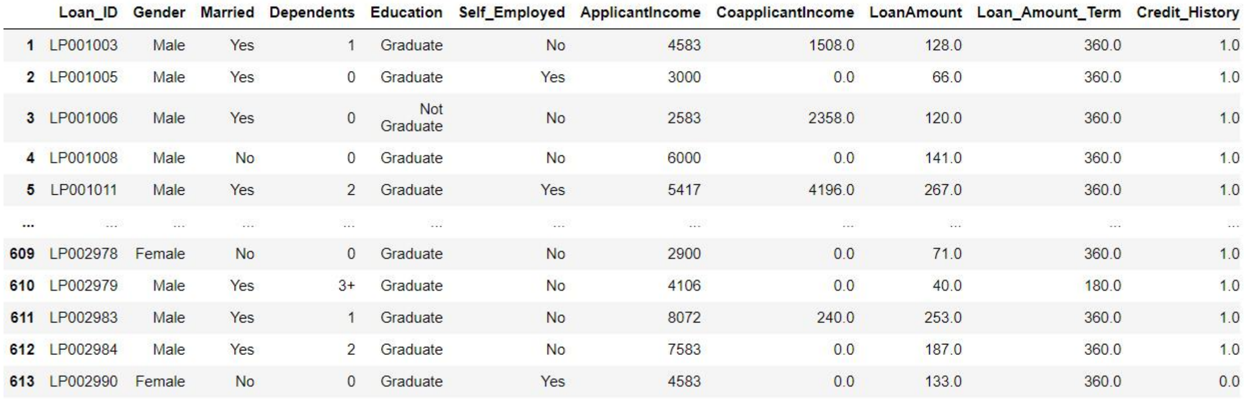
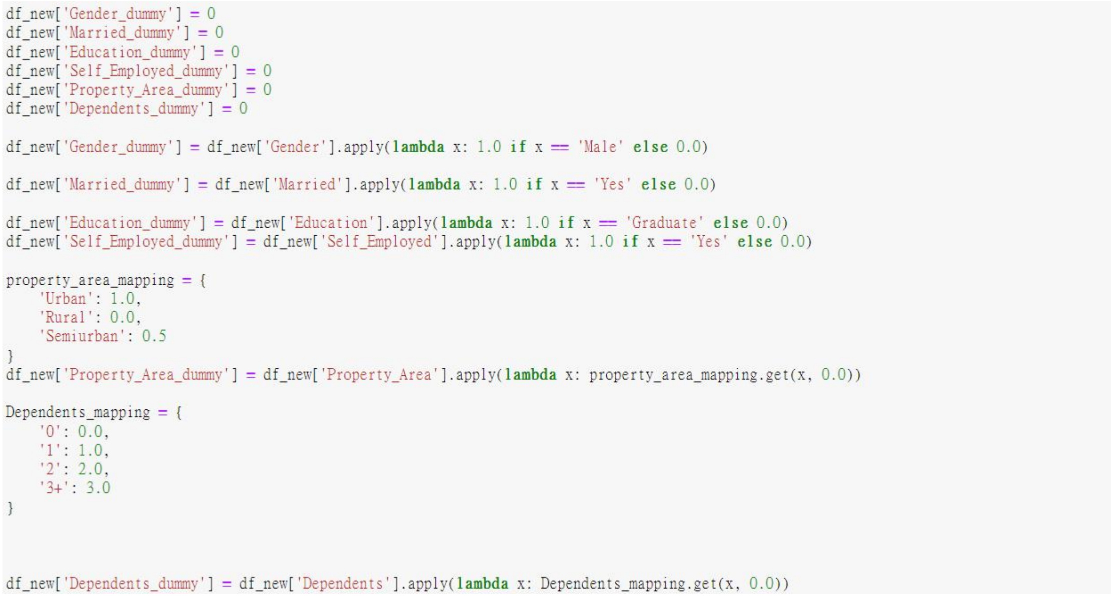
Terry Chou
LISUM23: 30
8/2/2023
Data Glacier

Data (Loan status data – same as week 4)

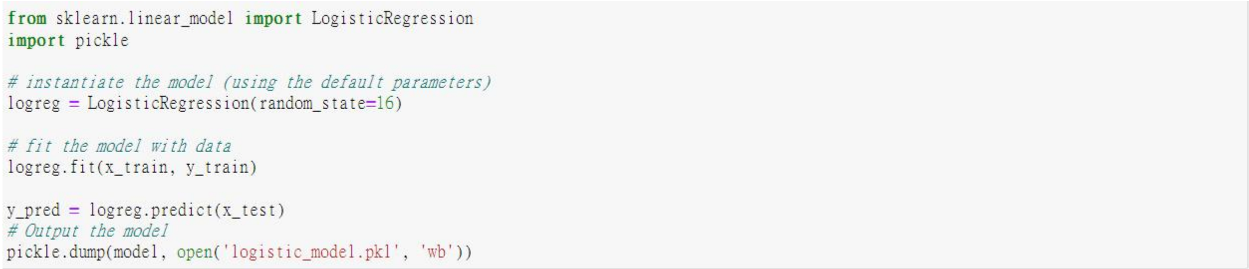


	Loan_ID	Gender	Married	Dependents	Education	Self_Employed	ApplicantIncome	CoapplicantIncome	LoanAmount	Loan_Amount_Term	Credit_History
1	LP001003	Male	Yes	1	Graduate	No	4583	1508.0	128.0	360.0	1.0
2	LP001005	Male	Yes	0	Graduate	Yes	3000	0.0	66.0	360.0	1.0
3	LP001006	Male	Yes	0	Not Graduate	No	2583	2358.0	120.0	360.0	1.0
4	LP001008	Male	No	0	Graduate	No	6000	0.0	141.0	360.0	1.0
5	LP001011	Male	Yes	2	Graduate	Yes	5417	4196.0	267.0	360.0	1.0
...	...	...	...	...	...	...	...	...	...	...	...
609	LP002978	Female	No	0	Graduate	No	2900	0.0	71.0	360.0	1.0
610	LP002979	Male	Yes	3+	Graduate	No	4106	0.0	40.0	180.0	1.0
611	LP002983	Male	Yes	1	Graduate	No	8072	240.0	253.0	360.0	1.0
612	LP002984	Male	Yes	2	Graduate	No	7583	0.0	187.0	360.0	1.0
613	LP002990	Female	No	0	Graduate	Yes	4583	0.0	133.0	360.0	0.0

