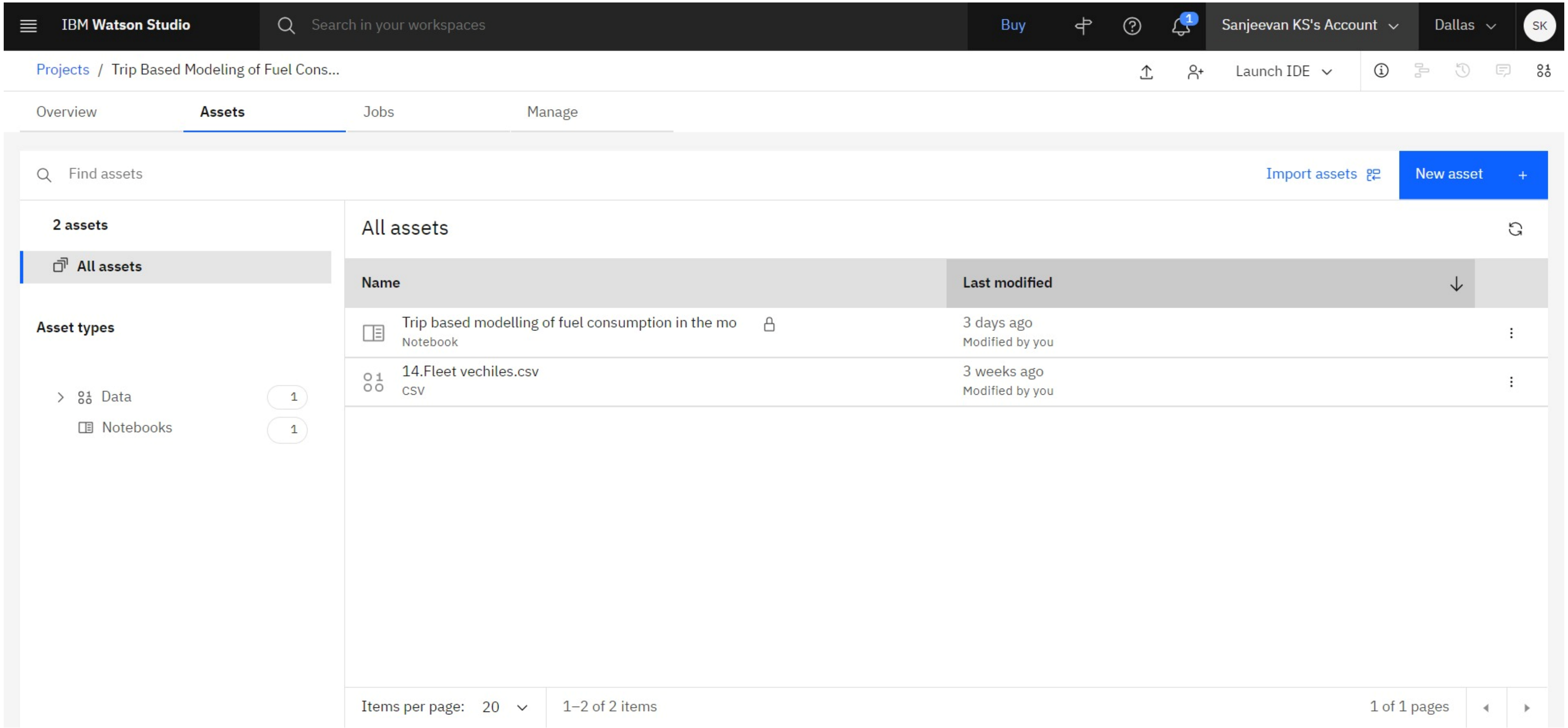
Training Machine Learning Model on IBM Watson Studio

