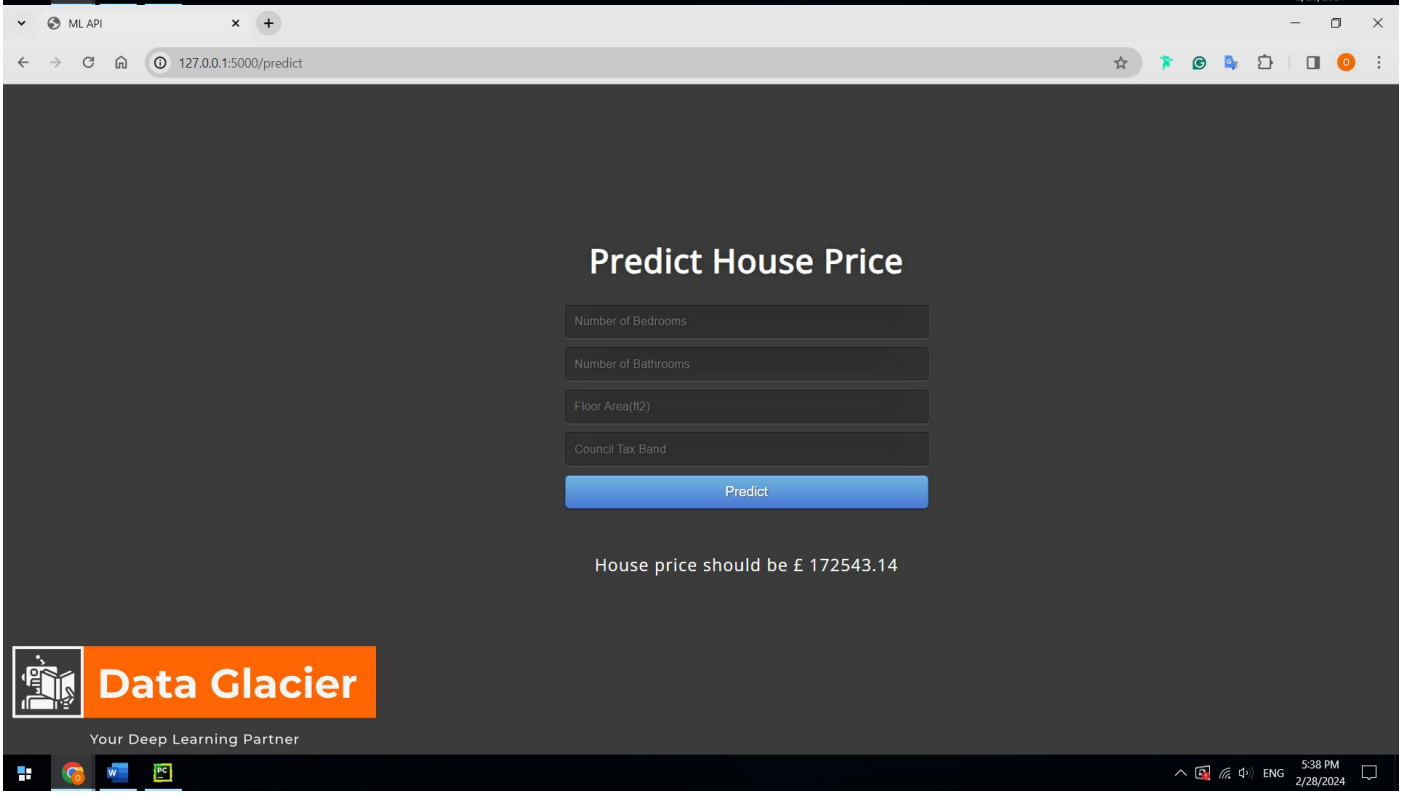
app.py

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

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


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


2 usages (2 dynamic)
@app.route( rule: '/predict', methods=['POST'])
def predict():
    """
    For rendering results on HTML GUI
    """
    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( template_name_or_list: 'index.html', prediction_text='House price should be £ {}'.format(output))


