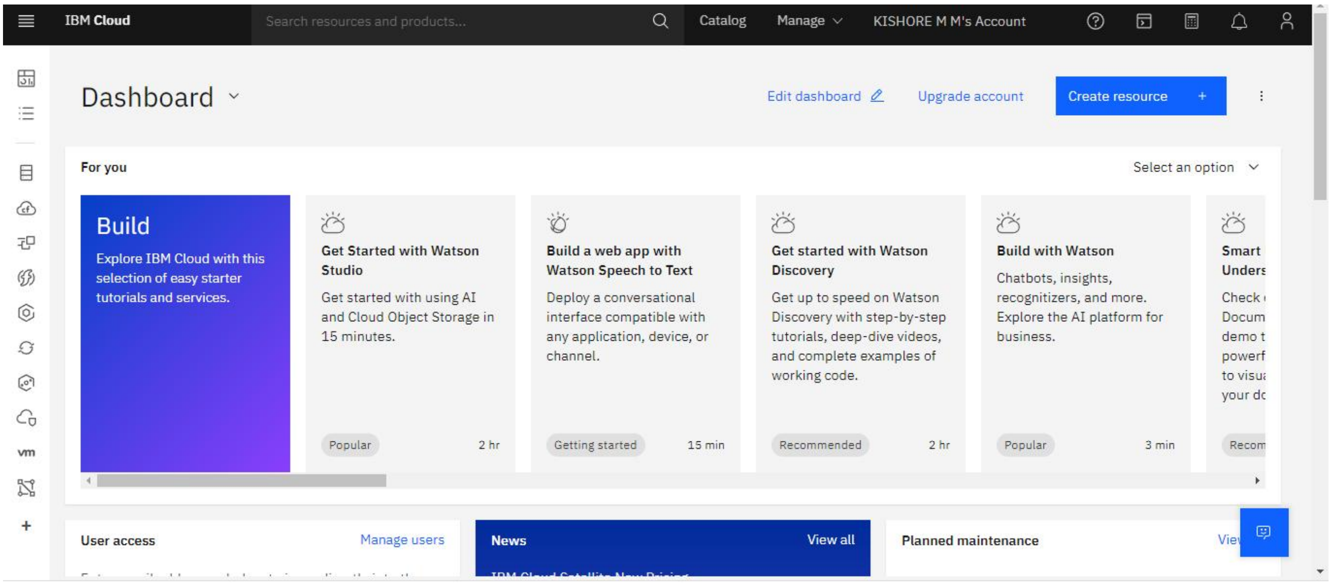
Training model on IBM and Integration of flask with scoring end point

1) Register for IBM cloud



Build

Explore IBM Cloud with this selection of easy starter tutorials and services.

Get Started with Watson Studio

Get started with using AI and Cloud Object Storage in 15 minutes.

Popular 2 hr

Build a web app with Watson Speech to Text

Deploy a conversational interface compatible with any application, device, or channel.

Getting started 15 min

Get started with Watson Discovery

Get up to speed on Watson Discovery with step-by-step tutorials, deep-dive videos, and complete examples of working code.

