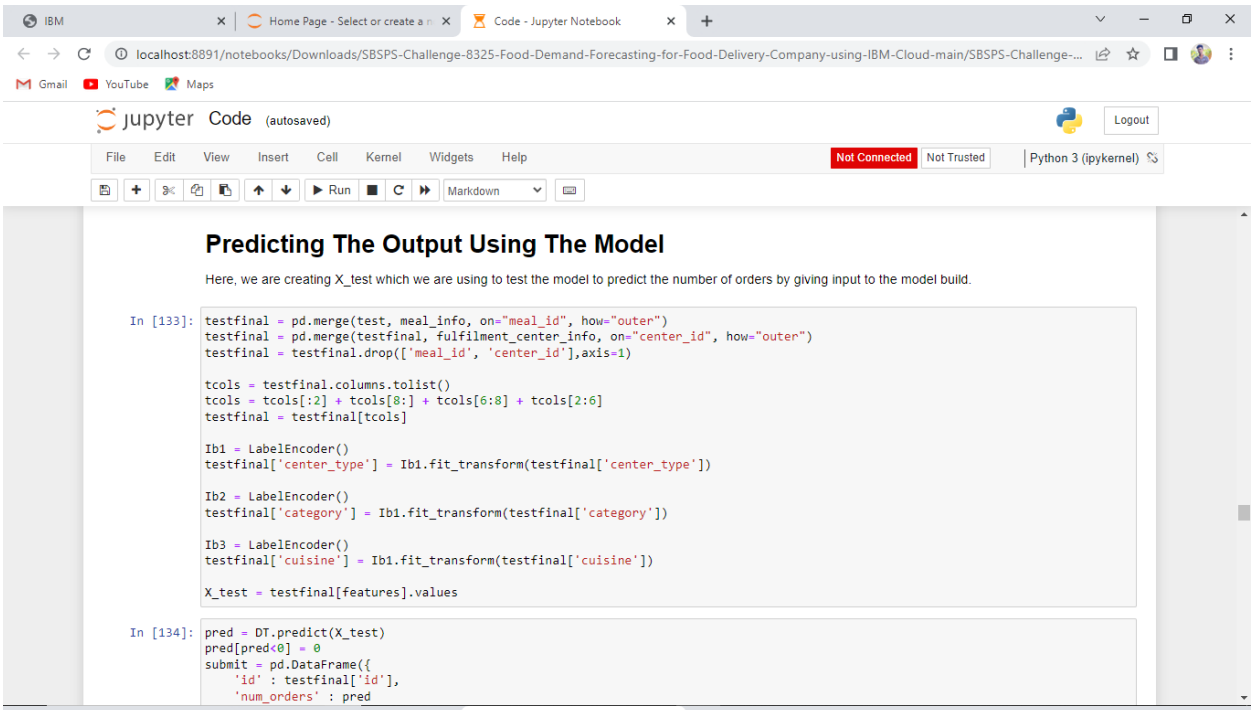
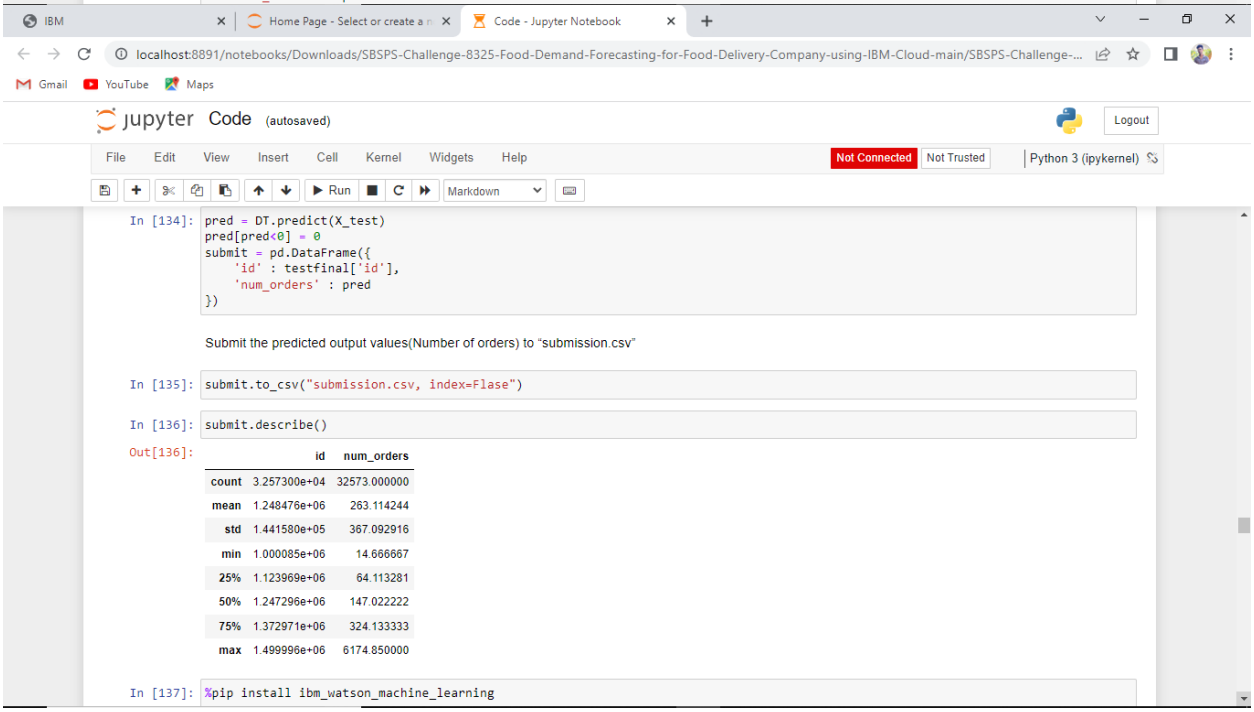
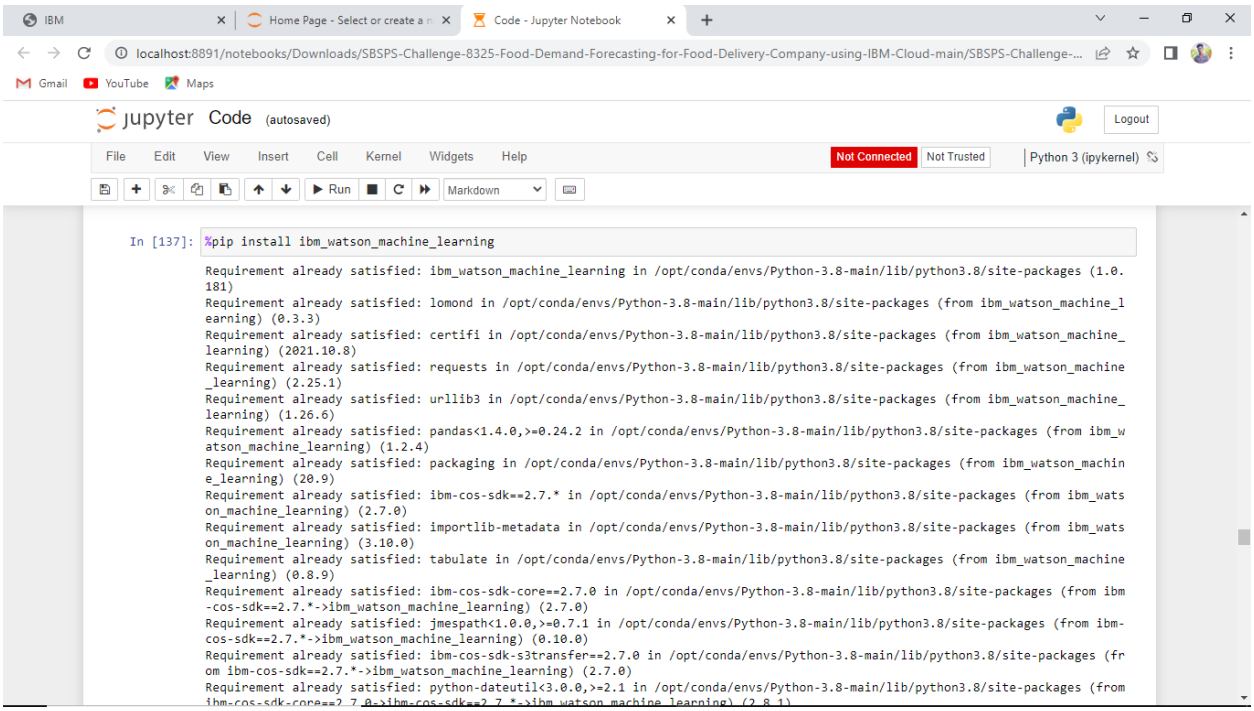
TEAM ID: PNT2022TMID17645