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

8. Model Testing

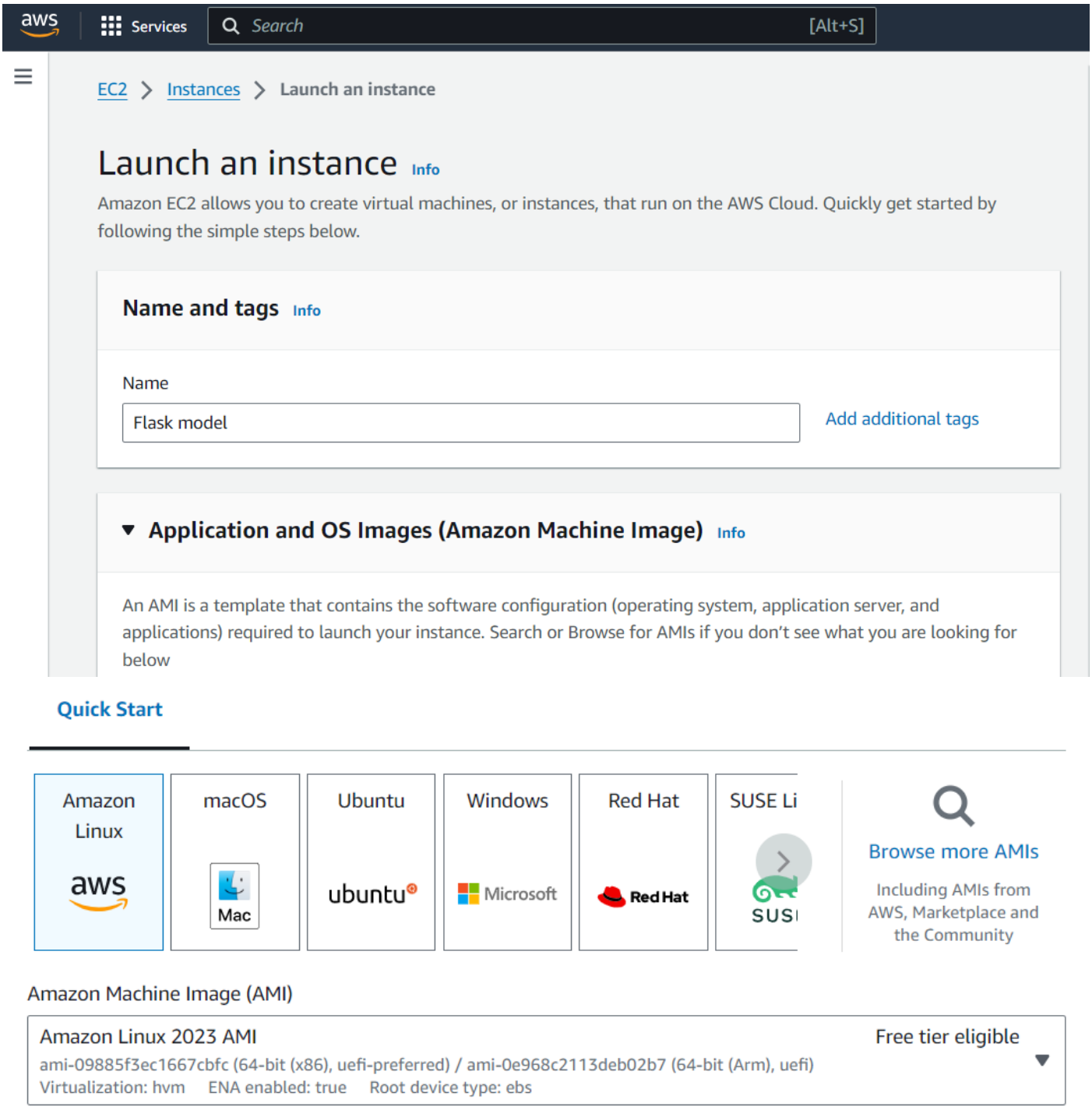



ML API
127.0.0.1:5000
Predict House Price
3
1
3000
3
Predict
Data Glacier
Your Deep Learning Partner
ENG
5:38 PM
2/28/2024