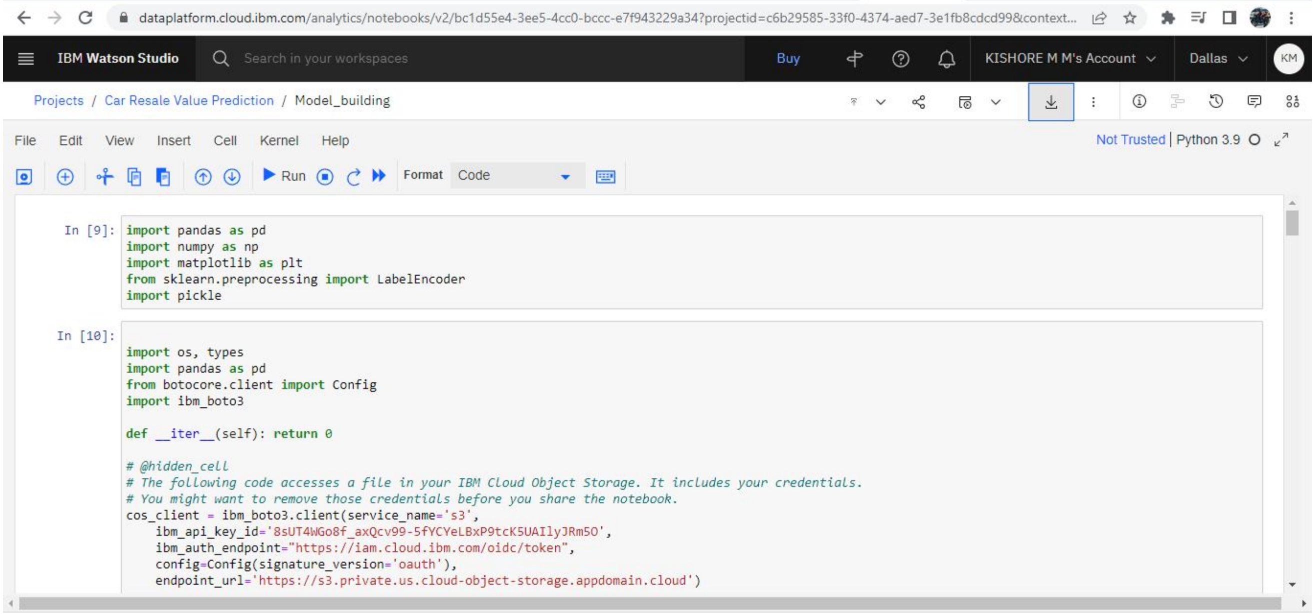
Recommended 2 hr

Build with Watson

Chatbots, insights, recognizers, and more. Explore the AI platform for business.

Popular 3 min

2)Train the ML model on IBM


dataplatform.cloud.ibm.com/analytics/notebooks/v2/bc1d55e4-3ee5-4cc0-bccc-e7f943229a34?projectid=c6b29585-33f0-4374-aed7-3e1fb8cdcd99&context...
IBM Watson Studio
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Projects / Car Resale Value Prediction / Model_building
File
Edit
View
Insert
Cell
Kernel
Help
Not Trusted
Python 3.9
Run
Format
Code

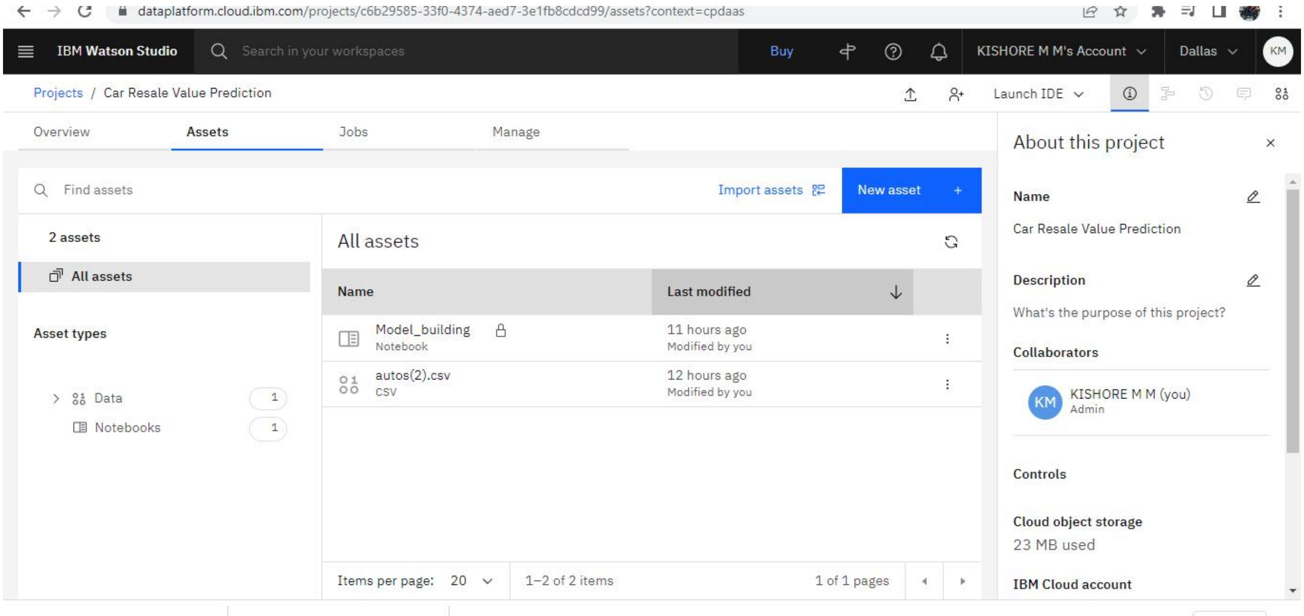
In [9]:
```
import pandas as pd
import numpy as np
import matplotlib as plt
from sklearn.preprocessing import LabelEncoder
import pickle
```