PROJECT NAME: DemandEst - AI powered Food Demand Forecaster

Team Leader



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Maps
jupyter Code (autosaved)
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Python 3 (ipykernel)
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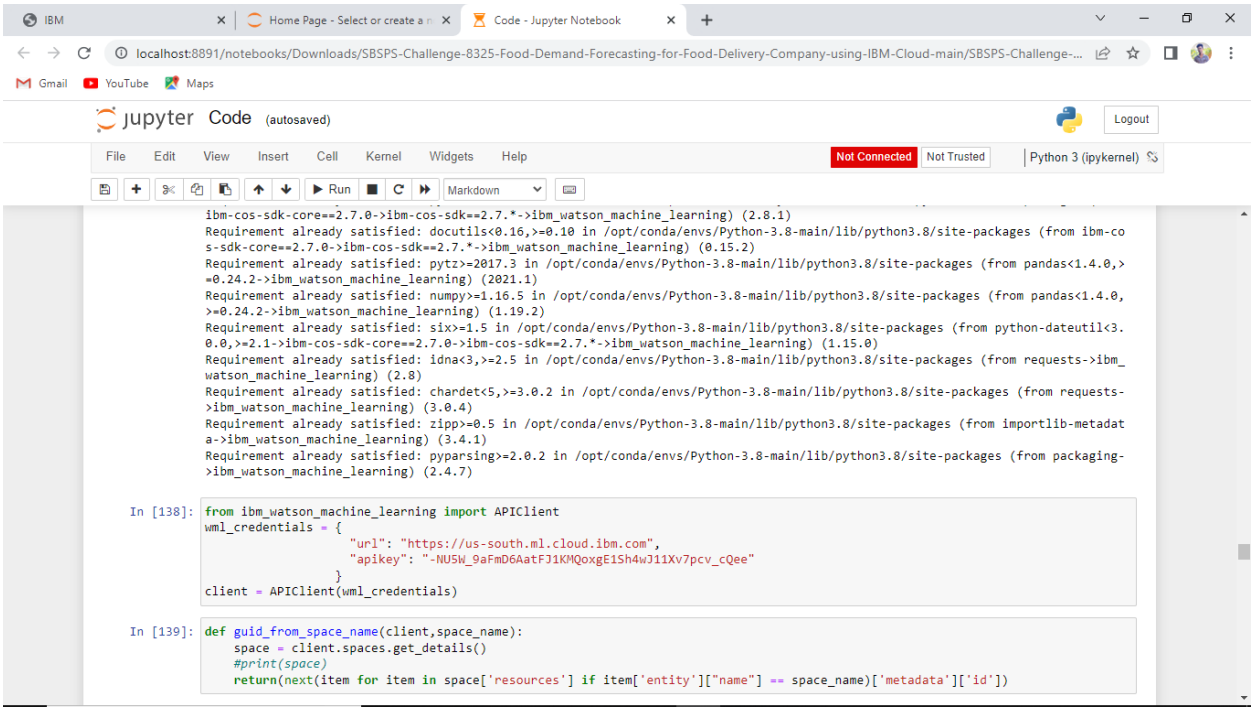
Markdown
In [137]: %pip install ibm_watson_machine_learning
Requirement already satisfied: ibm_watson_machine_learning in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (1.0.181)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.3.3)
Requirement already satisfied: certifi in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2021.10.8)
Requirement already satisfied: requests in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.25.1)
Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.26.6)
Requirement already satisfied: pandas<1.4.0,>=0.24.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.2.4)
Requirement already satisfied: packaging in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (20.9)
Requirement already satisfied: ibm-cos-sdk==2.7.* in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: importlib-metadata in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (3.10.0)
Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.8.9)
Requirement already satisfied: ibm-cos-sdk-core==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.10.0)
Requirement already satisfied: ibm-cos-sdk-s3transfer==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from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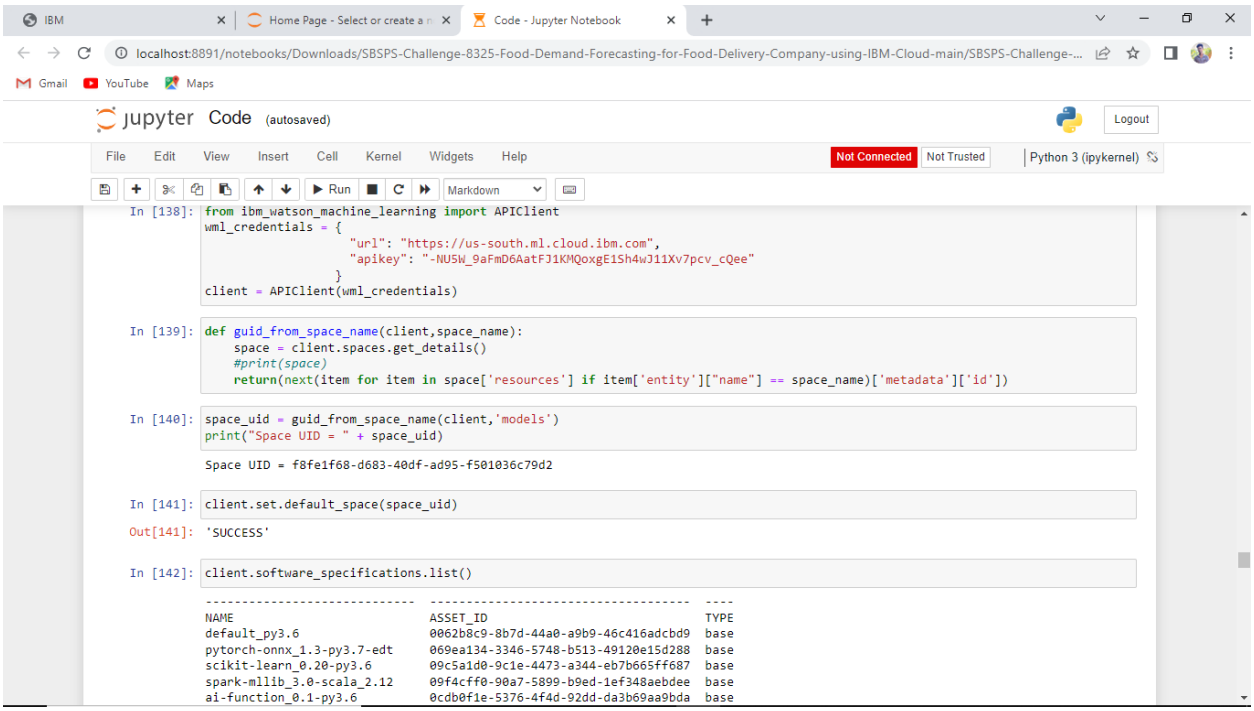
ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.8.1)
Requirement already satisfied: docutils<0.16,>=0.10 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.15.2)
Requirement already satisfied: pytz>=2017.3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (2021.1)
Requirement already satisfied: numpy>=1.16.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (1.19.2)
Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from python-dateutil<3.0.0,>=2.1->ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (1.15.0)
Requirement already satisfied: idna<3,>=2.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (2.8)
Requirement already satisfied: chardet<5,>=3.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (3.0.4)
Requirement already satisfied: zipp>=0.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from importlib-metadata->ibm_watson_machine_learning) (3.4.1)
Requirement already satisfied: pyparsing>=2.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from packaging->ibm_watson_machine_learning) (2.4.7)
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])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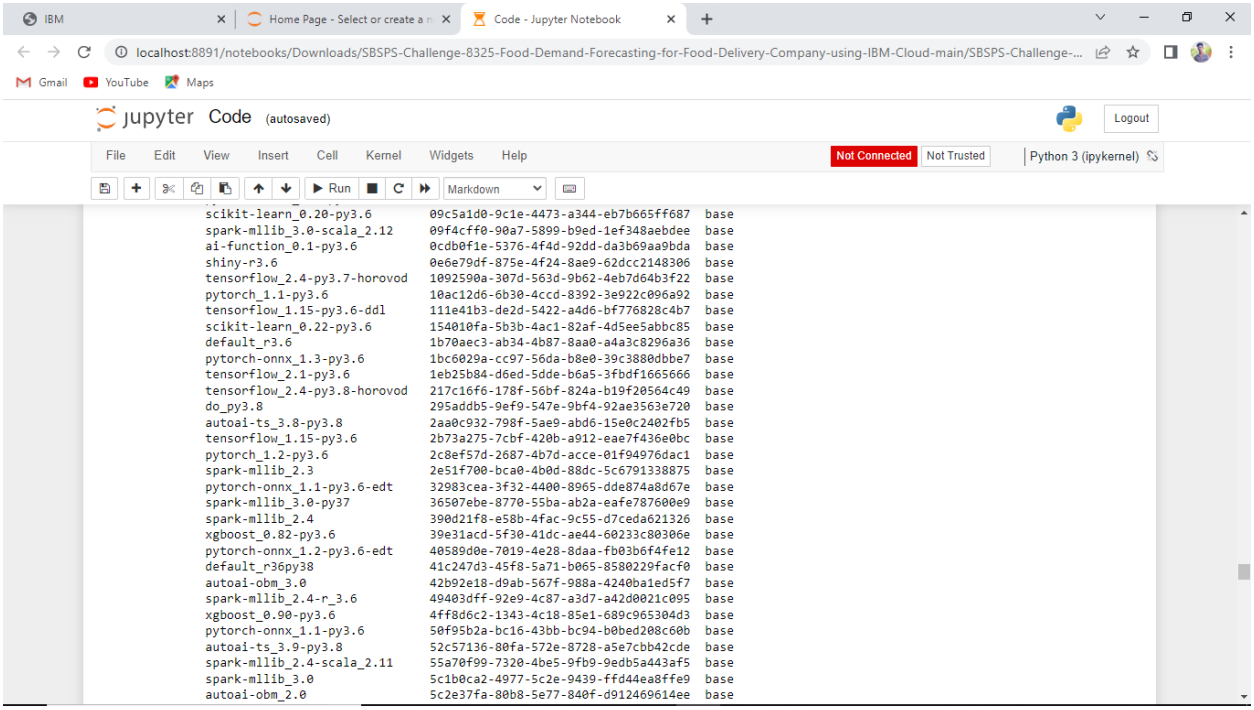
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])
In [140]:
space_uid = guid_from_space_name(client,'models')
print("Space UID = " + space_uid)
Space UID = f8fe1f68-d683-40df-ad95-f501036c79d2
In [141]:
client.set.default_space(space_uid)
Out[141]:
'SUCCESS'
In [142]:
client.software_specifications.list()
NAME ASSET_ID TYPE
default_py3.6 0062b8c9-8b7d-44a0-a9b9-46c416adcbd9 base
pytorch-onnx_1.3-py3.7-edt 069ea134-3346-5748-b513-49120e15d288 base
scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base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scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base
shiny-r3.6 0e6e79df-875e-4f24-8ae9-62dcc2148306 base
tensorflow_2.4-py3.7-horovod 1092590a-307d-563d-9b62-4eb7d64b3f22 base
pytorch_1.1-py3.6 10ac12d6-6b30-4ccd-8392-3e922c096a92 base