TEAM ID: PNT2022TMID18784

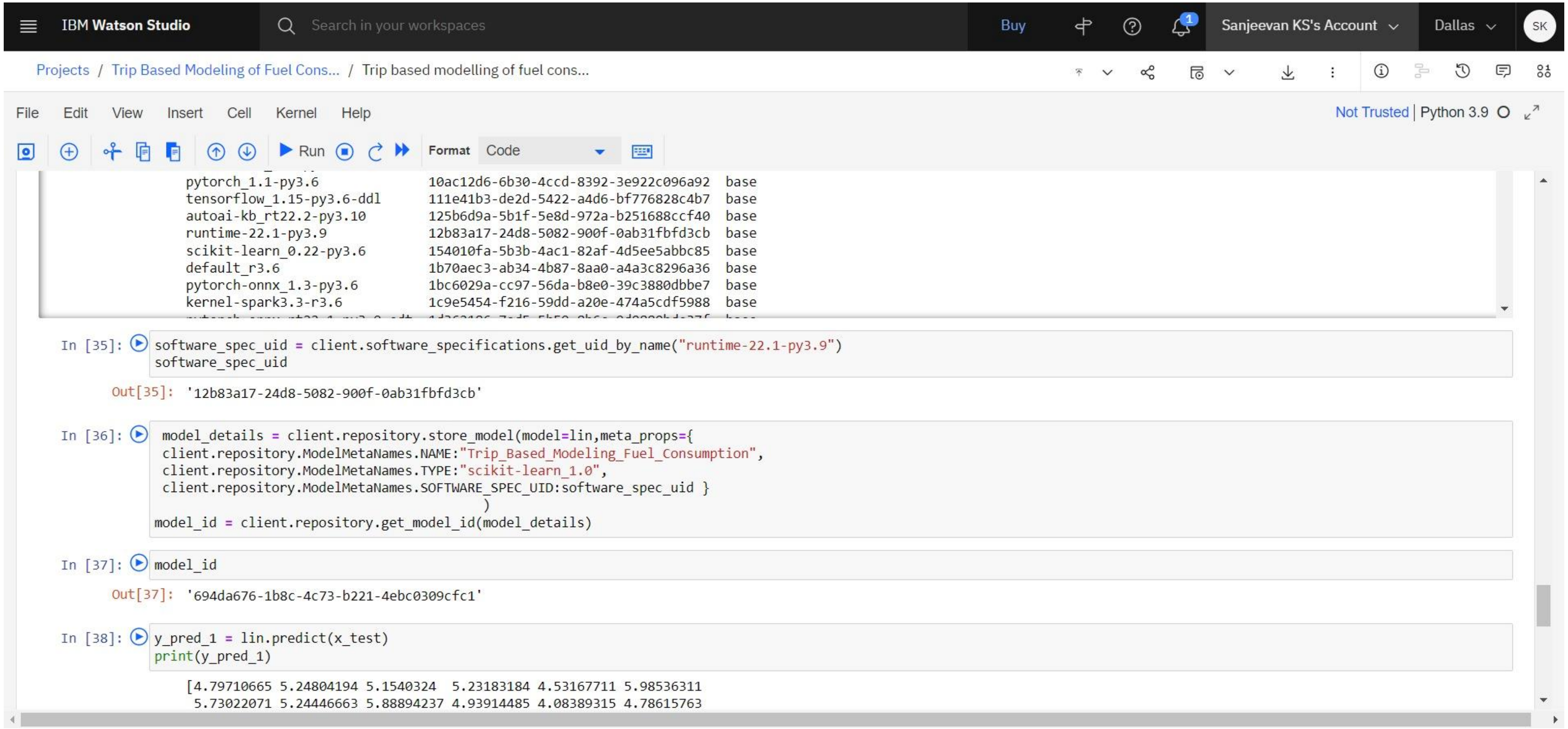
Project - Trip Based Modelling of Fuel Consumption in Modern Fleet Vehicles Using Machine Learning