ML API
127.0.0.1:5000/predict
Predict House Price
Number of Bedrooms
Number of Bathrooms
Floor Area(ft2)
Council Tax Band
Predict
House price should be £ 172543.14
Data Glacier
Your Deep Learning Partner
ENG
5:38 PM
2/28/2024

9. Cloud Deployment (AWS)

9.1. Launch an EC2 Instance



Instance type Info | Get advice

Instance type

t2.micro — Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0178 USD per Hour
On-Demand RHEL base pricing: 0.0732 USD per Hour
On-Demand SUSE base pricing: 0.0132 USD per Hour
On-Demand Linux base pricing: 0.0132 USD per Hour

All generations

Compare instance types

Additional costs apply for AMIs with pre-installed software

Key pair (login) Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

[redacted]key

Create new key pair

Network settings Info

VPC - *required* Info

vpc-0b6cf2e8afdc0f1a2 (default)
172.31.0.0/16

Subnet Info

No preference

Create new subnet

Auto-assign public IP Info

Enable

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

(•) Create security group ( ) Select existing security group

Security group name - *required*

launch-wizard-1

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and ._-:/()#,@[]+=&;{}!$*

▼ Inbound rules

Filter rules

Name	Security group rule ID	Port range	Protocol	Source	Security
–	sgr-076286ea49b2dbbda	22	TCP	0.0.0.0/0	launch-w
–	sgr-091b3fa5efc1cd4ca	All	All	0.0.0.0/0	launch-w

▼ Outbound rules

Filter rules

Name	Security group rule ID	Port range	Protocol	Destination	Security
–	sgr-02b8a8a18c40fbaef	All	All	0.0.0.0/0	launch-w

▼ Configure storage Info Advanced

1x 8 GiB gp3 Root volume (Not encrypted)

Success
Successfully initiated launch of instance (i-0a68606948656b8fc)

Instances (1) Info | Connect | Instance state | Actions | Launch instances

Find Instance by attribute or tag (case-sensitive) | Any state

Instance ID = i-0a68606948656b8fc | Clear filters

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
Flask model	i-0a68606948656b8fc	Running	t2.micro	Initializing	View alarms	eu-west-2c	ec2-18-168

9.2. Connect to the EC2 Instance

```
PS F:\Development\Keys> ssh -i .\[redacted]_key.pem ec2-user@18.168.200.151
   ,     #_
   ,     #_
  ~\_  ####_        Amazon Linux 2023
 ~~  \_#####\
 ~~     \###|
 ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
  ~~       V~' '->
   ~~~         /
     ~~._.   _/
        _/ _/
      _/m/'
```

9.3. Prepare the Environment and Connect the GitHub repository