tensorflow_1.15-py3.6-ddl 111e41b3-de2d-5422-a4d6-bf776828c4b7 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
tensorflow_2.1-py3.6 1eb25b84-d6ed-5dde-b6a5-3fbdf1665666 base
tensorflow_2.4-py3.8-horovod 217c16f6-178f-56bf-824a-b19f20564c49 base
do_py3.8 295addb5-9ef9-547e-9bf4-92ae3563e720 base
autoai-ts_3.8-py3.8 2aa0c932-798f-5ae9-abd6-15e0c2402fb5 base
tensorflow_1.15-py3.6 2b73a275-7cbf-420b-a912-eae7f436e0bc base
pytorch_1.2-py3.6 2c8ef57d-2687-4b7d-acce-01f94976dac1 base
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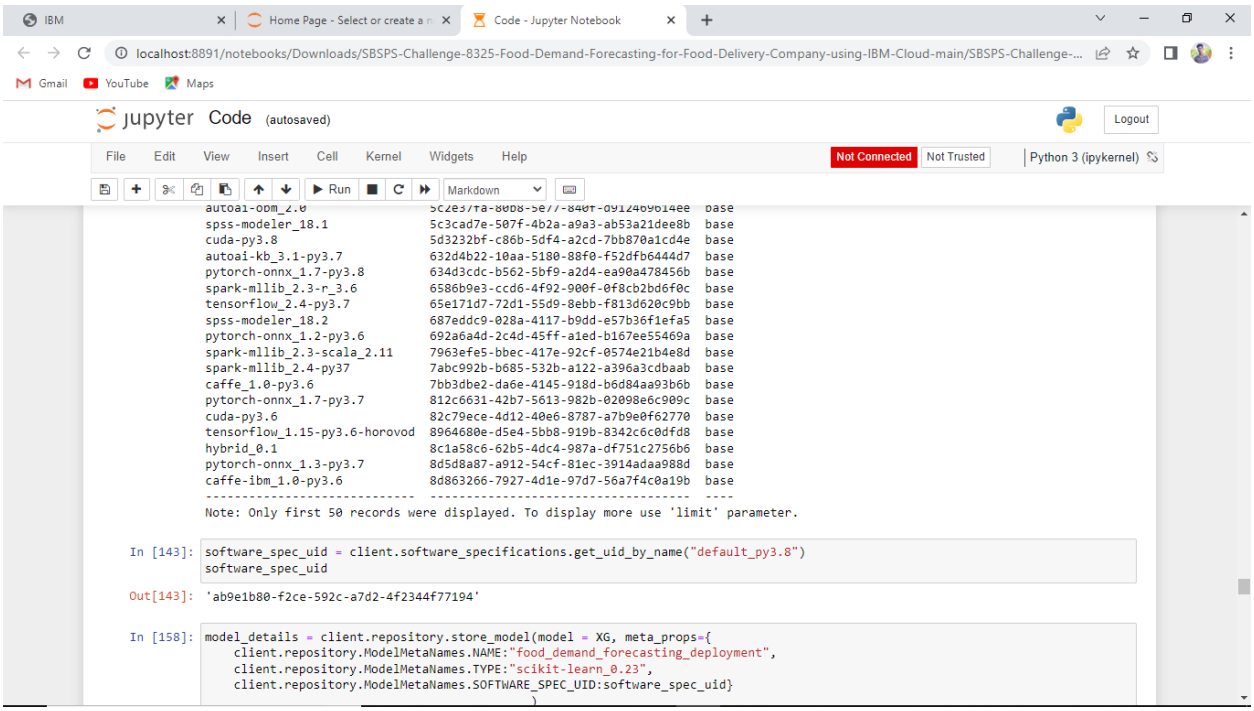
pytorch-onnx_1.1-py3.6-edt 32983cea-3f32-4400-8965-dde874a8d67e base
spark-mllib_3.0-py37 36507ebe-8770-55ba-ab2a-eafe787600e9 base
spark-mllib_2.4 390d21f8-e58b-4fac-9c55-d7ceda621326 base
xgboost_0.82-py3.6 39e31acd-5f30-41dc-ae44-60233c80306e base
pytorch-onnx_1.2-py3.6-edt 40589d0e-7019-4e28-8daa-fb03b6f4fe12 base
default_r36py38 41c247d3-45f8-5a71-b065-8580229facf0 base
autoai-obm_3.0 42b92e18-d9ab-567f-988a-4240ba1ed5f7 base
spark-mllib_2.4-r_3.6 49403dff-92e9-4c87-a3d7-a42d0021c095 base
xgboost_0.90-py3.6 4ff8d6c2-1343-4c18-85e1-689c965304d3 base
pytorch-onnx_1.1-py3.6 50f95b2a-bc16-43bb-bc94-b0bed208c60b base
autoai-ts_3.9-py3.8 52c57136-80fa-572e-8728-a5e7cbb42cde base
spark-mllib_2.4-scala_2.11 55a70f99-7320-4be5-9fb9-9edb5a443af5 base
spark-mllib_3.0 5c1b0ca2-4977-5c2e-9439-ffd44ea8ffe9 base
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base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Python 3 (ipykernel)
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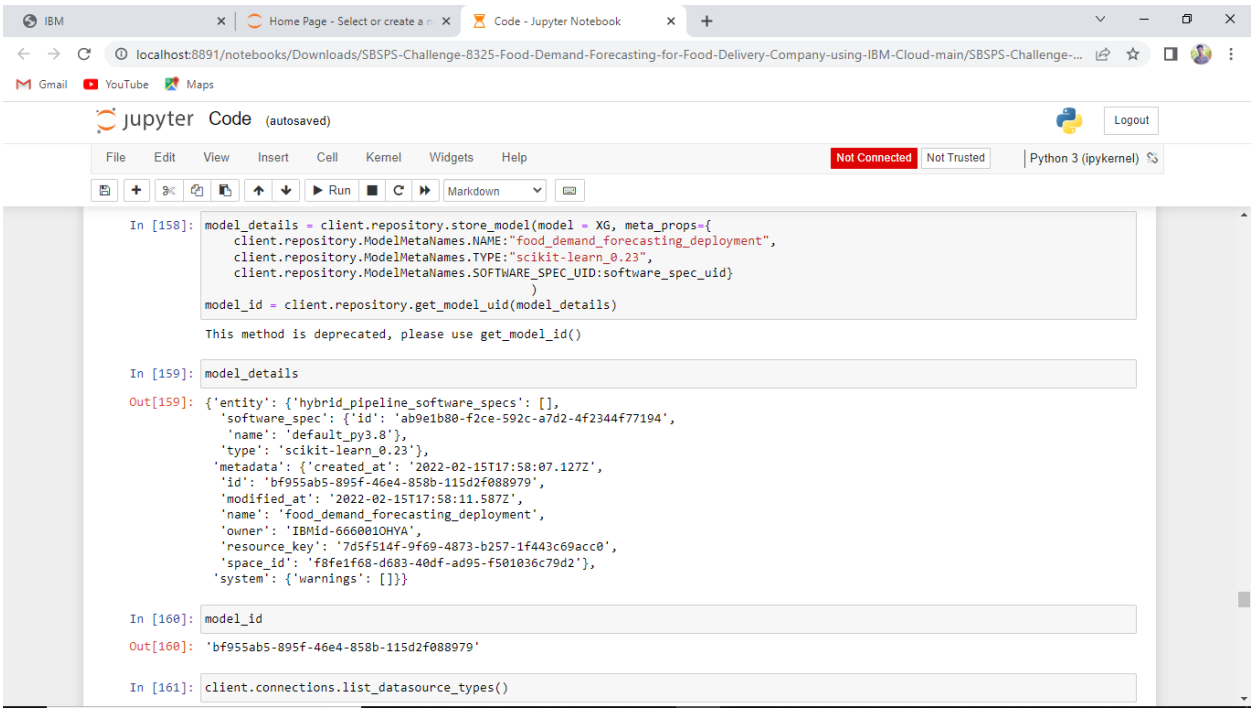
Markdown
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base
spss-modeler_18.1 5c3cad7e-507f-4b2a-a9a3-ab53a21dee8b base
cuda-py3.8 5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e base
autoai-kb_3.1-py3.7 632d4b22-10aa-5180-88f0-f52dfb6444d7 base
pytorch-onnx_1.7-py3.8 634d3cdc-b562-5bf9-a2d4-ea90a478456b base
spark-mllib_2.3-r_3.6 6586b9e3-ccd6-4f92-900f-0f8cb2bd6f0c base
tensorflow_2.4-py3.7 65e171d7-72d1-55d9-8ebb-f813d620c9bb base
spss-modeler_18.2 687eddc9-028a-4117-b9dd-e57b36f1efa5 base
pytorch-onnx_1.2-py3.6 692a6a4d-2c4d-45ff-a1ed-b167ee55469a base
spark-mllib_2.3-scala_2.11 7963efe5-bbec-417e-92cf-0574e21b4e8d base
spark-mllib_2.4-py37 7abc992b-b685-532b-a122-a396a3cdbaab base
caffe_1.0-py3.6 7bb3dbe2-da6e-4145-918d-b6d84aa93b6b base
pytorch-onnx_1.7-py3.7 812c6631-42b7-5613-982b-02098e6c909c base
cuda-py3.6 82c79ece-4d12-40e6-8787-a7b9e0f62770 base
tensorflow_1.15-py3.6-horovod 8964680e-d5e4-5bb8-919b-8342c6c0dfd8 base
hybrid_0.1 8c1a58c6-62b5-4dc4-987a-df751c2756b6 base
pytorch-onnx_1.3-py3.7 8d5d8a87-a912-54cf-81ec-3914adaa988d base
caffe-ibm_1.0-py3.6 8d863266-7927-4d1e-97d7-56a7f4c0a19b base
Note: Only first 50 records were displayed. To display more use 'limit' parameter.
In [143]:
software_spec_uid = client.software_specifications.get_uid_by_name("default_py3.8")
software_spec_uid
Out[143]: 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194'
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}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Maps
jupyter Code (autosaved)
Logout
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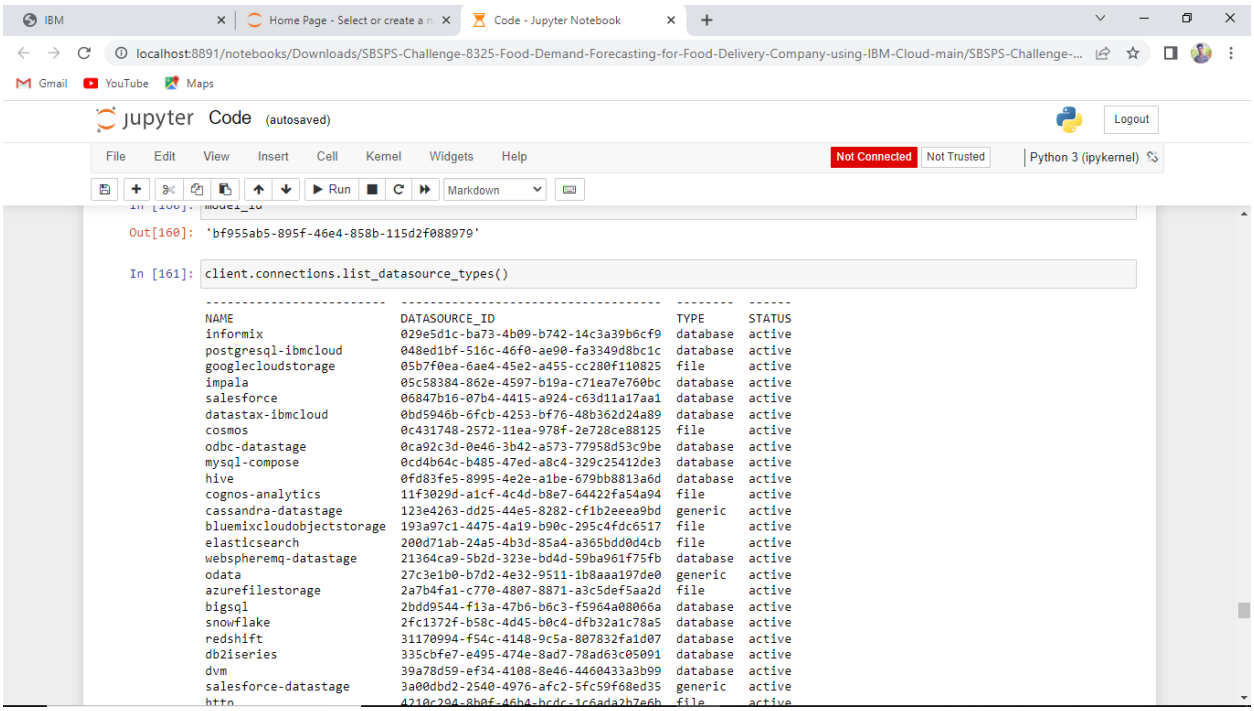
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}
)
model_id = client.repository.get_model_uid(model_details)
This method is deprecated, please use get_model_id()
In [159]:
model_details
Out[159]: {'entity': {'hybrid_pipeline_software_specs': [],
'software_spec': {'id': 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194',
'name': 'default_py3.8'},
'type': 'scikit-learn_0.23'},