1.Setting up Watson Studio for running Jupyter notebook



Name	Last modified
Trip based modelling of fuel consumption in the mo Notebook	3 days ago Modified by you
14.Fleet vechiles.csv CSV	3 weeks ago Modified by you

2. Training and saving the model in IBM Watson Machine Learning Service



IBM Watson Studio
Search in your workspaces
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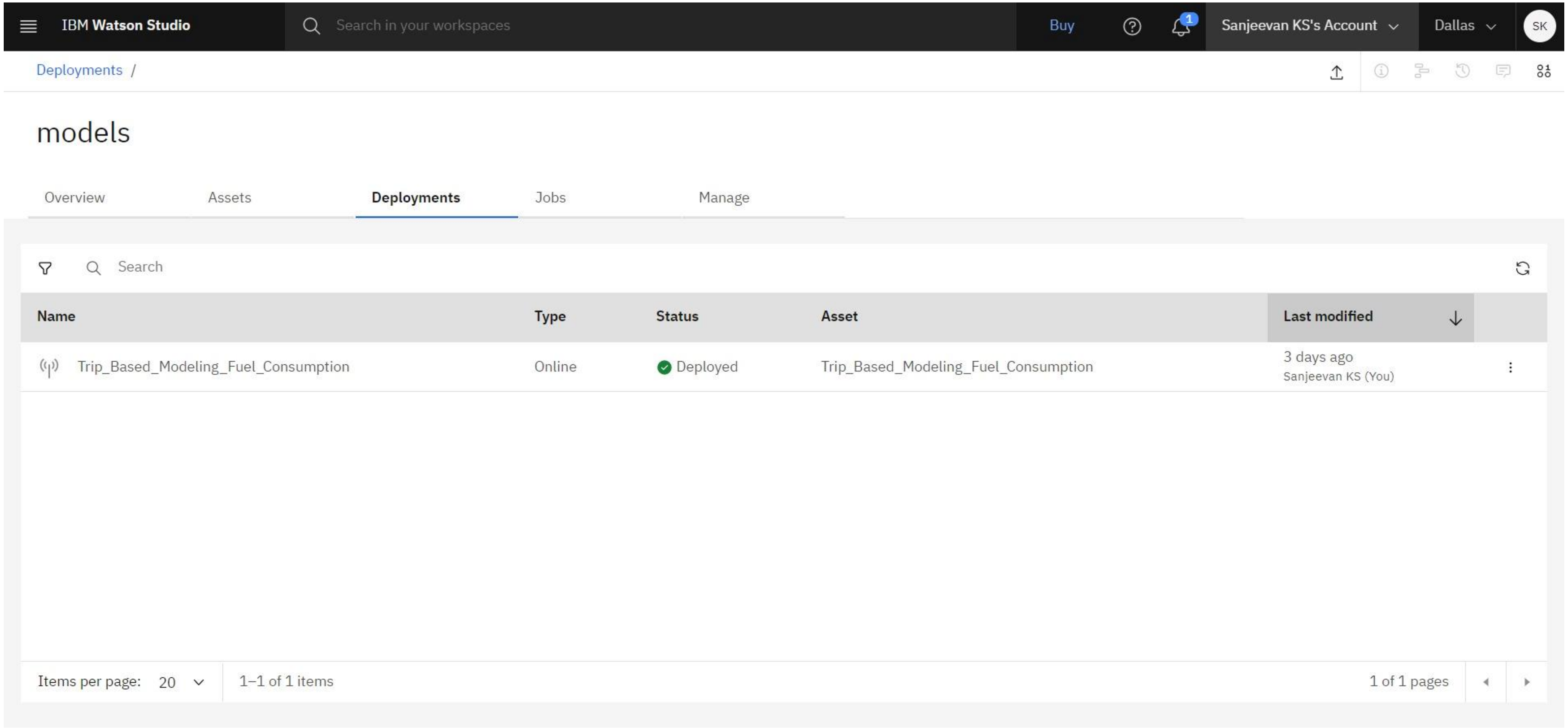
Dallas
SK
Projects / Trip Based Modeling of Fuel Cons... / Trip based modelling of fuel cons...
File Edit View Insert Cell Kernel Help
Not Trusted | Python 3.9
Run
Format Code

```
    pytorch_1.1-py3.6              10ac12d6-6b30-4ccd-8392-3e922c096a92  base
    tensorflow_1.15-py3.6-ddl      111e41b3-de2d-5422-a4d6-bf776828c4b7  base
    autoai-kb_rt22.2-py3.10        125b6d9a-5b1f-5e8d-972a-b251688ccf40  base
    runtime-22.1-py3.9             12b83a17-24d8-5082-900f-0ab31fbfd3cb  base
    scikit-learn_0.22-py3.6        154010fa-5b3b-4ac1-82af-4d5ee5abbc85  base
    default_r3.6                   1b70aec3-ab34-4b87-8aa0-a4a3c8296a36  base
    pytorch-onnx_1.3-py3.6         1bc6029a-cc97-56da-b8e0-39c3880dbbe7  base
    kernel-spark3.3-r3.6           1c9e5454-f216-59dd-a20e-474a5cdf5988  base
```

```
In [35]: software_spec_uid = client.software_specifications.get_uid_by_name("runtime-22.1-py3.9")
         software_spec_uid

Out[35]: '12b83a17-24d8-5082-900f-0ab31fbfd3cb'

In [36]:  model_details = client.repository.store_model(model=lin,meta_props={
          client.repository.ModelMetaNames.NAME:"Trip_Based_Modeling_Fuel_Consumption",
          client.repository.ModelMetaNames.TYPE:"scikit-learn_1.0",
          client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid }
                                             )
         model_id = client.repository.get_model_id(model_details)

In [37]: model_id

Out[37]: '694da676-1b8c-4c73-b221-4ebc0309cfc1'

In [38]: y_pred_1 = lin.predict(x_test)
         print(y_pred_1)

             [4.79710665 5.24804194 5.1540324  5.23183184 4.53167711 5.98536311
              5.73022071 5.24446663 5.88894237 4.93914485 4.08389315 4.78615763
```