Model (same as week 4)

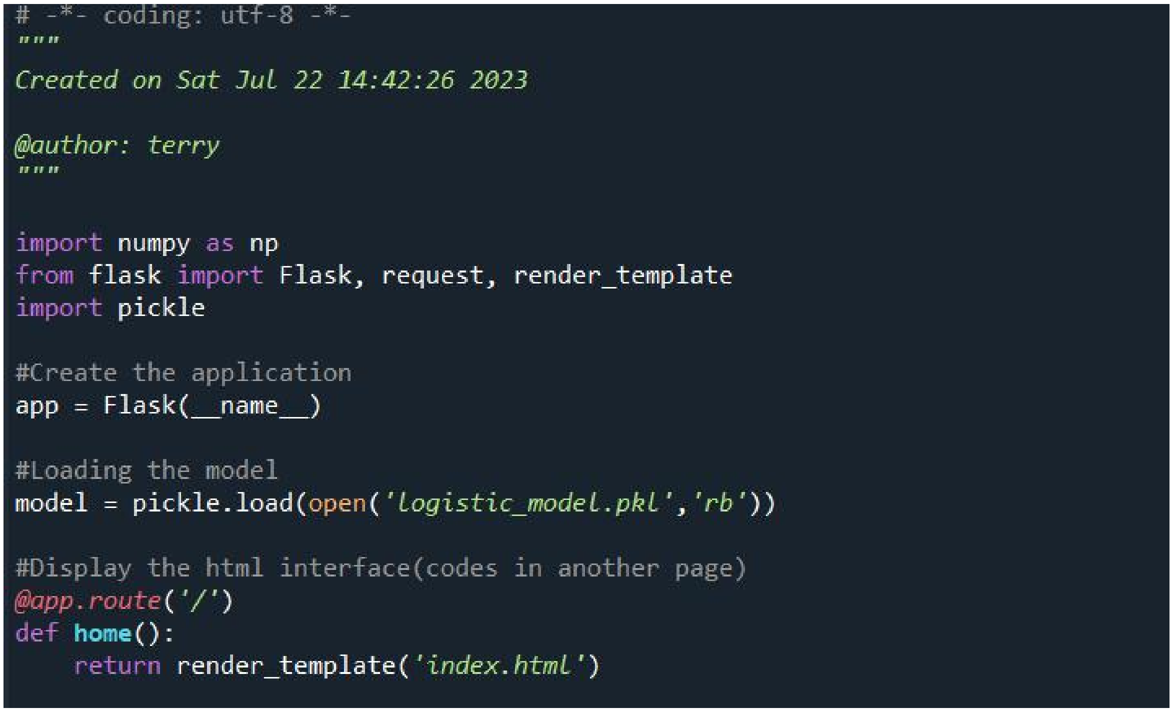


```
df_new['Gender_dummy'] = 0
df_new['Married_dummy'] = 0
df_new['Education_dummy'] = 0
df_new['Self_Employed_dummy'] = 0
df_new['Property_Area_dummy'] = 0
df_new['Dependents_dummy'] = 0

df_new['Gender_dummy'] = df_new['Gender'].apply(lambda x: 1.0 if x == 'Male' else 0.0)

df_new['Married_dummy'] = df_new['Married'].apply(lambda x: 1.0 if x == 'Yes' else 0.0)

df_new['Education_dummy'] = df_new['Education'].apply(lambda x: 1.0 if x == 'Graduate' else 0.0)
df_new['Self_Employed_dummy'] = df_new['Self_Employed'].apply(lambda x: 1.0 if x == 'Yes' else 0.0)

property_area_mapping = {
    'Urban': 1.0,
    'Rural': 0.0,
    'Semiurban': 0.5
}
df_new['Property_Area_dummy'] = df_new['Property_Area'].apply(lambda x: property_area_mapping.get(x, 0.0))

Dependents_mapping = {
    '0': 0.0,
    '1': 1.0,
    '2': 2.0,
    '3+': 3.0
}



df_new['Dependents_dummy'] = df_new['Dependents'].apply(lambda x: Dependents_mapping.get(x, 0.0))
```