In [10]:
```

import os, types
import pandas as pd
from botocore.client import Config
import ibm_boto3

def __iter__(self): return 0

# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.
cos_client = ibm_boto3.client(service_name='s3',
    ibm_api_key_id='8sUT4WGo8f_axQcv99-5fYCYeLBxP9tcK5UAIlyJRm5O',
    ibm_auth_endpoint="https://iam.cloud.ibm.com/oidc/token",
    config=Config(signature_version='oauth'),
    endpoint_url='https://s3.private.us.cloud-object-storage.appdomain.cloud')
```



dataplatform.cloud.ibm.com/projects/c6b29585-33f0-4374-aed7-3e1fb8cdcd99/assets?context=cpdaas

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Projects / Car Resale Value Prediction | Launch IDE

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Find assets | Import assets | New asset +

2 assets

All assets

Asset types

- Data 1
- Notebooks 1

All assets

Name	Last modified
Model_building Notebook	11 hours ago Modified by you
autos(2).csv CSV	12 hours ago Modified by you

Items per page: 20 | 1–2 of 2 items | 1 of 1 pages

About this project

Name: Car Resale Value Prediction

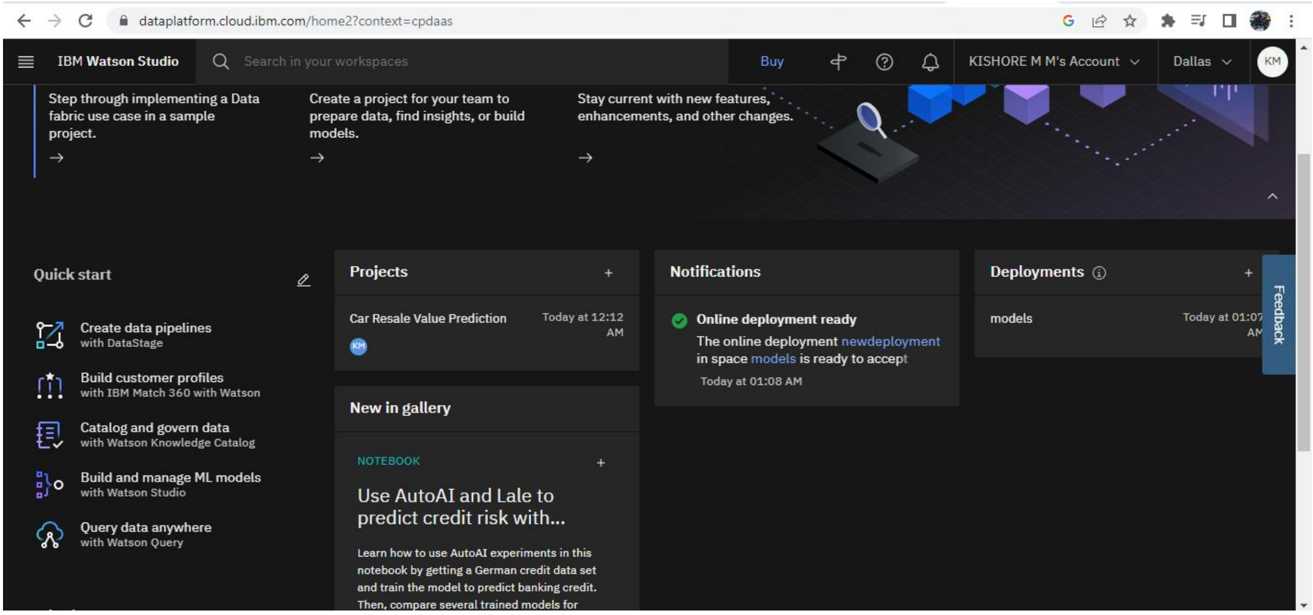
Description: What's the purpose of this project?