```
[ec2-user@ip-172-31-10-84 Development]$ sudo yum install git-all
Last metadata expiration check: 0:22:42 ago on Wed Mar  6 20:41:02 2024.
Dependencies resolved.
================================================================================
 Package                  Architecture    Version                    Repository          Size
================================================================================
Installing:
 git-all                  noarch          2.40.1-1.amzn2023.0.1      amazonlinux         15 k
Installing dependencies:
 apr                      x86_64          1.7.2-2.amzn2023.0.2       amazonlinux        129 k
 apr-util                 x86_64          1.6.3-1.amzn2023.0.1       amazonlinux         98 k
 cairo                    x86_64          1.17.6-2.amzn2023.0.1      amazonlinux        684 k
 cvs                      x86_64          1.11.23-56.amzn2023.0.3    amazonlinux        594 k
 cvsps                    x86_64          2.2-0.28.b1.amzn2023.0.2   amazonlinux         61 k
 fontconfig               x86_64          2.13.94-2.amzn2023.0.2     amazonlinux        273 k
 fonts-filesystem         noarch          1:2.0.5-12.amzn2023.0.2    amazonlinux        9.5 k
 freetype                 x86_64          2.13.0-2.amzn2023.0.1      amazonlinux        422 k
 generic-logos-httpd      noarch          18.0.0-12.amzn2023.0.3     amazonlinux         19 k
 git                      x86_64          2.40.1-1.amzn2023.0.1      amazonlinux         57 k
 git-core                 x86_64          2.40.1-1.amzn2023.0.1      amazonlinux        4.3 M
 git-core-doc             noarch          2.40.1-1.amzn2023.0.1      amazonlinux        2.6 M
 git-credential-libsecret x86_64          2.40.1-1.amzn2023.0.1      amazonlinux         22 k
 git-cvs                  noarch          2.40.1-1.amzn2023.0.1      amazonlinux         98 k
 git-daemon               x86_64          2.40.1-1.amzn2023.0.1      amazonlinux        325 k
 git-email                noarch          2.40.1-1.amzn2023.0.1      amazonlinux         58 k
 git-gui                  noarch          2.40.1-1.amzn2023.0.1      amazonlinux        247 k
 git-instaweb             noarch          2.40.1-1.amzn2023.0.1      amazonlinux         30 k
 git-p4                   noarch          2.40.1-1.amzn2023.0.1      amazonlinux         81 k
 git-subtree              noarch          2.40.1-1.amzn2023.0.1      amazonlinux         39 k
 git-svn                  noarch          2.40.1-1.amzn2023.0.1      amazonlinux         75 k
 gitk                     noarch          2.40.1-1.amzn2023.0.1      amazonlinux        162 k
 gitweb                   noarch          2.40.1-1.amzn2023.0.1      amazonlinux        149 k
 google-noto-fonts-common noarch          20201206-2.amzn2023.0.2    amazonlinux         15 k
 google-noto-sans-vf-fonts noarch         20201206-2.amzn2023.0.2    amazonlinux        492 k
 graphite2                x86_64          1.3.14-7.amzn2023.0.2      amazonlinux         97 k
 harfbuzz                 x86_64          7.0.0-2.amzn2023.0.1       amazonlinux        868 k
 httpd                    x86_64          2.4.58-1.amzn2023          amazonlinux         47 k
 httpd-core               x86_64          2.4.58-1.amzn2023          amazonlinux        1.4 M
 httpd-filesystem         noarch          2.4.58-1.amzn2023          amazonlinux         14 k
 httpd-tools              x86_64          2.4.58-1.amzn2023          amazonlinux         81 k
 langpacks-core-font-en   noarch          3.0-21.amzn2023.0.4        amazonlinux         10 k
 libX11                   x86_64          1.7.2-3.amzn2023.0.4       amazonlinux        657 k
 libX11-common            noarch          1.7.2-3.amzn2023.0.4       amazonlinux        152 k
 libXau                   x86_64          1.0.9-6.amzn2023.0.2       amazonlinux         31 k
 libXext                  x86_64          1.3.4-6.amzn2023.0.2       amazonlinux         41 k
 libXft                   x86_64          2.3.3-6.amzn2023.0.2       amazonlinux         64 k
 libXrender               x86_64          0.9.10-14.amzn2023.0.2     amazonlinux         28 k
[ec2-user@ip-172-31-10-84 Development]$ mkdir PropertyPrice
[ec2-user@ip-172-31-10-84 Development]$ git clone https://github.com/helenapanchenko/DS_Internship_Glacier.git
Cloning into 'DS_Internship_Glacier'...
remote: Enumerating objects: 54, done.
remote: Counting objects: 100% (54/54), done.
remote: Compressing objects: 100% (41/41), done.
remote: Total 54 (delta 11), reused 50 (delta 7), pack-reused 0
Receiving objects: 100% (54/54), 9.38 MiB | 15.74 MiB/s, done.
Resolving deltas: 100% (11/11), done.
```