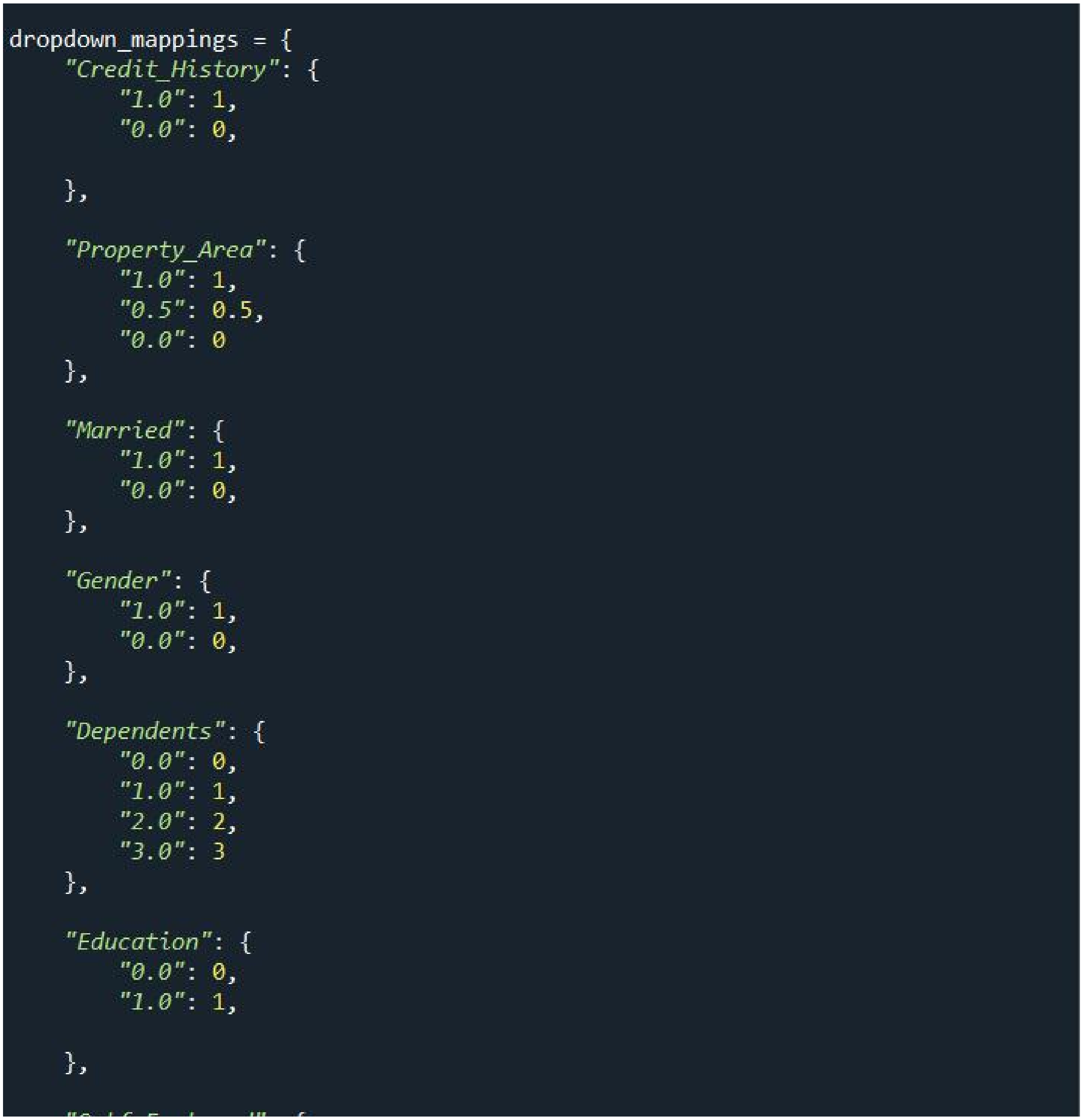


```
from sklearn.linear_model import LogisticRegression
import pickle

# instantiate the model (using the default parameters)
logreg = LogisticRegression(random_state=16)

# fit the model with data
logreg.fit(x_train, y_train)

y_pred = logreg.predict(x_test)
# Output the model
pickle.dump(model, open('logistic_model.pkl', 'wb'))
```