'metadata': {'created_at': '2022-02-15T17:58:07.127Z',
'id': 'bf955ab5-895f-46e4-858b-115d2f088979',
'modified_at': '2022-02-15T17:58:11.587Z',
'name': 'food_demand_forecasting_deployment',
'owner': 'IBMid-666001OHYA',
'resource_key': '7d5f514f-9f69-4873-b257-1f443c69acc0',
'space_id': 'f8fe1f68-d683-40df-ad95-f501036c79d2'},
'system': {'warnings': []}}
In [160]:
model_id
Out[160]: 'bf955ab5-895f-46e4-858b-115d2f088979'
In [161]:
client.connections.list_datasource_types()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Not Trusted
Python 3 (ipykernel)
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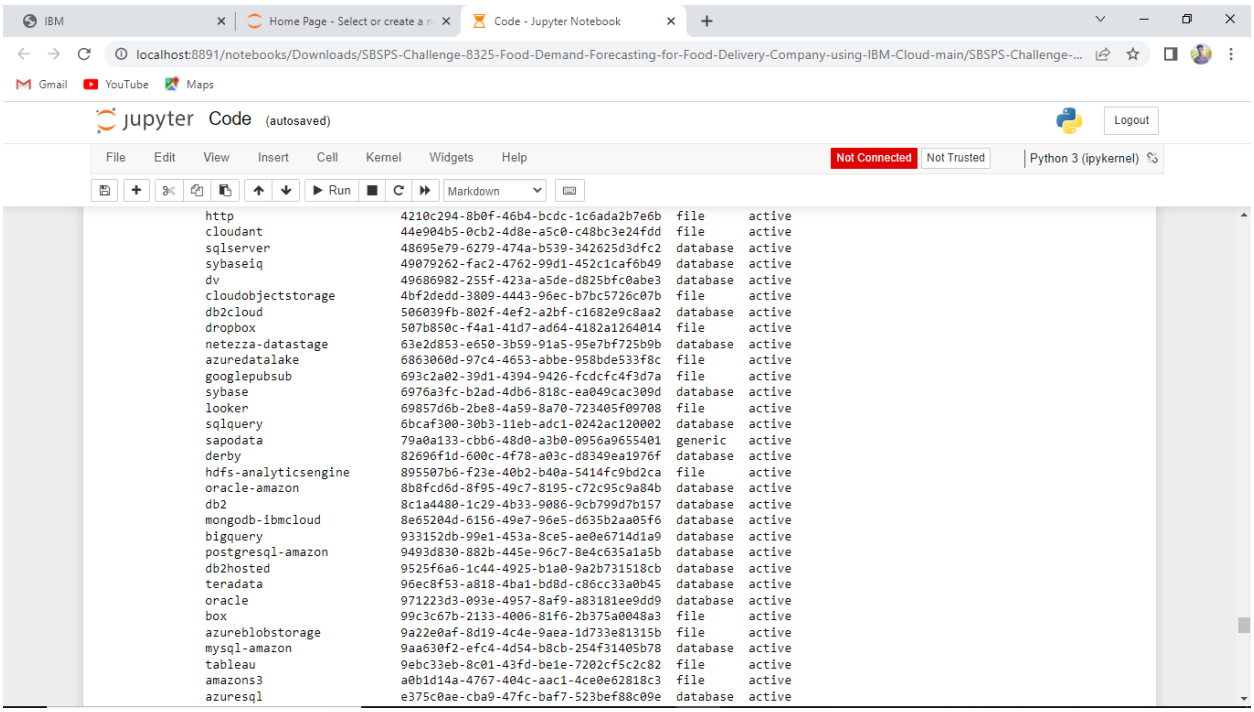
Out[160]: 'bf955ab5-895f-46e4-858b-115d2f088979'
In [161]: client.connections.list_datasource_types()
NAME DATASOURCE_ID TYPE STATUS
informix 029e5d1c-ba73-4b09-b742-14c3a39b6cf9 database active
postgresql-ibmcloud 048ed1bf-516c-46f0-ae90-fa3349d8bc1c database active
googlecloudstorage 05b7f0ea-6ae4-45e2-a455-cc280f110825 file active
impala 05c58384-862e-4597-b19a-c71ea7e760bc database active
salesforce 06847b16-07b4-4415-a924-c63d11a17aa1 database active
datastax-ibmcloud 0bd5946b-6fcb-4253-bf76-48b362d24a89 database active
cosmos 0c431748-2572-11ea-978f-2e728ce88125 file active
odbc-datastage 0ca92c3d-0e46-3b42-a573-77958d53c9be database active
mysql-compose 0cd4b64c-b485-47ed-a8c4-329c25412de3 database active
hive 0fd83fe5-8995-4e2e-a1be-679bb8813a6d database active
cognos-analytics 11f3029d-a1cf-4c4d-b8e7-64422fa54a94 file active
cassandra-datastage 123e4263-dd25-44e5-8282-cf1b2eeea9bd generic active
bluemixcloudobjectstorage 193a97c1-4475-4a19-b90c-295c4fdc6517 file active
elasticsearch 200d71ab-24a5-4b3d-85a4-a365bdd0d4cb file active
webspheremq-datastage 21364ca9-5b2d-323e-bd4d-59ba961f75fb database active
odata 27c3e1b0-b7d2-4e32-9511-1b8aaa197de0 generic active
azurefilestorage 2a7b4fa1-c770-4807-8871-a3c5def5aa2d file active
bigsql 2bdd9544-f13a-47b6-b6c3-f5964a08066a database active
snowflake 2fc1372f-b58c-4d45-b0c4-dfb32a1c78a5 database active
redshift 31170994-f54c-4148-9c5a-807832fa1d07 database active
db2iseries 335cbfe7-e495-474e-8ad7-78ad63c05091 database active
dvm 39a78d59-ef34-4108-8e46-4460433a3b99 database active
salesforce-datastage 3a00dbd2-2540-4976-afc2-5fc59f68ed35 generic active
http 4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b file active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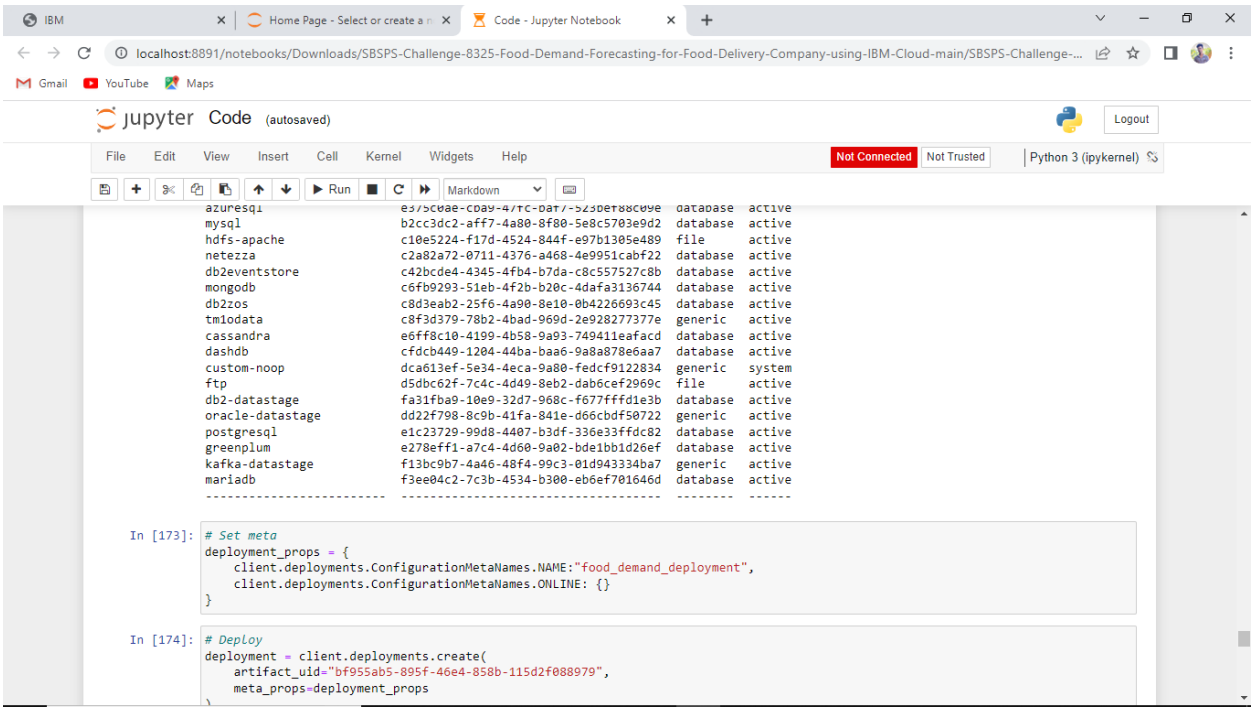
http 4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b file active
cloudant 44e904b5-0cb2-4d8e-a5c0-c48bc3e24fdd file active
sqlserver 48695e79-6279-474a-b539-342625d3dfc2 database active
sybaseiq 49079262-fac2-4762-99d1-452c1caf6b49 database active
dv 49686982-255f-423a-a5de-d825bfc0abe3 database active
cloudobjectstorage 4bf2dedd-3809-4443-96ec-b7bc5726c07b file active
db2cloud 506039fb-802f-4ef2-a2bf-c1682e9c8aa2 database active
dropbox 507b850c-f4a1-41d7-ad64-4182a1264014 file active
netezza-datastage 63e2d853-e650-3b59-91a5-95e7bf725b9b database active
azuredatalake 6863060d-97c4-4653-abbe-958bde533f8c file active
googlepubsub 693c2a02-39d1-4394-9426-fcdcfc4f3d7a file active
sybase 6976a3fc-b2ad-4db6-818c-ea049cac309d database active
looker 69857d6b-2be8-4a59-8a70-723405f09708 file active
sqlquery 6bcaf300-30b3-11eb-adc1-0242ac120002 database active
sapodata 79a0a133-cbb6-48d0-a3b0-0956a9655401 generic active
derby 82696f1d-600c-4f78-a03c-d8349ea1976f database active
hdfs-analyticsengine 895507b6-f23e-40b2-b40a-5414fc9bd2ca file active
oracle-amazon 8b8fcd6d-8f95-49c7-8195-c72c95c9a84b database active
db2 8c1a4480-1c29-4b33-9086-9cb799d7b157 database active