```
[ec2-user@ip-172-31-10-84 Week4]$ source venv/bin/activate
(venv) [ec2-user@ip-172-31-10-84 Week4]$ pip install flask
Collecting flask
  Downloading flask-3.0.2-py3-none-any.whl (101 kB)
     |████████████████████████████████| 101 kB 4.5 MB/s
Collecting Werkzeug>=3.0.0
  Downloading werkzeug-3.0.1-py3-none-any.whl (226 kB)
     |████████████████████████████████| 226 kB 25.8 MB/s
Collecting itsdangerous>=2.1.2
  Downloading itsdangerous-2.1.2-py3-none-any.whl (15 kB)
Collecting click>=8.1.3
  Downloading click-8.1.7-py3-none-any.whl (97 kB)
     |████████████████████████████████| 97 kB 13.1 MB/s
Collecting Jinja2>=3.1.2
  Downloading Jinja2-3.1.3-py3-none-any.whl (133 kB)
     |████████████████████████████████| 133 kB 51.7 MB/s
Collecting importlib-metadata>=3.6.0
  Downloading importlib_metadata-7.0.1-py3-none-any.whl (23 kB)
Collecting blinker>=1.6.2
  Downloading blinker-1.7.0-py3-none-any.whl (13 kB)
Collecting zipp>=0.5
  Downloading zipp-3.17.0-py3-none-any.whl (7.4 kB)
Collecting MarkupSafe>=2.0
  Downloading MarkupSafe-2.1.5-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (25 kB)
Installing collected packages: zipp, MarkupSafe, Werkzeug, Jinja2, itsdangerous, importlib-metadata, click, blinker, fla
sk
Successfully installed Jinja2-3.1.3 MarkupSafe-2.1.5 Werkzeug-3.0.1 blinker-1.7.0 click-8.1.7 flask-3.0.2 importlib-meta
data-7.0.1 itsdangerous-2.1.2 zipp-3.17.0
WARNING: You are using pip version 21.3.1; however, version 24.0 is available.
You should consider upgrading via the '/home/ec2-user/Development/DS_Internship_Glacier/Week4/venv/bin/python3 -m pip in
stall --upgrade pip' command.
(venv) [ec2-user@ip-172-31-10-84 Week4]$ python -m pip install pip-tools
Collecting pip-tools
  Downloading pip_tools-7.4.1-py3-none-any.whl (61 kB)
     |████████████████████████████████| 61 kB 3.6 MB/s
Collecting pyproject-hooks
  Downloading pyproject_hooks-1.0.0-py3-none-any.whl (9.3 kB)
Collecting wheel
  Downloading wheel-0.42.0-py3-none-any.whl (65 kB)
     |████████████████████████████████| 65 kB 6.3 MB/s
Collecting build>=1.0.0
  Downloading build-1.1.1-py3-none-any.whl (19 kB)
Collecting pip>=22.2
  Downloading pip-24.0-py3-none-any.whl (2.1 MB)
     |████████████████████████████████| 2.1 MB 34.4 MB/s
Requirement already satisfied: setuptools in ./venv/lib/python3.9/site-packages (from pip-tools) (59.6.0)
Requirement already satisfied: click>=8 in ./venv/lib/python3.9/site-packages (from pip-tools) (8.1.7)
Collecting tomli
  Downloading tomli-2.0.1-py3-none-any.whl (12 kB)
Collecting packaging>=19.0
  Downloading packaging-23.2-py3-none-any.whl (53 kB)
     |████████████████████████████████| 53 kB 3.3 MB/s
Requirement already satisfied: importlib-metadata>=4.6 in ./venv/lib/python3.9/site-packages (from build>=1.0.0->pip-too
ls) (7.0.1)
Requirement already satisfied: zipp>=0.5 in ./venv/lib/python3.9/site-packages (from importlib-metadata>=4.6->build>=1.0
.0->pip-tools) (3.17.0)
Installing collected packages: tomli, pyproject-hooks, packaging, wheel, pip, build, pip-tools
  Attempting uninstall: pip
    Found existing installation: pip 21.3.1
    Uninstalling pip-21.3.1:
      Successfully uninstalled pip-21.3.1
Successfully installed build-1.1.1 packaging-23.2 pip-24.0 pip-tools-7.4.1 pyproject-hooks-1.0.0 tomli-2.0.1 wheel-0.42.
0
```