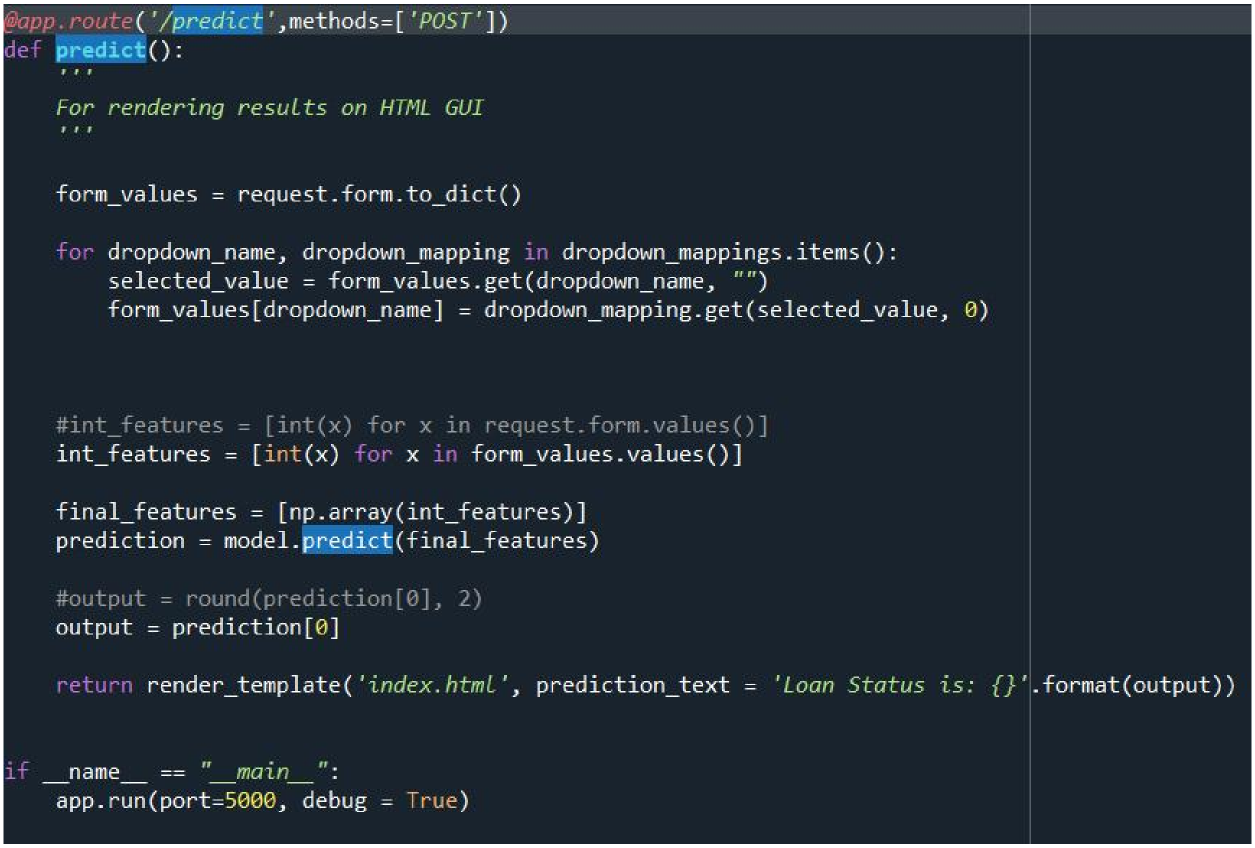
Web Application and interface



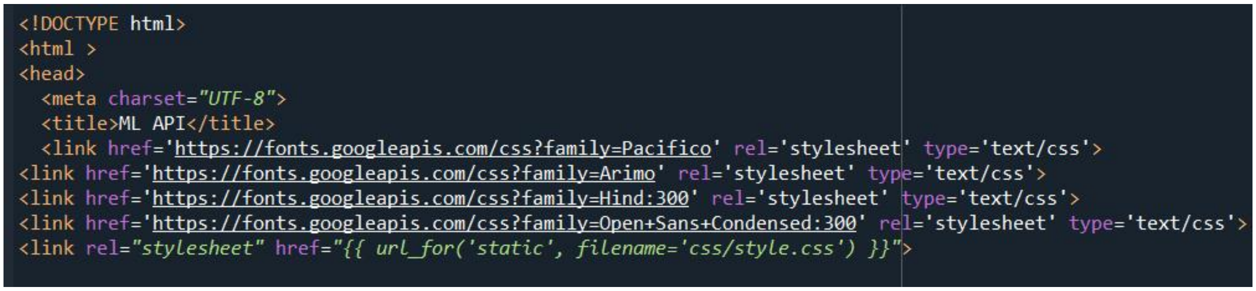
```
# -*- coding: utf-8 -*-
"""
Created on Sat Jul 22 14:42:26 2023

@author: terry
"""


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

#Create the application
app = Flask(__name__)

#Loading the model
model = pickle.load(open('logistic_model.pkl','rb'))

#Display the html interface(codes in another page)
@app.route('/')
def home():
    return render_template('index.html')
```



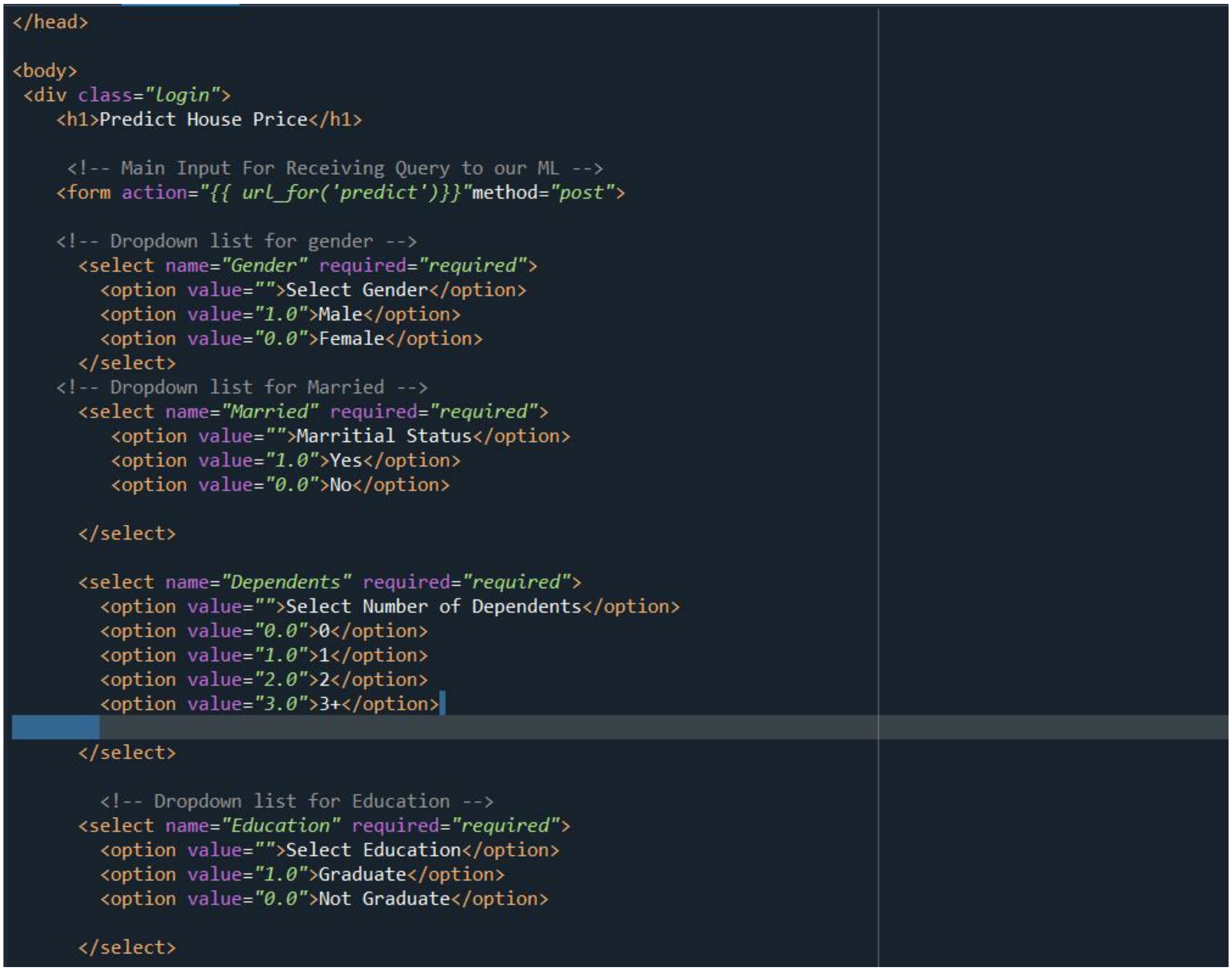
```
dropdown_mappings = {
    "Credit_History": {
        "1.0": 1,
        "0.0": 0,

    },

    "Property_Area": {
        "1.0": 1,
        "0.5": 0.5,
        "0.0": 0
    },

    "Married": {
        "1.0": 1,
        "0.0": 0,
    },

    "Gender": {
        "1.0": 1,
        "0.0": 0,
    },

    "Dependents": {
        "0.0": 0,
        "1.0": 1,
        "2.0": 2,
        "3.0": 3
    },

    "Education": {
        "0.0": 0,
        "1.0": 1,

    },

    "Self_Employed": {
```