mongodb-ibmcloud 8e65204d-6156-49e7-96e5-d635b2aa05f6 database active
bigquery 933152db-99e1-453a-8ce5-ae0e6714d1a9 database active
postgresql-amazon 9493d830-882b-445e-96c7-8e4c635a1a5b database active
db2hosted 9525f6a6-1c44-4925-b1a0-9a2b731518cb database active
teradata 96ec8f53-a818-4ba1-bd8d-c86cc33a0b45 database active
oracle 971223d3-093e-4957-8af9-a83181ee9dd9 database active
box 99c3c67b-2133-4006-81f6-2b375a0048a3 file active
azureblobstorage 9a22e0af-8d19-4c4e-9aea-1d733e81315b file active
mysql-amazon 9aa630f2-efc4-4d54-b8cb-254f31405b78 database active
tableau 9ebc33eb-8c01-43fd-be1e-7202cf5c2c82 file active
amazons3 a0b1d14a-4767-404c-aac1-4ce0e62818c3 file active
azuresql e375c0ae-cba9-47fc-baf7-523bef88c09e database active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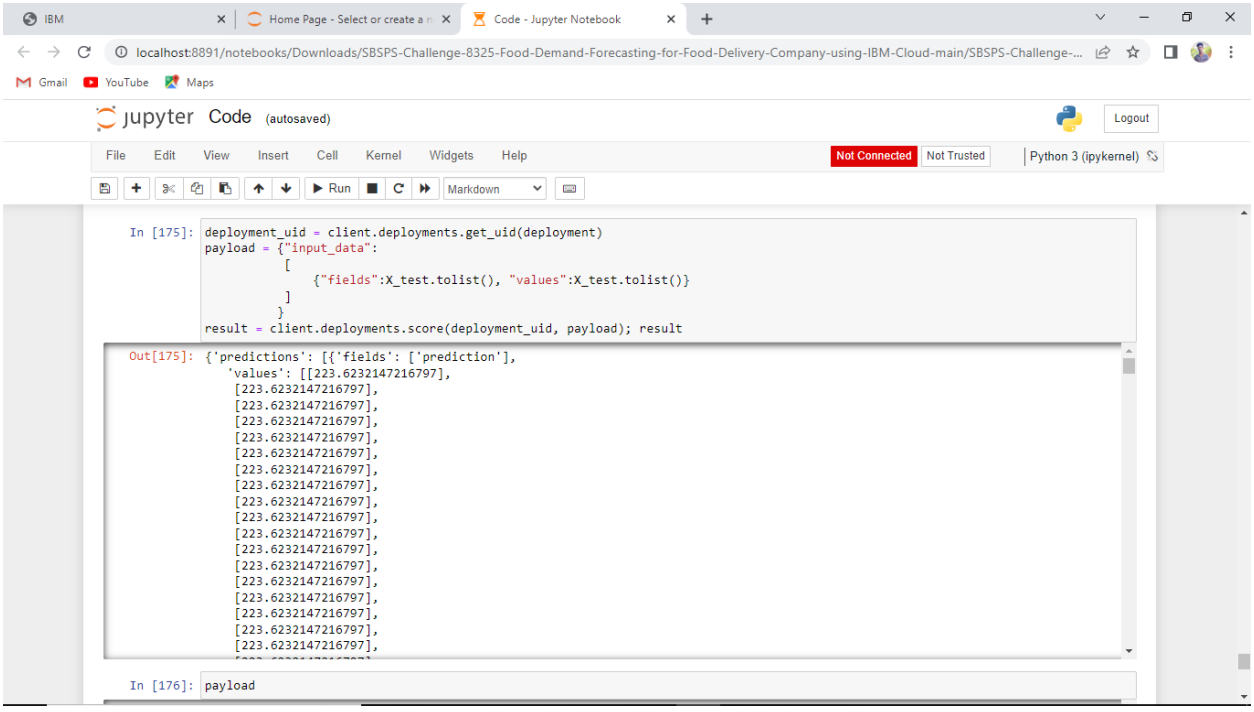
azuresql e575cdae-cda9-47fc-baf7-523bef88c09e database active
mysql b2cc3dc2-aff7-4a80-8f80-5e8c5703e9d2 database active
hdfs-apache c10e5224-f17d-4524-844f-e97b1305e489 file active
netezza c2a82a72-0711-4376-a468-4e9951cabf22 database active
db2eventstore c42bcde4-4345-4fb4-b7da-c8c557527c8b database active
mongodb c6fb9293-51eb-4f2b-b20c-4dafa3136744 database active
db2zos c8d3eab2-25f6-4a90-8e10-0b4226693c45 database active
tm1odata c8f3d379-78b2-4bad-969d-2e928277377e generic active
cassandra e6ff8c10-4199-4b58-9a93-749411eafacd database active
dashdb cfdcb449-1204-44ba-baa6-9a8a878e6aa7 database active
custom-noop dca613ef-5e34-4eca-9a80-fedcf9122834 generic system
ftp d5dbc62f-7c4c-4d49-8eb2-dab6cef2969c file active
db2-datastage fa31fba9-10e9-32d7-968c-f677fffd1e3b database active
oracle-datastage dd22f798-8c9b-41fa-841e-d66cbdf50722 generic active
postgresql e1c23729-99d8-4407-b3df-336e33ffdc82 database active
greenplum e278eff1-a7c4-4d60-9a02-bde1bb1d26ef database active
kafka-datastage f13bc9b7-4a46-48f4-99c3-01d943334ba7 generic active
mariadb f3ee04c2-7c3b-4534-b300-eb6ef701646d database active
In [173]:
# Set meta
deployment_props = {
client.deployments.ConfigurationMetaNames.NAME:"food_demand_deployment",
client.deployments.ConfigurationMetaNames.ONLINE: {}
}
In [174]:
# Deploy
deployment = client.deployments.create(
artifact_uid="bf955ab5-895f-46e4-858b-115d2f088979",
meta_props=deployment_props
)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Python 3 (ipykernel)
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Markdown
In [175]:
deployment_uid = client.deployments.get_uid(deployment)
payload = {"input_data":
[
{"fields":X_test.tolist(), "values":X_test.tolist()}
]
}
result = client.deployments.score(deployment_uid, payload); result
Out[175]: {'predictions': [{'fields': ['prediction'],
'values': [[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
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[223.6232147216797],
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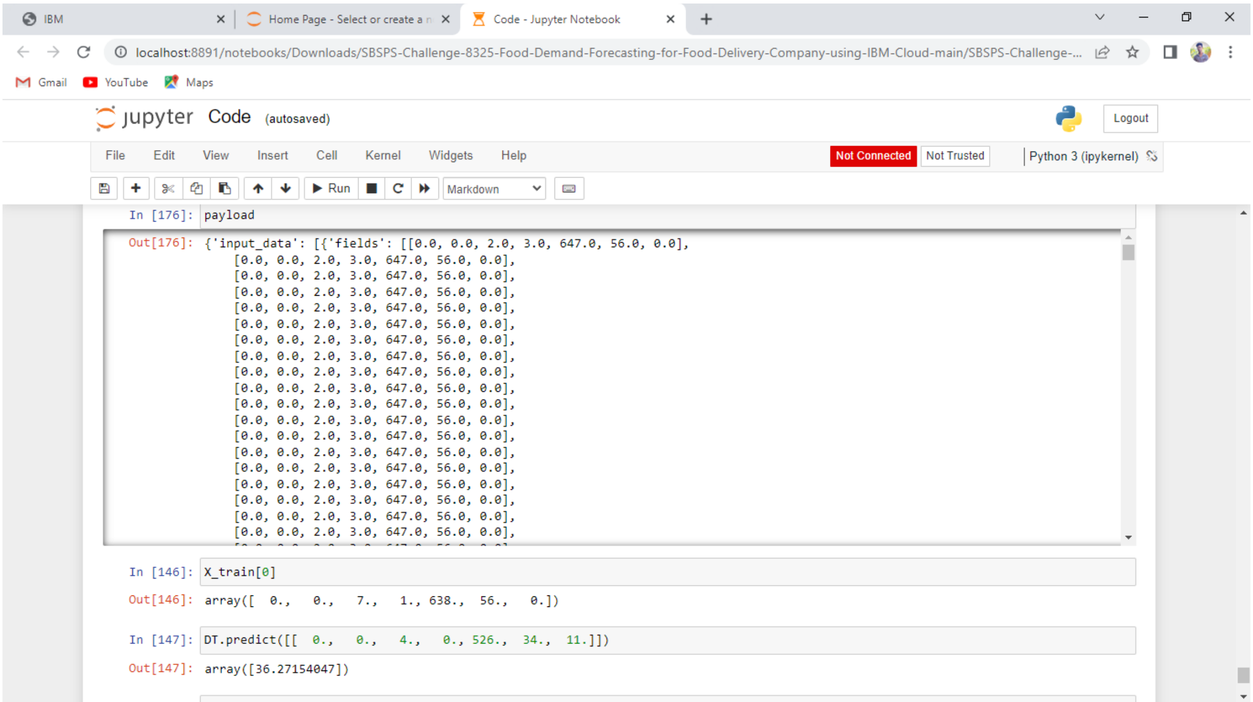
[223.6232147216797],
[223.6232147216797],
In [176]:
payload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jupyter Code (autosaved)
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Python 3 (ipykernel)
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In [176]: payload
Out[176]: {'input_data': [{'fields': [[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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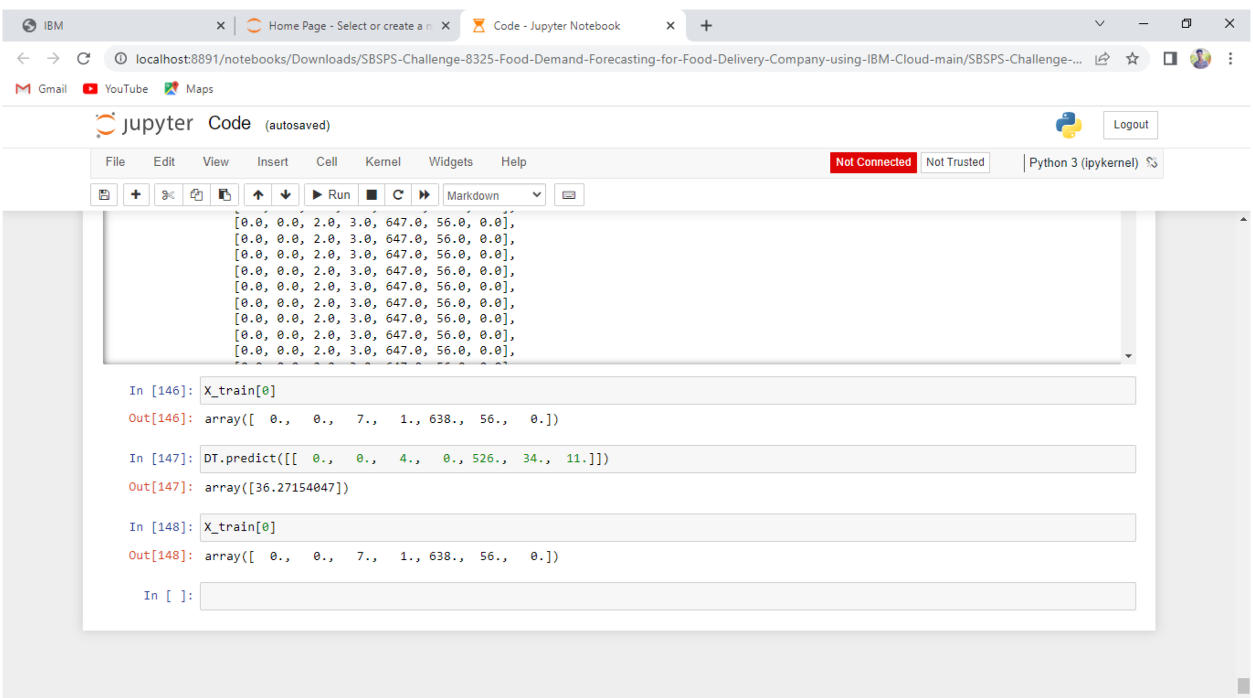
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])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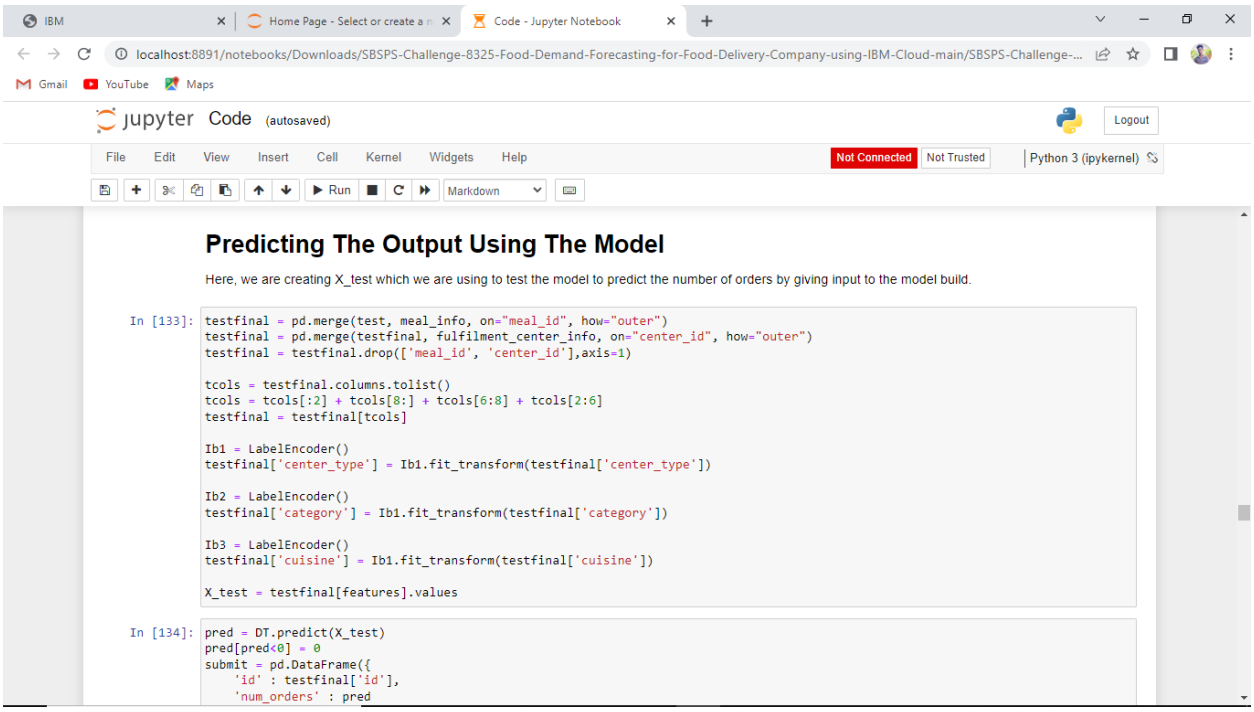
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])
In [148]: X_train[0]
Out[148]: array([0., 0., 7., 1., 638., 56., 0.])
In [ ]:

Team Member 1

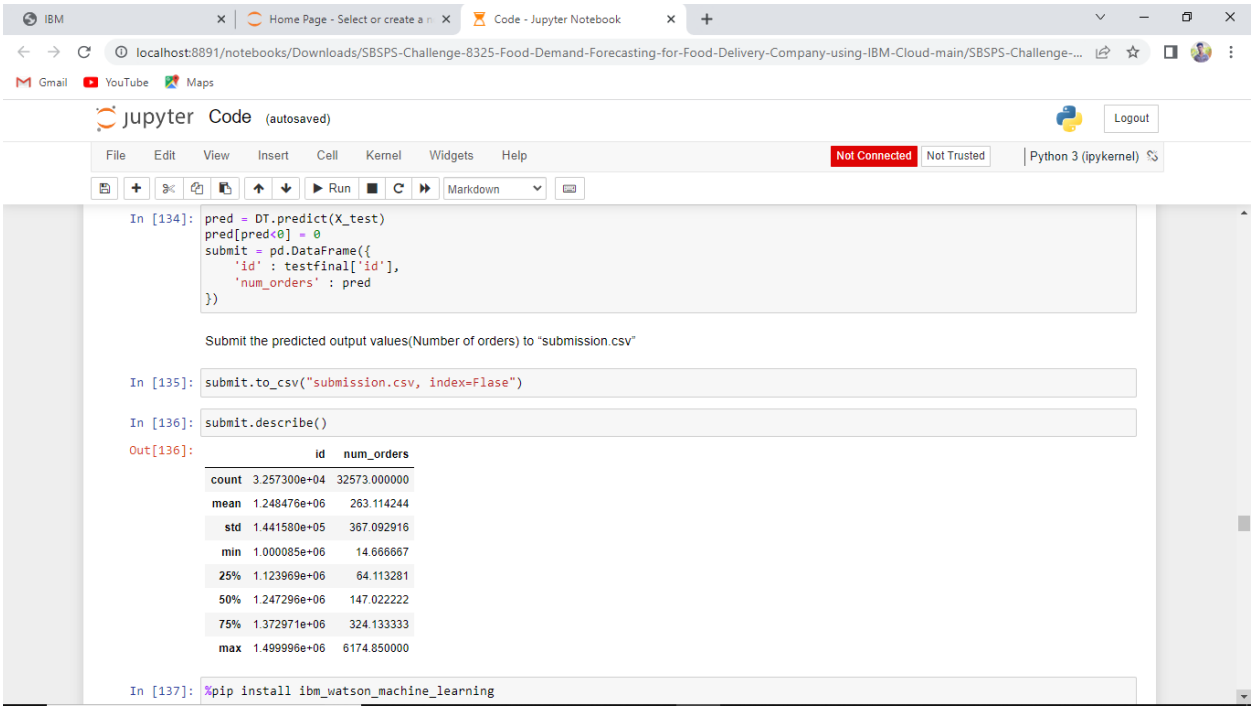


Predicting The Output Using The Model

Here, we are creating X_test which we are using to test the model to predict the number of orders by giving input to the model build.

In [133]:
```
testfinal = pd.merge(test, meal_info, on="meal_id", how="outer")
testfinal = pd.merge(testfinal, fulfilment_center_info, on="center_id", how="outer")
testfinal = testfinal.drop(['meal_id', 'center_id'],axis=1)

tcols = testfinal.columns.tolist()
tcols = tcols[:2] + tcols[8:] + tcols[6:8] + tcols[2:6]
testfinal = testfinal[tcols]

Ib1 = LabelEncoder()
testfinal['center_type'] = Ib1.fit_transform(testfinal['center_type'])

Ib2 = LabelEncoder()
testfinal['category'] = Ib1.fit_transform(testfinal['category'])

Ib3 = LabelEncoder()
testfinal['cuisine'] = Ib1.fit_transform(testfinal['cuisine'])

X_test = testfinal[features].values
```

In [134]:
```
pred = DT.predict(X_test)
pred[pred<0] = 0
submit = pd.DataFrame({
    'id' : testfinal['id'],
    'num_orders' : pred
```



In [134]:
```
pred = DT.predict(X_test)
pred[pred<0] = 0
submit = pd.DataFrame({
    'id' : testfinal['id'],
    'num_orders' : pred
})
```

Submit the predicted output values(Number of orders) to "submission.csv"

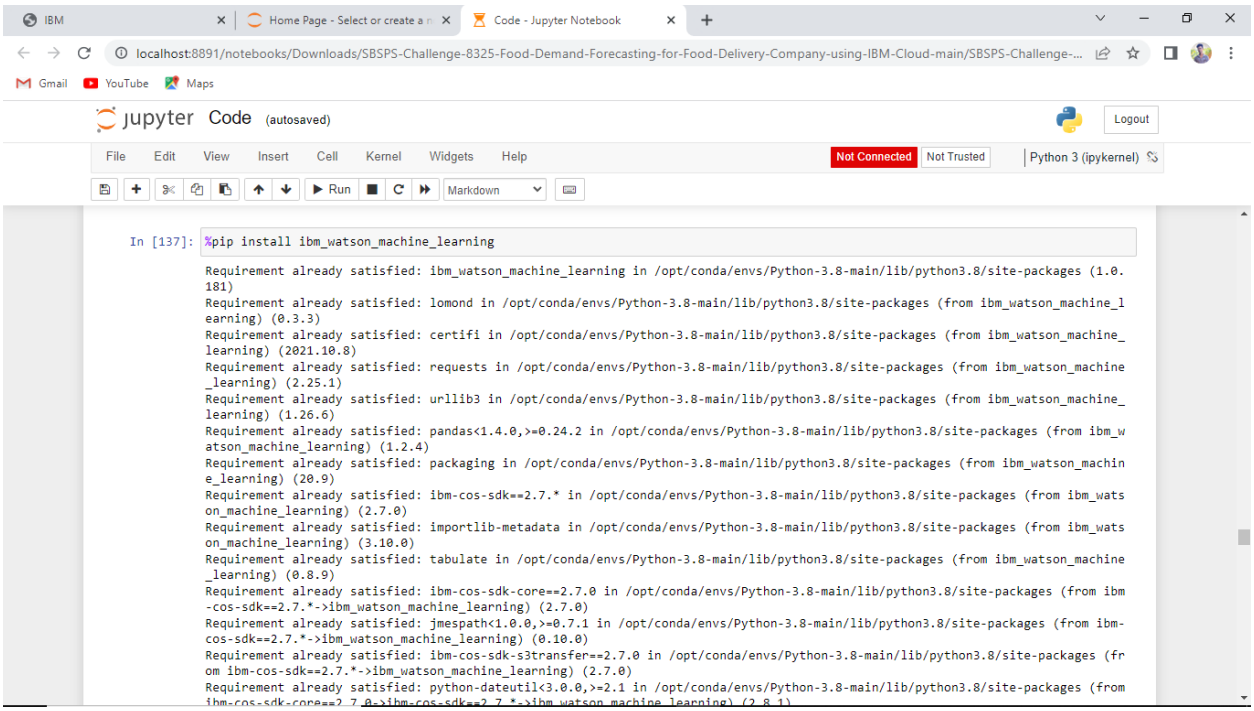
In [135]:
```
submit.to_csv("submission.csv, index=Flase")
```

In [136]:
```
submit.describe()
```

Out[136]:

	id	num_orders
count	3.257300e+04	32573.000000
mean	1.248476e+06	263.114244
std	1.441580e+05	367.092916
min	1.000085e+06	14.666667
25%	1.123969e+06	64.113281
50%	1.247296e+06	147.022222
75%	1.372971e+06	324.133333
max	1.499996e+06	6174.850000