```
(venv) [ec2-user@ip-172-31-10-84 Week4]$ pip-sync requirements.txt
Collecting colorama==0.4.6 (from -r /tmp/tmpjkw8fgz9 (line 1))
  Downloading colorama-0.4.6-py2.py3-none-any.whl.metadata (17 kB)
Collecting joblib==1.3.2 (from -r /tmp/tmpjkw8fgz9 (line 2))
  Downloading joblib-1.3.2-py3-none-any.whl.metadata (5.4 kB)
Collecting pandas==2.2.1 (from -r /tmp/tmpjkw8fgz9 (line 3))
  Downloading pandas-2.2.1-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (19 kB)
Collecting python-dateutil==2.8.2 (from -r /tmp/tmpjkw8fgz9 (line 4))
  Downloading python_dateutil-2.8.2-py2.py3-none-any.whl.metadata (8.2 kB)
Collecting pytz==2024.1 (from -r /tmp/tmpjkw8fgz9 (line 5))
  Downloading pytz-2024.1-py2.py3-none-any.whl.metadata (22 kB)
Collecting scikit-learn==1.4.1.post1 (from -r /tmp/tmpjkw8fgz9 (line 6))
  Downloading scikit_learn-1.4.1.post1-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (11 kB)
Collecting scipy==1.12.0 (from -r /tmp/tmpjkw8fgz9 (line 7))
  Downloading scipy-1.12.0-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (60 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 60.4/60.4 kB 9.9 MB/s eta 0:00:00
Collecting six==1.16.0 (from -r /tmp/tmpjkw8fgz9 (line 8))
  Downloading six-1.16.0-py2.py3-none-any.whl.metadata (1.8 kB)
Collecting threadpoolctl==3.3.0 (from -r /tmp/tmpjkw8fgz9 (line 9))
  Downloading threadpoolctl-3.3.0-py3-none-any.whl.metadata (13 kB)
Collecting tzdata==2024.1 (from -r /tmp/tmpjkw8fgz9 (line 10))
  Downloading tzdata-2024.1-py2.py3-none-any.whl.metadata (1.4 kB)
Requirement already satisfied: numpy<2,>=1.22.4 in ./venv/lib/python3.9/site-packages (from pandas==2.2.1->-r /tmp/tmpjk
w8fgz9 (line 3)) (1.26.4)
Downloading colorama-0.4.6-py2.py3-none-any.whl (25 kB)
Downloading joblib-1.3.2-py3-none-any.whl (302 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 302.2/302.2 kB 31.7 MB/s eta 0:00:00
Downloading pandas-2.2.1-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (13.0 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 13.0/13.0 MB 66.0 MB/s eta 0:00:00
Downloading python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 247.7/247.7 kB 30.5 MB/s eta 0:00:00
Downloading pytz-2024.1-py2.py3-none-any.whl (505 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 505.5/505.5 kB 50.5 MB/s eta 0:00:00
Downloading scikit_learn-1.4.1.post1-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (12.2 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 12.2/12.2 MB 31.3 MB/s eta 0:00:00