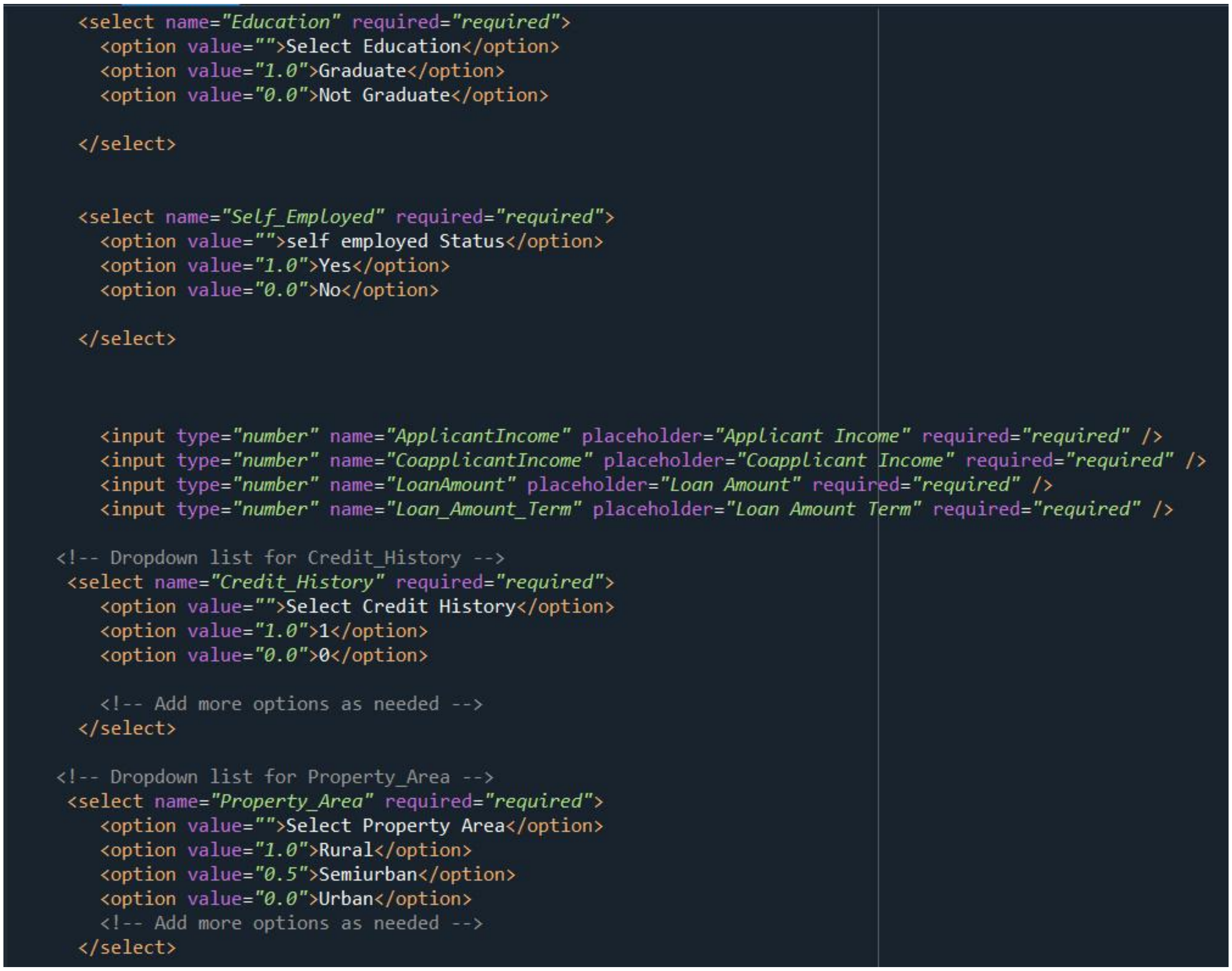
```python
@app.route('/predict',methods=['POST'])
def predict():
    '''
    For rendering results on HTML GUI
    '''

    form_values = request.form.to_dict()

    for dropdown_name, dropdown_mapping in dropdown_mappings.items():
        selected_value = form_values.get(dropdown_name, "")
        form_values[dropdown_name] = dropdown_mapping.get(selected_value, 0)



    #int_features = [int(x) for x in request.form.values()]
    int_features = [int(x) for x in form_values.values()]

    final_features = [np.array(int_features)]
    prediction = model.predict(final_features)

    #output = round(prediction[0], 2)
    output = prediction[0]

    return render_template('index.html', prediction_text = 'Loan Status is: {}'.format(output))


if __name__ == "__main__":
    app.run(port=5000, debug = True)
```



```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') }}">
```