In [137]:
```
%pip install ibm_watson_machine_learning
```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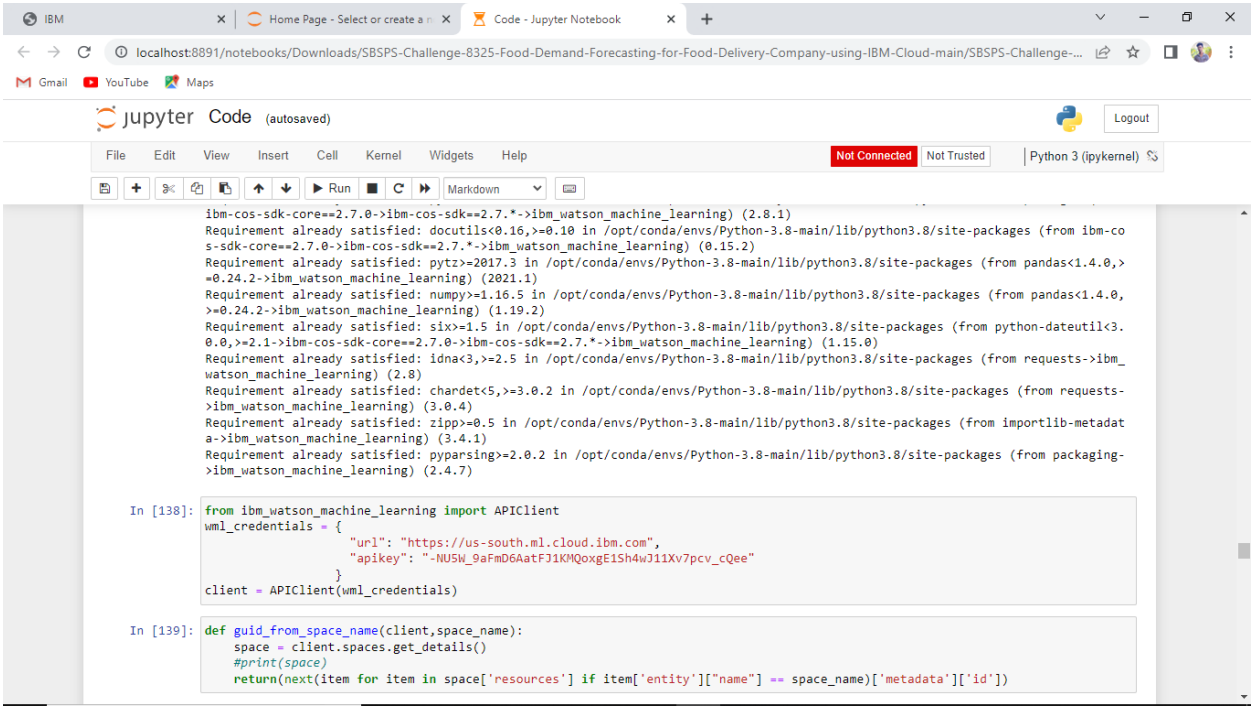
In [137]: %pip install ibm_watson_machine_learning
Requirement already satisfied: ibm_watson_machine_learning in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (1.0.181)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.3.3)
Requirement already satisfied: certifi in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2021.10.8)
Requirement already satisfied: requests in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.25.1)
Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.26.6)
Requirement already satisfied: pandas<1.4.0,>=0.24.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.2.4)
Requirement already satisfied: packaging in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (20.9)
Requirement already satisfied: ibm-cos-sdk==2.7.* in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: importlib-metadata in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (3.10.0)
Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.8.9)
Requirement already satisfied: ibm-cos-sdk-core==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.10.0)
Requirement already satisfied: ibm-cos-sdk-s3transfer==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from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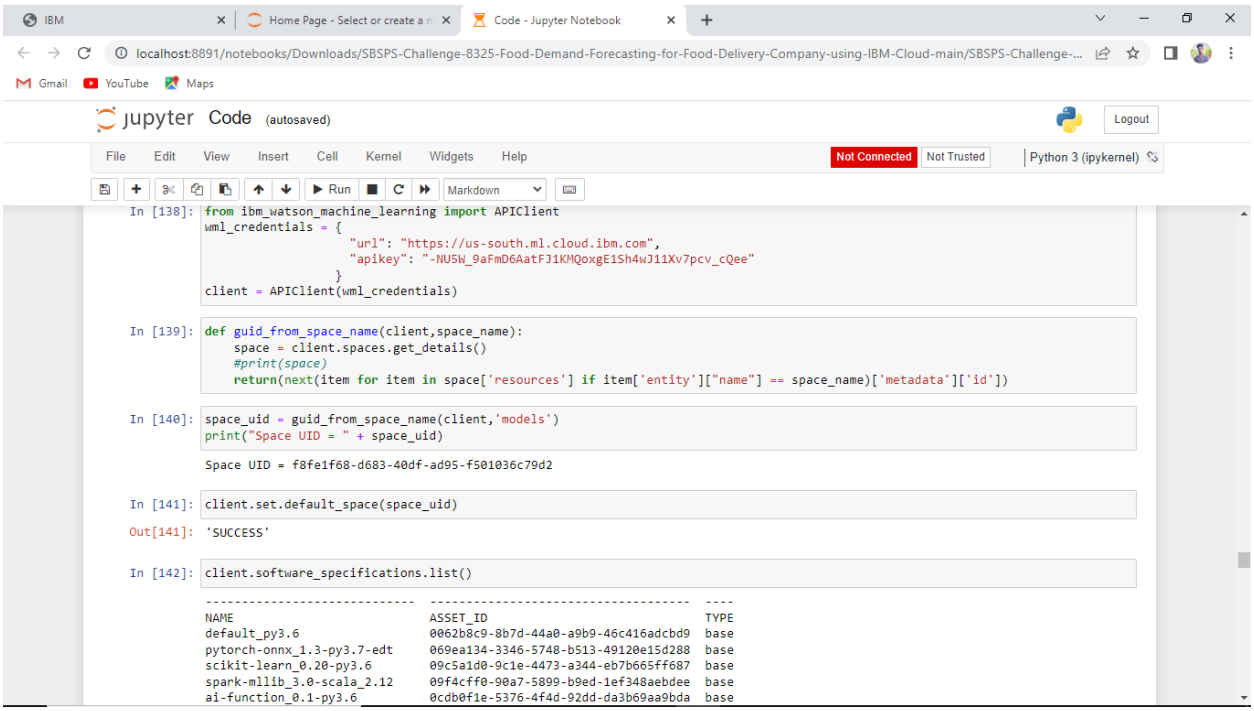
Requirement already satisfied: docutils<0.16,>=0.10 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.15.2)
Requirement already satisfied: pytz>=2017.3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (2021.1)
Requirement already satisfied: numpy>=1.16.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (1.19.2)
Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from python-dateutil<3.0.0,>=2.1->ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (1.15.0)
Requirement already satisfied: idna<3,>=2.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (2.8)
Requirement already satisfied: chardet<5,>=3.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (3.0.4)
Requirement already satisfied: zipp>=0.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from importlib-metadata->ibm_watson_machine_learning) (3.4.1)
Requirement already satisfied: pyparsing>=2.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from packaging->ibm_watson_machine_learning) (2.4.7)
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])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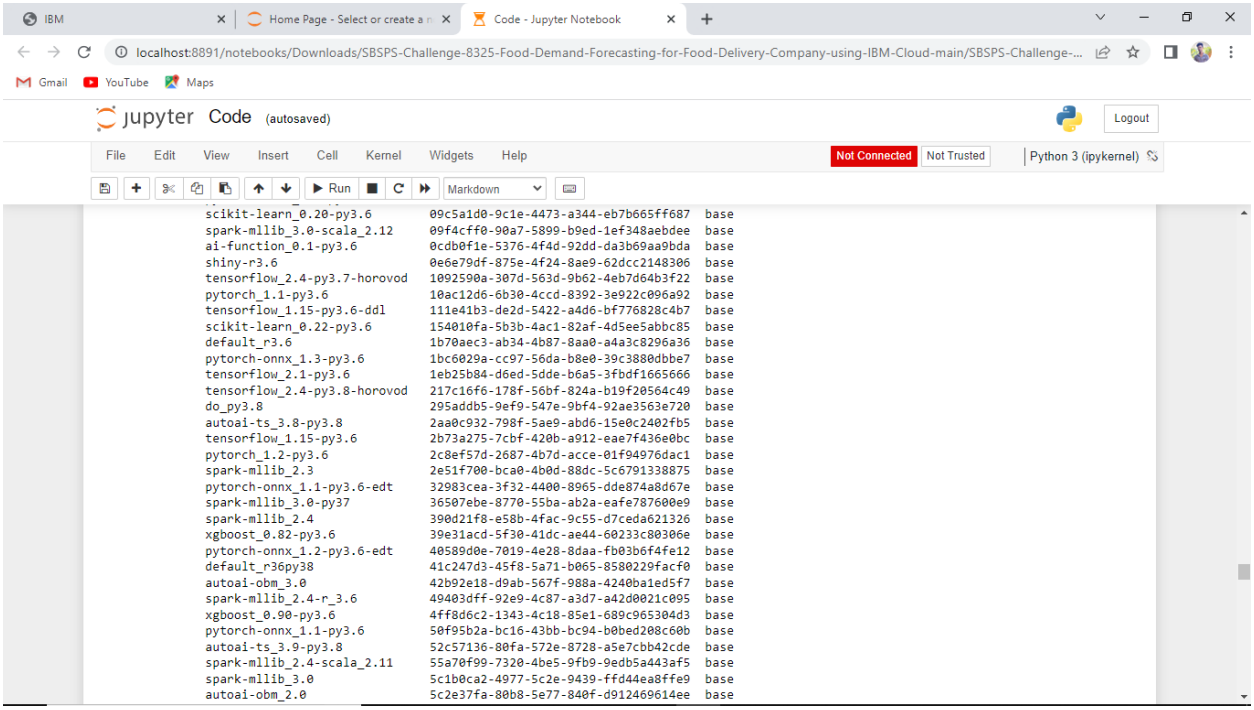
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])
In [140]:
space_uid = guid_from_space_name(client,'models')
print("Space UID = " + space_uid)
Space UID = f8fe1f68-d683-40df-ad95-f501036c79d2
In [141]:
client.set.default_space(space_uid)
Out[141]:
'SUCCESS'
In [142]:
client.software_specifications.list()
NAME ASSET_ID TYPE
default_py3.6 0062b8c9-8b7d-44a0-a9b9-46c416adcbd9 base
pytorch-onnx_1.3-py3.7-edt 069ea134-3346-5748-b513-49120e15d288 base
scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base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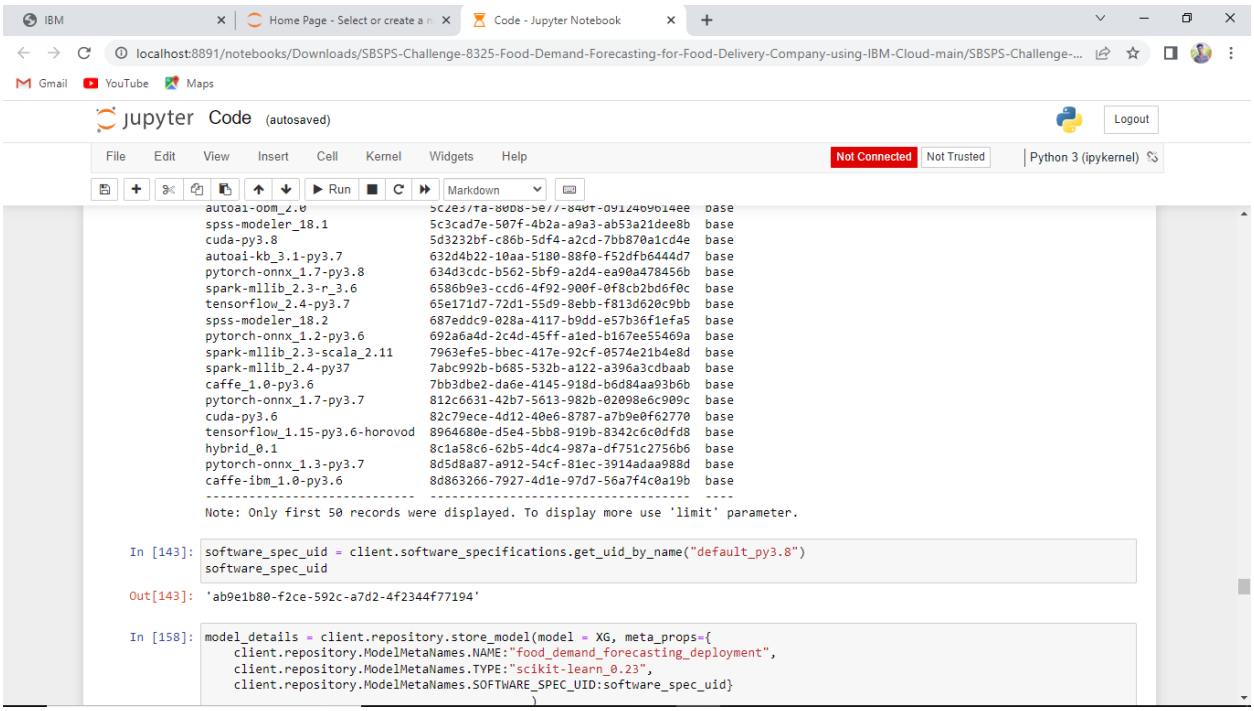
scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base
shiny-r3.6 0e6e79df-875e-4f24-8ae9-62dcc2148306 base
tensorflow_2.4-py3.7-horovod 1092590a-307d-563d-9b62-4eb7d64b3f22 base
pytorch_1.1-py3.6 10ac12d6-6b30-4ccd-8392-3e922c096a92 base
tensorflow_1.15-py3.6-ddl 111e41b3-de2d-5422-a4d6-bf776828c4b7 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
tensorflow_2.1-py3.6 1eb25b84-d6ed-5dde-b6a5-3fbdf1665666 base
tensorflow_2.4-py3.8-horovod 217c16f6-178f-56bf-824a-b19f20564c49 base
do_py3.8 295addb5-9ef9-547e-9bf4-92ae3563e720 base