3. Deployed the model in IBM Watson Machine Learning Service



models

Name	Type	Status	Asset	Last modified
Trip_Based_Modeling_Fuel_Consumption	Online	✓ Deployed	Trip_Based_Modeling_Fuel_Consumption	3 days ago Sanjeevan KS (You)

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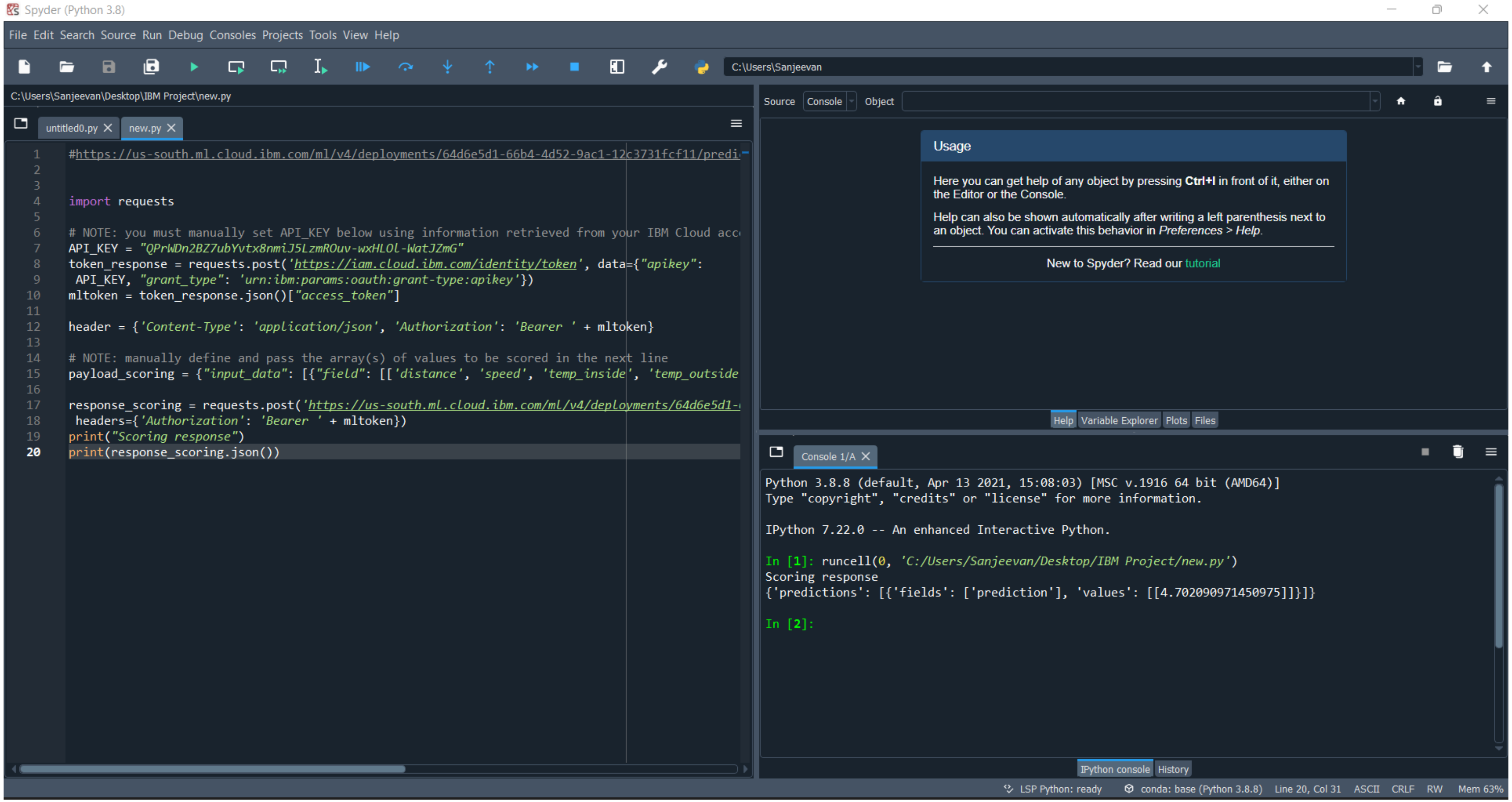
4. Testing the created model using the API created for the deployed model



```
#https://us-south.ml.cloud.ibm.com/ml/v4/deployments/64d6e5d1-66b4-4d52-9ac1-12c3731fcf11/predi


import requests

# NOTE: you must manually set API_KEY below using information retrieved from your IBM Cloud acc
API_KEY = "QPrWDn2BZ7ubYvtx8nmiJ5LzmROuv-wxHLOl-WatJZmG"
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}

# NOTE: manually define and pass the array(s) of values to be scored in the next line
payload_scoring = {"input_data": [{"field": [['distance', 'speed', 'temp_inside', 'temp_outside

response_scoring = requests.post('https://us-south.ml.cloud.ibm.com/ml/v4/deployments/64d6e5d1-
 headers={'Authorization': 'Bearer ' + mltoken})
print("Scoring response")
print(response_scoring.json())
```

Usage

Here you can get help of any object by pressing **Ctrl+I** in front of it, either on the Editor or the Console.

Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in *Preferences > Help*.

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```
Python 3.8.8 (default, Apr 13 2021, 15:08:03) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 7.22.0 -- An enhanced Interactive Python.

In [1]: runcell(0, 'C:/Users/Sanjeevan/Desktop/IBM Project/new.py')
Scoring response
{'predictions': [{'fields': ['prediction'], 'values': [[4.702090971450975]]}]}

In [2]:
```