Collaborators: KISHORE M M (you) Admin

Controls

Cloud object storage: 23 MB used

IBM Cloud account



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Step through implementing a Data fabric use case in a sample project. →

Create a project for your team to prepare data, find insights, or build models. →

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Quick start

- Create data pipelines with DataStage
- Build customer profiles with IBM Match 360 with Watson
- Catalog and govern data with Watson Knowledge Catalog
- Build and manage ML models with Watson Studio
- Query data anywhere with Watson Query

Projects +

Car Resale Value Prediction — Today at 12:12 AM

New in gallery

NOTEBOOK

Use AutoAI and Lale to predict credit risk with...

Learn how to use AutoAI experiments in this notebook by getting a German credit data set and train the model to predict banking credit. Then, compare several trained models for

Notifications

Online deployment ready

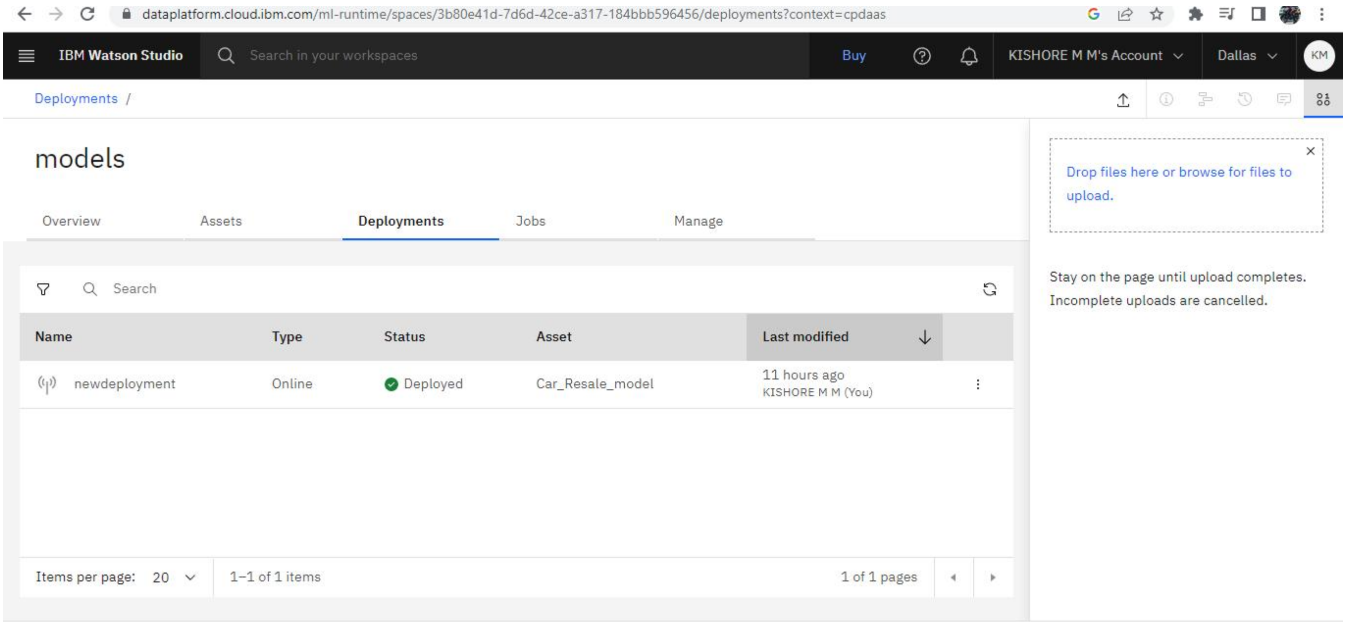
The online deployment newdeployment in space models is ready to accept

Today at 01:08 AM

Deployments +

models — Today at 01:07 AM

Feedback



dataplatform.cloud.ibm.com/ml-runtime/spaces/3b80e41d-7d6d-42ce-a317-184bbb596456/deployments?context=cpdaas
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models

Name	Type	Status	Asset	Last modified
newdeployment	Online	Deployed	Car_Resale_model	11 hours ago KISHORE M M (You)

Drop files here or browse for files to upload.