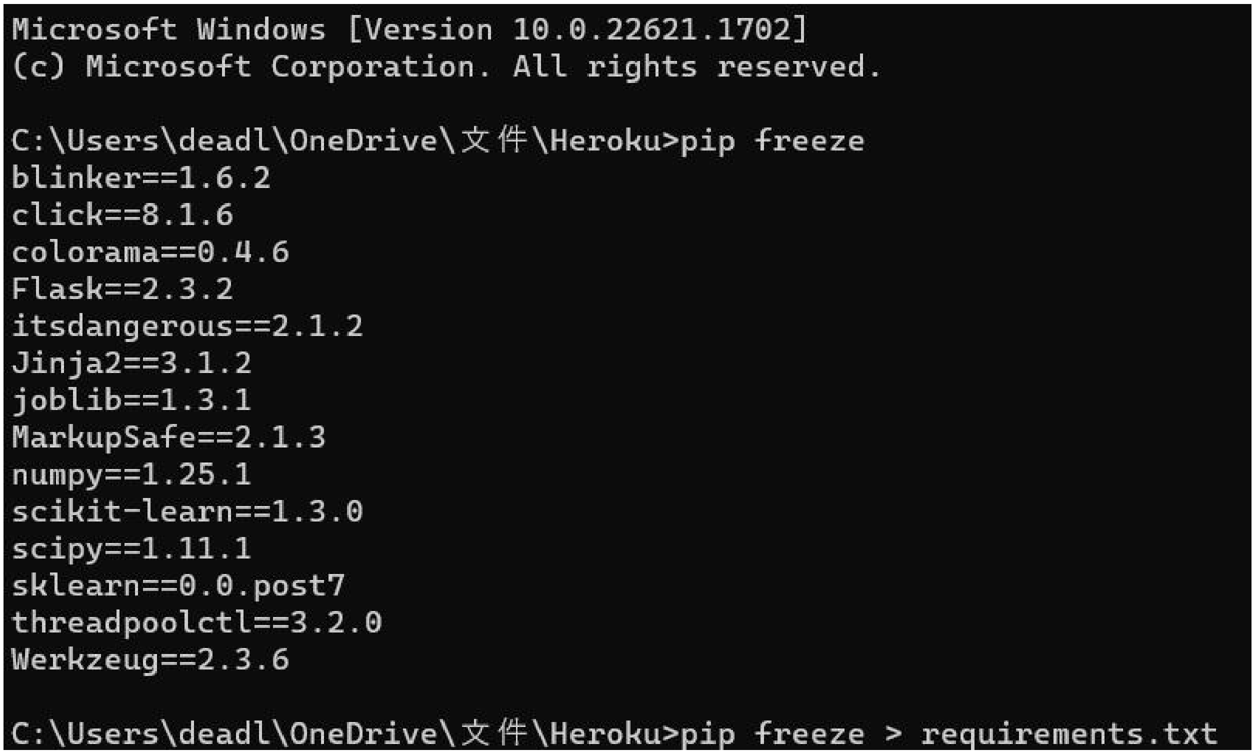


```
</head>

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

     <!-- Main Input For Receiving Query to our ML -->
    <form action="{{ url_for('predict')}}"method="post">

    <!-- Dropdown list for gender -->
      <select name="Gender" required="required">
        <option value="">Select Gender</option>
        <option value="1.0">Male</option>
        <option value="0.0">Female</option>
      </select>
    <!-- Dropdown list for Married -->
      <select name="Married" required="required">
         <option value="">Marritial Status</option>
         <option value="1.0">Yes</option>
         <option value="0.0">No</option>

      </select>

      <select name="Dependents" required="required">
        <option value="">Select Number of Dependents</option>
        <option value="0.0">0</option>
        <option value="1.0">1</option>
        <option value="2.0">2</option>
        <option value="3.0">3+</option>

      </select>

        <!-- Dropdown list for Education -->
      <select name="Education" required="required">
        <option value="">Select Education</option>
        <option value="1.0">Graduate</option>
        <option value="0.0">Not Graduate</option>

      </select>
```



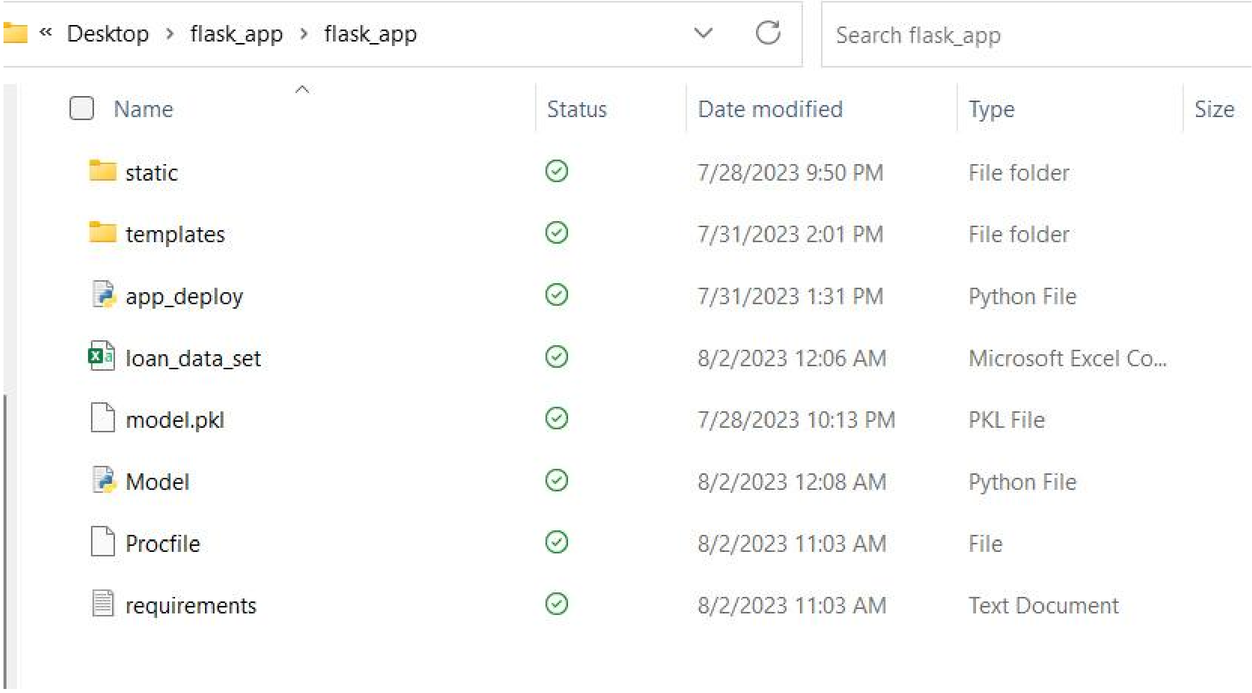
```
  <select name="Education" required="required">
    <option value="">Select Education</option>
    <option value="1.0">Graduate</option>
    <option value="0.0">Not Graduate</option>

  </select>


  <select name="Self_Employed" required="required">
    <option value="">self employed Status</option>
    <option value="1.0">Yes</option>
    <option value="0.0">No</option>

  </select>



    <input type="number" name="ApplicantIncome" placeholder="Applicant Income" required="required" />
    <input type="number" name="CoapplicantIncome" placeholder="Coapplicant Income" required="required" />
    <input type="number" name="LoanAmount" placeholder="Loan Amount" required="required" />
    <input type="number" name="Loan_Amount_Term" placeholder="Loan Amount Term" required="required" />

<!-- Dropdown list for Credit_History -->
 <select name="Credit_History" required="required">
    <option value="">Select Credit History</option>
    <option value="1.0">1</option>
    <option value="0.0">0</option>

    <!-- Add more options as needed -->
  </select>

<!-- Dropdown list for Property_Area -->
 <select name="Property_Area" required="required">
    <option value="">Select Property Area</option>
    <option value="1.0">Rural</option>
    <option value="0.5">Semiurban</option>
    <option value="0.0">Urban</option>
    <!-- Add more options as needed -->
  </select>
```