Downloading scipy-1.12.0-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (38.5 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 38.5/38.5 MB 32.5 MB/s eta 0:00:00
Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Downloading threadpoolctl-3.3.0-py3-none-any.whl (17 kB)
Downloading tzdata-2024.1-py2.py3-none-any.whl (345 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 345.4/345.4 kB 39.6 MB/s eta 0:00:00
Installing collected packages: pytz, tzdata, threadpoolctl, six, scipy, joblib, colorama, scikit-learn, python-dateutil,
 pandas
Successfully installed colorama-0.4.6 joblib-1.3.2 pandas-2.2.1 python-dateutil-2.8.2 pytz-2024.1 scikit-learn-1.4.1.pos
t1 scipy-1.12.0 six-1.16.0 threadpoolctl-3.3.0 tzdata-2024.1
```

9.4. Set up Gunicorn

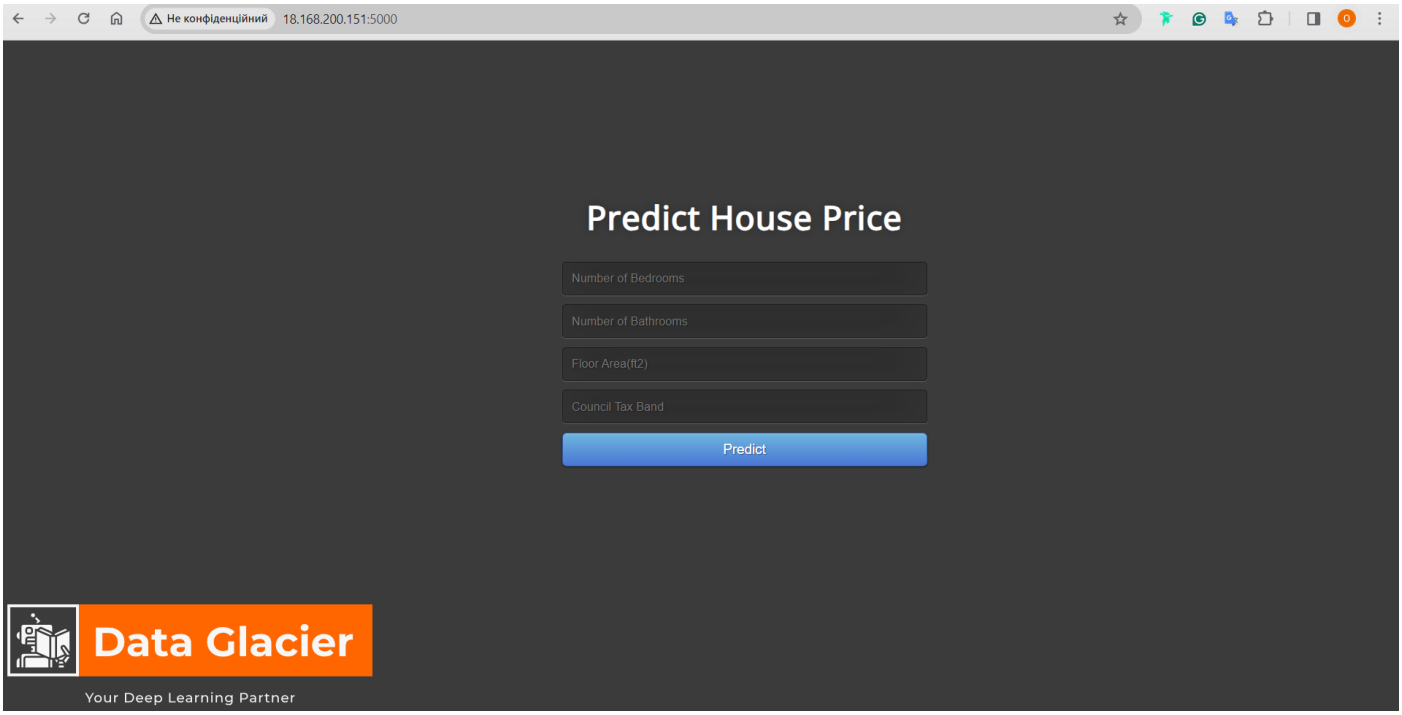
```
(venv) [ec2-user@ip-172-31-10-84 Week4]$ pip install gunicorn
WARNING: Retrying (Retry(total=4, connect=None, read=None, redirect=None, status=None)) after connection broken by 'NewC
onnectionError('<pip._vendor.urllib3.connection.HTTPSConnection object at 0x7f9555035490>: Failed to establish a new con
nection: [Errno 101] Network is unreachable')': /simple/gunicorn/
Collecting gunicorn
  Downloading gunicorn-21.2.0-py3-none-any.whl.metadata (4.1 kB)
Requirement already satisfied: packaging in ./venv/lib/python3.9/site-packages (from gunicorn) (23.2)
Downloading gunicorn-21.2.0-py3-none-any.whl (80 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 80.2/80.2 kB 4.2 MB/s eta 0:00:00
Installing collected packages: gunicorn
Successfully installed gunicorn-21.2.0
(venv) [ec2-user@ip-172-31-10-84 Week4]$ python app.py
 * Serving Flask app 'app'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 153-860-855
^C(venv) [ec2-user@ip-172-31-10-84 Week4]$ gunicorn -b 0.0.0.0:8000 app:app
[2024-03-06 21:53:29 +0000] [29844] [INFO] Starting gunicorn 21.2.0
[2024-03-06 21:53:29 +0000] [29844] [INFO] Listening at: http://0.0.0.0:8000 (29844)
[2024-03-06 21:53:29 +0000] [29844] [INFO] Using worker: sync
[2024-03-06 21:53:29 +0000] [29845] [INFO] Booting worker with pid: 29845
^C[2024-03-06 21:54:28 +0000] [29844] [INFO] Handling signal: int
[2024-03-06 21:54:28 +0000] [29845] [INFO] Worker exiting (pid: 29845)
[2024-03-06 21:54:28 +0000] [29844] [INFO] Shutting down: Master
```

9.5. Configure Nginx as a Reverse Proxy