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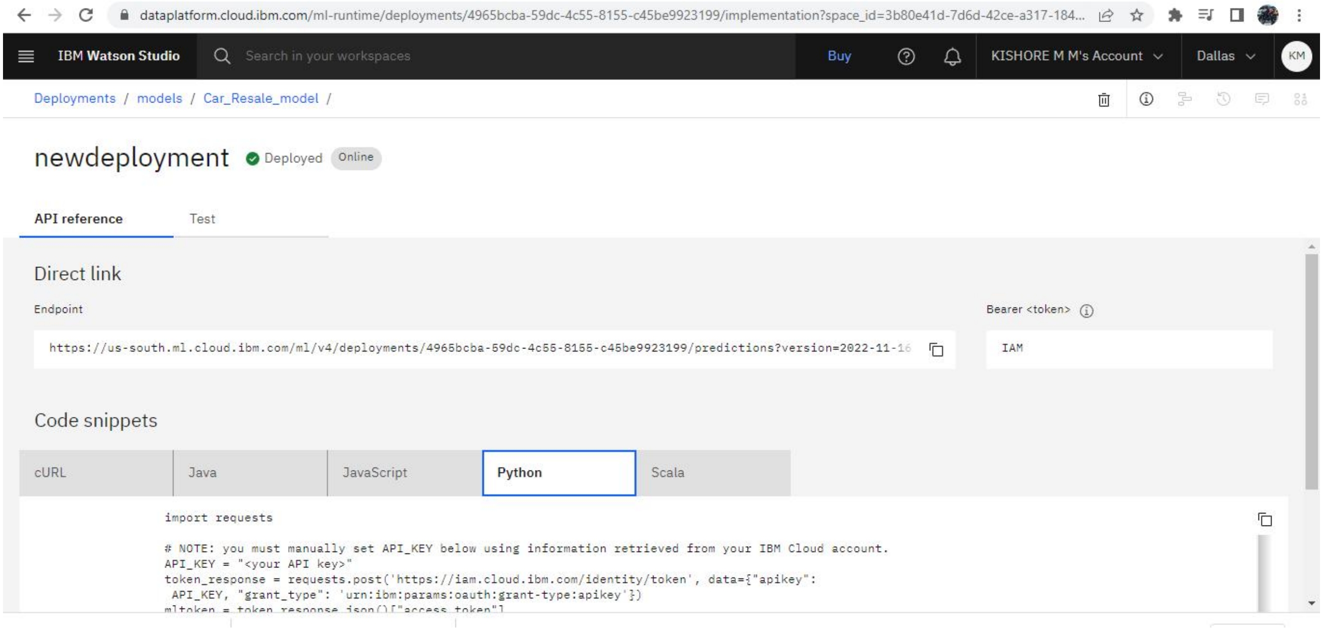

dataplatform.cloud.ibm.com/ml-runtime/deployments/4965bcba-59dc-4c55-8155-c45be9923199/implementation?space_id=3b80e41d-7d6d-42ce-a317-184...
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Deployments / models / Car_Resale_model /

newdeployment Deployed Online

Direct link

Endpoint

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/4965bcba-59dc-4c55-8155-c45be9923199/predictions?version=2022-11-16