Creating requirements.txt



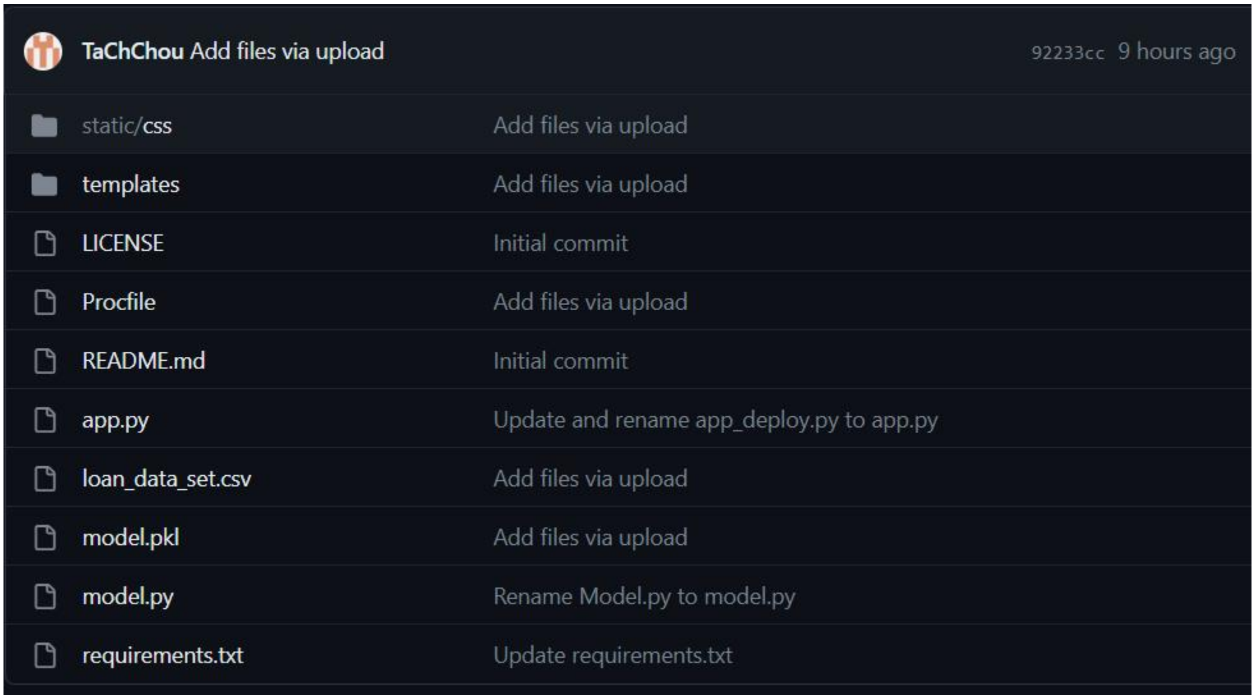
```
Microsoft Windows [Version 10.0.22621.1702]
(c) Microsoft Corporation. All rights reserved.

C:\Users\deadl\OneDrive\文件\Heroku>pip freeze
blinker==1.6.2
click==8.1.6
colorama==0.4.6
Flask==2.3.2
itsdangerous==2.1.2
Jinja2==3.1.2
joblib==1.3.1
MarkupSafe==2.1.3
numpy==1.25.1
scikit-learn==1.3.0
scipy==1.11.1
sklearn==0.0.post7
threadpoolctl==3.2.0
Werkzeug==2.3.6

C:\Users\deadl\OneDrive\文件\Heroku>pip freeze > requirements.txt
```

File for upload



Name	Status	Date modified	Type	Size
static	✓	7/28/2023 9:50 PM	File folder	
templates	✓	7/31/2023 2:01 PM	File folder	
app_deploy	✓	7/31/2023 1:31 PM	Python File	
loan_data_set	✓	8/2/2023 12:06 AM	Microsoft Excel Co...	
model.pkl	✓	7/28/2023 10:13 PM	PKL File	
Model	✓	8/2/2023 12:08 AM	Python File	
Procfile	✓	8/2/2023 11:03 AM	File	
requirements	✓	8/2/2023 11:03 AM	Text Document	

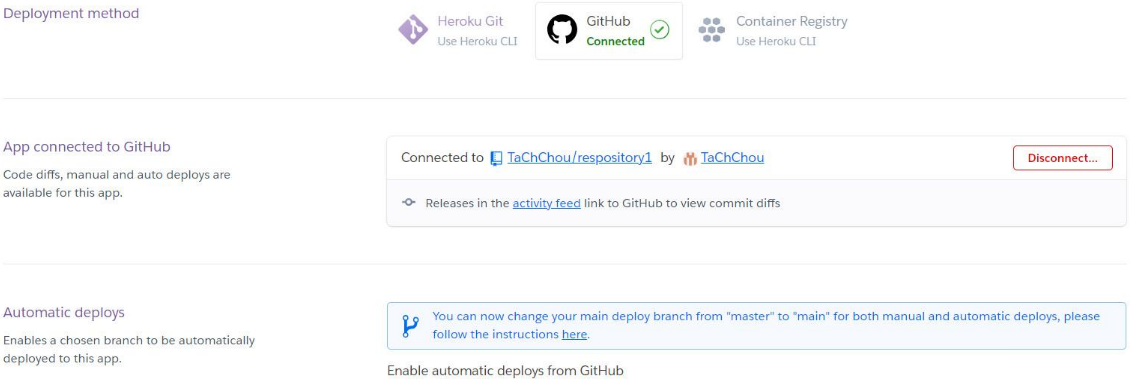
Upload to Github repository



TaChChou Add files via upload 92233cc 9 hours ago

static/css	Add files via upload
templates	Add files via upload
LICENSE	Initial commit
Procfile	Add files via upload
README.md	Initial commit
app.py	Update and rename app_deploy.py to app.py
loan_data_set.csv	Add files via upload
model.pkl	Add files via upload
model.py	Rename Model.py to model.py
requirements.txt	Update requirements.txt

Heroku Account creation and setting up connection with Github



Deployment method

App connected to GitHub

Code diffs, manual and auto deploys are available for this app.