```
[ec2-user@ip-172-31-10-84 Week4]$ sudo yum install nginx
Last metadata expiration check: 1:14:18 ago on Wed Mar  6 20:41:02 2024.
Dependencies resolved.
================================================================================================================================
 Package                    Architecture        Version                          Repository                Size
================================================================================================================================
Installing:
 nginx                      x86_64              1:1.24.0-1.amzn2023.0.2          amazonlinux               32 k
Installing dependencies:
 gperftools-libs            x86_64              2.9.1-1.amzn2023.0.3             amazonlinux              308 k
 libunwind                  x86_64              1.4.0-5.amzn2023.0.2             amazonlinux               66 k
 nginx-core                 x86_64              1:1.24.0-1.amzn2023.0.2          amazonlinux              586 k
 nginx-filesystem           noarch              1:1.24.0-1.amzn2023.0.2          amazonlinux              9.1 k
 nginx-mimetypes            noarch              2.1.49-3.amzn2023.0.3            amazonlinux               21 k
```

```
[ec2-user@ip-172-31-10-84 Week4]$ sudo systemctl start nginx
[ec2-user@ip-172-31-10-84 Week4]$ sudo systemctl enable nginx
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.
[ec2-user@ip-172-31-10-84 Week4]$ sudo nano /etc/nginx/sites-available/default
[ec2-user@ip-172-31-10-84 Week4]$ sudo nano /etc/nginx/sites-available/default
[ec2-user@ip-172-31-10-84 Week4]$ sudo nano /etc/nginx/sites-available/default
[ec2-user@ip-172-31-10-84 Week4]$ sudo nano /etc/nginx/sites-available/default
[ec2-user@ip-172-31-10-84 Week4]$ source venv/bin/activate
(venv) [ec2-user@ip-172-31-10-84 Week4]$ gunicorn --bind 0.0.0.0:5000 app:app
[2024-03-06 22:25:21 +0000] [30944] [INFO] Starting gunicorn 21.2.0
[2024-03-06 22:25:21 +0000] [30944] [INFO] Listening at: http://0.0.0.0:5000 (30944)
[2024-03-06 22:25:21 +0000] [30944] [INFO] Using worker: sync
[2024-03-06 22:25:21 +0000] [30945] [INFO] Booting worker with pid: 30945
^[[A^[[A^C[2024-03-06 22:26:48 +0000] [30944] [INFO] Handling signal: int
[2024-03-06 22:26:48 +0000] [30945] [INFO] Worker exiting (pid: 30945)
[2024-03-06 22:26:48 +0000] [30944] [INFO] Shutting down: Master
```

9.6. Testing using Public IPv4 address


Не конфіденційний
18.168.200.151:5000
Predict House Price
Number of Bedrooms
Number of Bathrooms
Floor Area(ft2)
Council Tax Band
Predict
Data Glacier
Your Deep Learning Partner