Bearer <token>

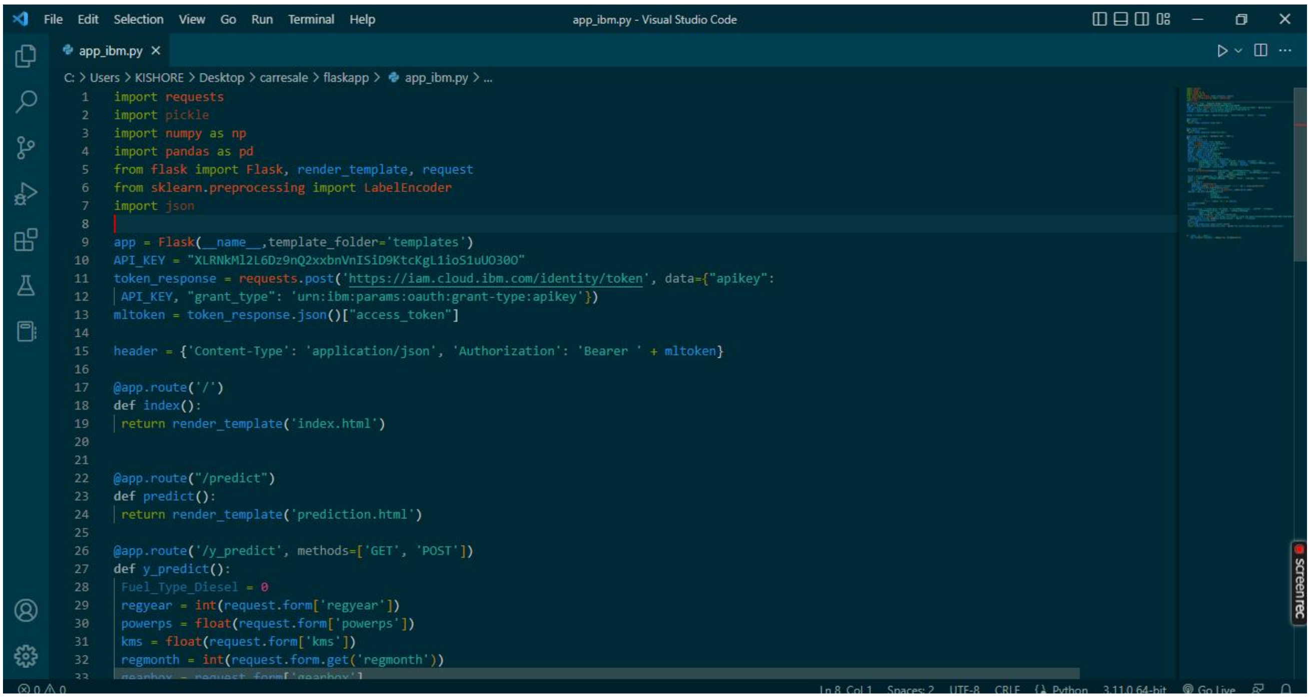
IAM

Code snippets

cURL
Java
JavaScript
Python
Scala

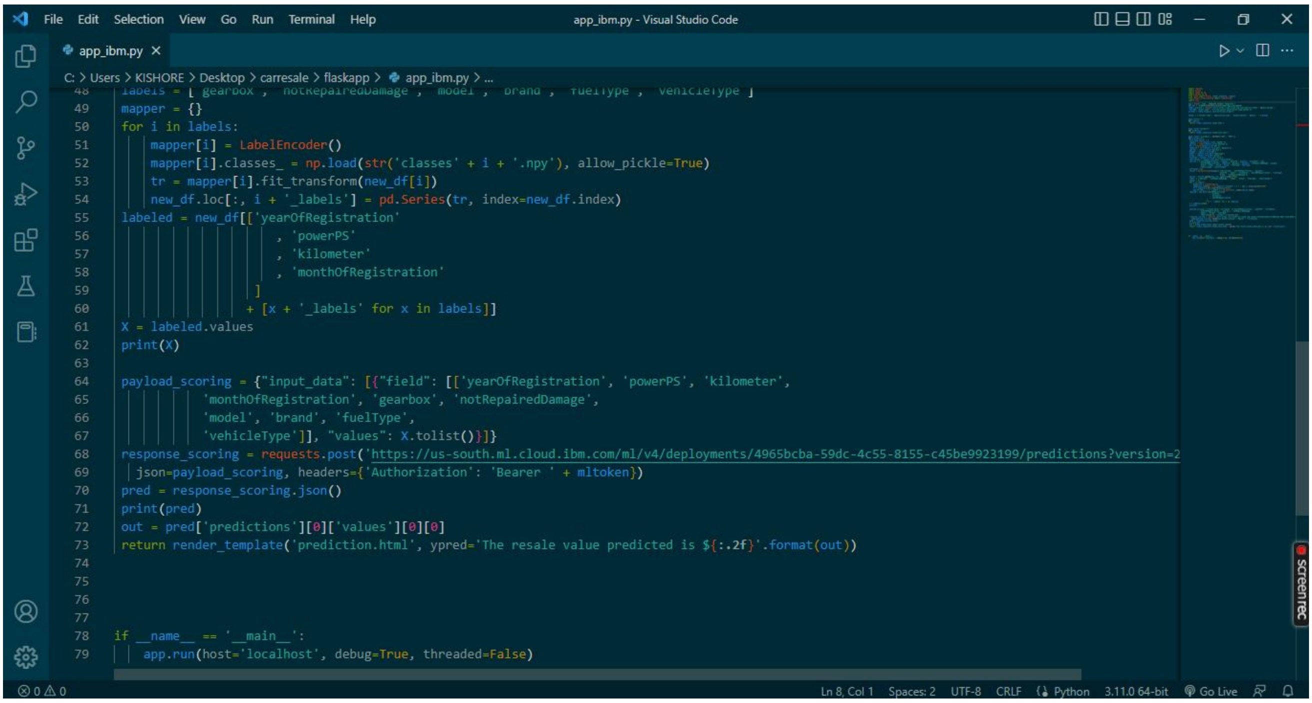
```
import requests

# NOTE: you must manually set API_KEY below using information retrieved from your IBM Cloud account.
API_KEY = "<your API key>"
token_response = requests.post('https://iam.cloud.ibm.com/identity/token', data={"apikey":
 API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'})
mltoken = token_response.json()["access_token"]
```