Connected to TaChChou/respository1 by TaChChou

Releases in the activity feed link to GitHub to view commit diffs

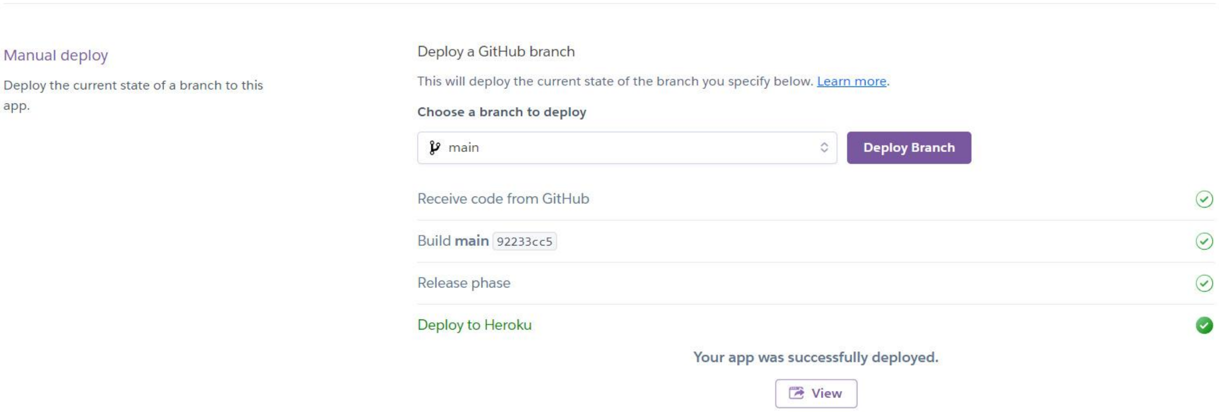
Automatic deploys

Enables a chosen branch to be automatically deployed to this app.

You can now change your main deploy branch from "master" to "main" for both manual and automatic deploys, please follow the instructions here.

Enable automatic deploys from GitHub

Deploy Github branch



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 ✓

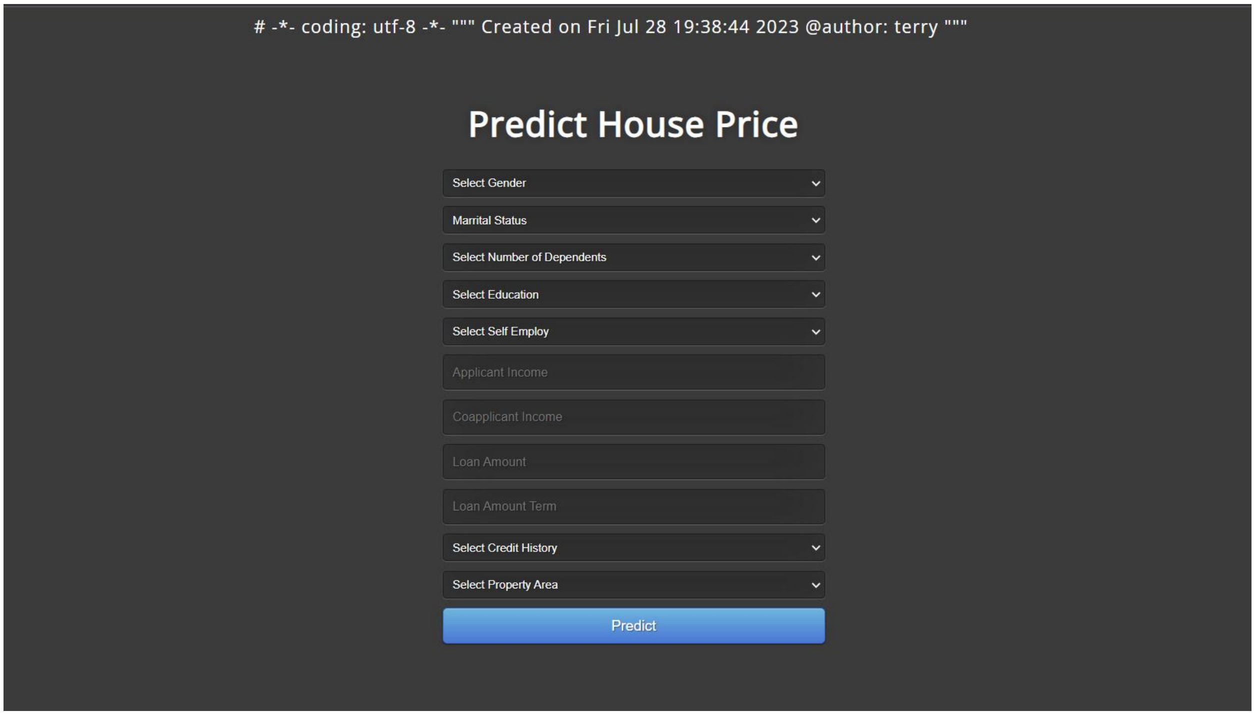
Build **main** 92233cc5 ✓

Release phase ✓

Deploy to Heroku ✓

Your app was successfully deployed.

Website View



-*- coding: utf-8 -*- """ Created on Fri Jul 28 19:38:44 2023 @author: terry """

Predict House Price