3)Integrate flask with scoring end point



File Edit Selection View Go Run Terminal Help
app_ibm.py - Visual Studio Code
app_ibm.py
C: > Users > KISHORE > Desktop > carresale > flaskapp > app_ibm.py > ...
Ln 8, Col 1 Spaces: 2 UTF-8 CRLF Python 3.11.0 64-bit Go Live

```python
import requests
import pickle
import numpy as np
import pandas as pd
from flask import Flask, render_template, request
from sklearn.preprocessing import LabelEncoder
import json

app = Flask(__name__,template_folder='templates')
API_KEY = "XLRNkMl2L6Dz9nQ2xxbnVnISiD9KtcKgL1ioS1uUO300"
token_response = requests.post('https://iam.cloud.ibm.com/identity/token', data={"apikey":
  API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'})
mltoken = token_response.json()["access_token"]

header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}

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


@app.route("/predict")
def predict():
  return render_template('prediction.html')

@app.route('/y_predict', methods=['GET', 'POST'])
def y_predict():
  Fuel_Type_Diesel = 0
  regyear = int(request.form['regyear'])
  powerps = float(request.form['powerps'])
  kms = float(request.form['kms'])
  regmonth = int(request.form.get('regmonth'))
  gearbox = request.form['gearbox']
```



File Edit Selection View Go Run Terminal Help
app_ibm.py - Visual Studio Code
app_ibm.py
C: > Users > KISHORE > Desktop > carresale > flaskapp > app_ibm.py > ...
Ln 8, Col 1 Spaces: 2 UTF-8 CRLF Python 3.11.0 64-bit Go Live

```python
  labels = ['gearbox', 'notRepairedDamage', 'model', 'brand', 'fuelType', 'vehicleType']
  mapper = {}
  for i in labels:
      mapper[i] = LabelEncoder()
      mapper[i].classes_ = np.load(str('classes' + i + '.npy'), allow_pickle=True)
      tr = mapper[i].fit_transform(new_df[i])
      new_df.loc[:, i + '_labels'] = pd.Series(tr, index=new_df.index)
  labeled = new_df[['yearOfRegistration'
                    , 'powerPS'
                    , 'kilometer'
                    , 'monthOfRegistration'
                  ]
                  + [x + '_labels' for x in labels]]
  X = labeled.values
  print(X)

  payload_scoring = {"input_data": [{"field": [['yearOfRegistration', 'powerPS', 'kilometer',
                'monthOfRegistration', 'gearbox', 'notRepairedDamage',
                'model', 'brand', 'fuelType',
                'vehicleType']], "values": X.tolist()}]}
  response_scoring = requests.post('https://us-south.ml.cloud.ibm.com/ml/v4/deployments/4965bcba-59dc-4c55-8155-c45be9923199/predictions?version=2
    json=payload_scoring, headers={'Authorization': 'Bearer ' + mltoken})
  pred = response_scoring.json()
  print(pred)
  out = pred['predictions'][0]['values'][0][0]
  return render_template('prediction.html', ypred='The resale value predicted is ${:.2f}'.format(out))




if __name__ == '__main__':
    app.run(host='localhost', debug=True, threaded=False)
```