autoai-ts_3.8-py3.8 2aa0c932-798f-5ae9-abd6-15e0c2402fb5 base
tensorflow_1.15-py3.6 2b73a275-7cbf-420b-a912-eae7f436e0bc base
pytorch_1.2-py3.6 2c8ef57d-2687-4b7d-acce-01f94976dac1 base
spark-mllib_2.3 2e51f700-bca0-4b0d-88dc-5c6791338875 base
pytorch-onnx_1.1-py3.6-edt 32983cea-3f32-4400-8965-dde874a8d67e base
spark-mllib_3.0-py37 36507ebe-8770-55ba-ab2a-eafe787600e9 base
spark-mllib_2.4 390d21f8-e58b-4fac-9c55-d7ceda621326 base
xgboost_0.82-py3.6 39e31acd-5f30-41dc-ae44-60233c80306e base
pytorch-onnx_1.2-py3.6-edt 40589d0e-7019-4e28-8daa-fb03b6f4fe12 base
default_r36py38 41c247d3-45f8-5a71-b065-8580229facf0 base
autoai-obm_3.0 42b92e18-d9ab-567f-988a-4240ba1ed5f7 base
spark-mllib_2.4-r_3.6 49403dff-92e9-4c87-a3d7-a42d0021c095 base
xgboost_0.90-py3.6 4ff8d6c2-1343-4c18-85e1-689c965304d3 base
pytorch-onnx_1.1-py3.6 50f95b2a-bc16-43bb-bc94-b0bed208c60b base
autoai-ts_3.9-py3.8 52c57136-80fa-572e-8728-a5e7cbb42cde base
spark-mllib_2.4-scala_2.11 55a70f99-7320-4be5-9fb9-9edb5a443af5 base
spark-mllib_3.0 5c1b0ca2-4977-5c2e-9439-ffd44ea8ffe9 base
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base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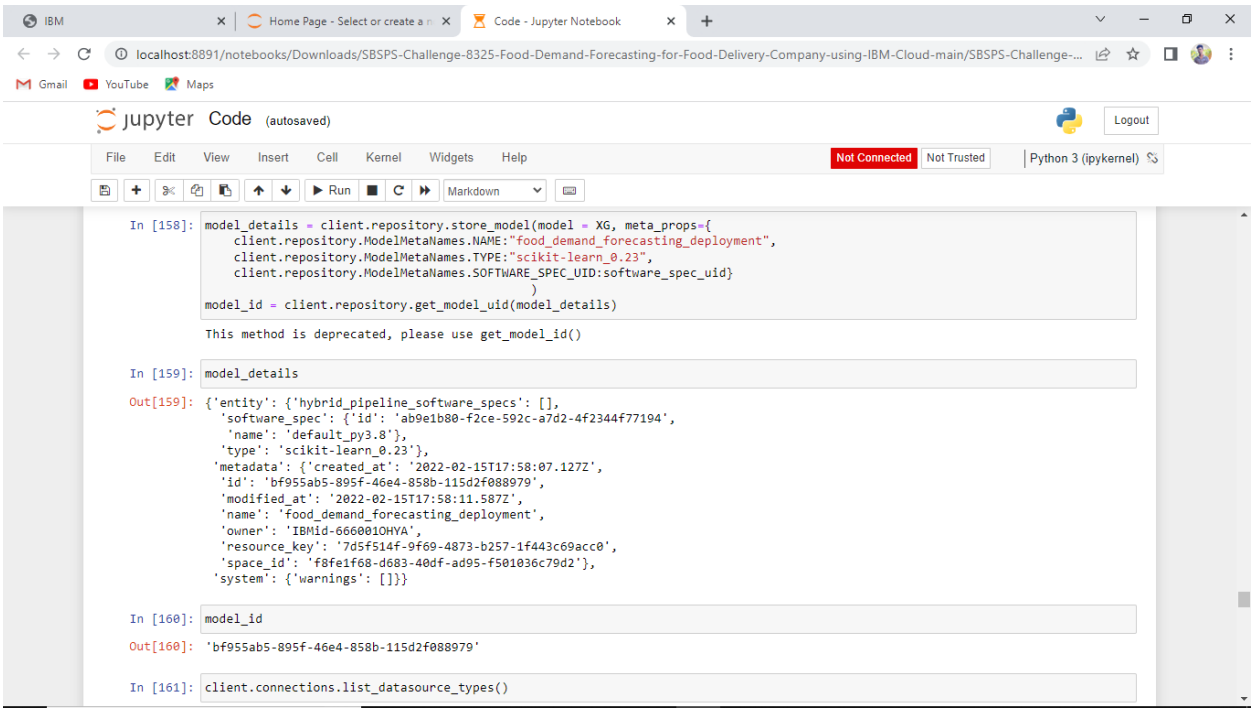
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base
spss-modeler_18.1 5c3cad7e-507f-4b2a-a9a3-ab53a21dee8b base
cuda-py3.8 5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e base
autoai-kb_3.1-py3.7 632d4b22-10aa-5180-88f0-f52dfb6444d7 base
pytorch-onnx_1.7-py3.8 634d3cdc-b562-5bf9-a2d4-ea90a478456b base
spark-mllib_2.3-r_3.6 6586b9e3-ccd6-4f92-900f-0f8cb2bd6f0c base
tensorflow_2.4-py3.7 65e171d7-72d1-55d9-8ebb-f813d620c9bb base
spss-modeler_18.2 687eddc9-028a-4117-b9dd-e57b36f1efa5 base
pytorch-onnx_1.2-py3.6 692a6a4d-2c4d-45ff-a1ed-b167ee55469a base
spark-mllib_2.3-scala_2.11 7963efe5-bbec-417e-92cf-0574e21b4e8d base
spark-mllib_2.4-py37 7abc992b-b685-532b-a122-a396a3cdbaab base
caffe_1.0-py3.6 7bb3dbe2-da6e-4145-918d-b6d84aa93b6b base
pytorch-onnx_1.7-py3.7 812c6631-42b7-5613-982b-02098e6c909c base
cuda-py3.6 82c79ece-4d12-40e6-8787-a7b9e0f62770 base
tensorflow_1.15-py3.6-horovod 8964680e-d5e4-5bb8-919b-8342c6c0dfd8 base
hybrid_0.1 8c1a58c6-62b5-4dc4-987a-df751c2756b6 base
pytorch-onnx_1.3-py3.7 8d5d8a87-a912-54cf-81ec-3914adaa988d base
caffe-ibm_1.0-py3.6 8d863266-7927-4d1e-97d7-56a7f4c0a19b base
Note: Only first 50 records were displayed. To display more use 'limit' parameter.
In [143]:
software_spec_uid = client.software_specifications.get_uid_by_name("default_py3.8")
software_spec_uid
Out[143]: 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194'
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}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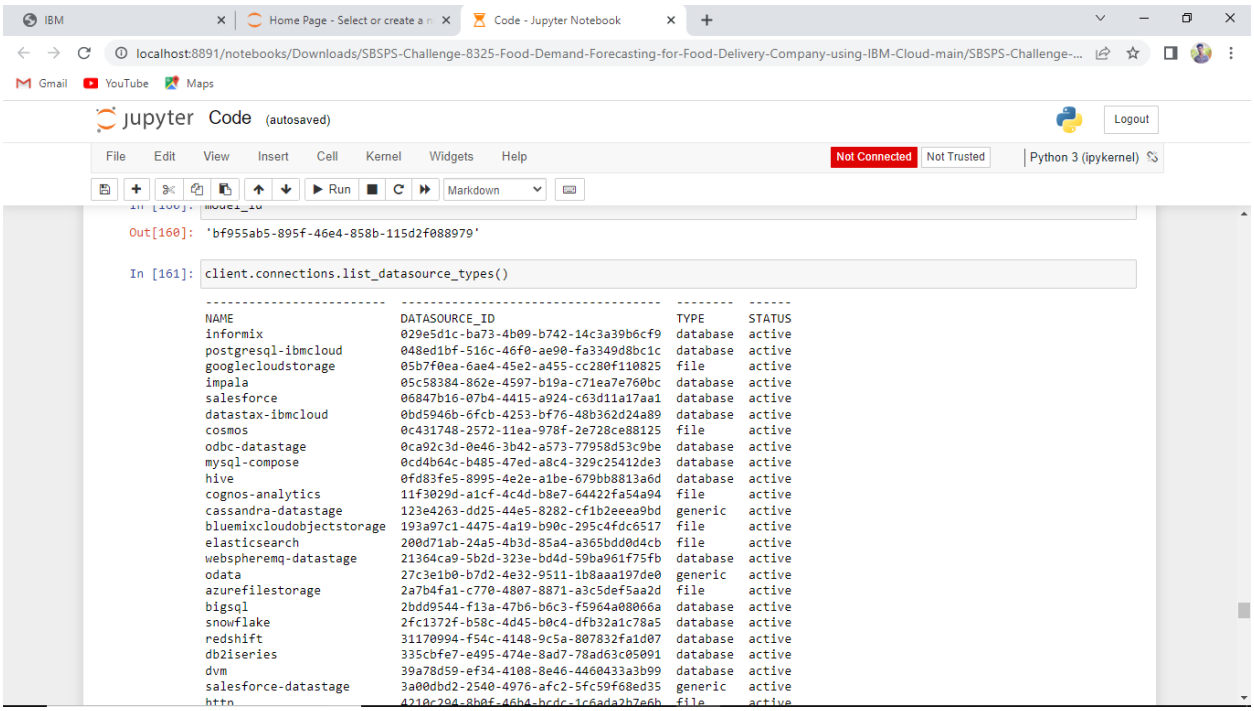
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}
)
model_id = client.repository.get_model_uid(model_details)
This method is deprecated, please use get_model_id()
In [159]:
model_details
Out[159]: {'entity': {'hybrid_pipeline_software_specs': [],
'software_spec': {'id': 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194',
'name': 'default_py3.8'},
'type': 'scikit-learn_0.23'},
'metadata': {'created_at': '2022-02-15T17:58:07.127Z',
'id': 'bf955ab5-895f-46e4-858b-115d2f088979',
'modified_at': '2022-02-15T17:58:11.587Z',
'name': 'food_demand_forecasting_deployment',
'owner': 'IBMid-666001OHYA',
'resource_key': '7d5f514f-9f69-4873-b257-1f443c69acc0',
'space_id': 'f8fe1f68-d683-40df-ad95-f501036c79d2'},
'system': {'warnings': []}}
In [160]:
model_id
Out[160]: 'bf955ab5-895f-46e4-858b-115d2f088979'
In [161]:
client.connections.list_datasource_types()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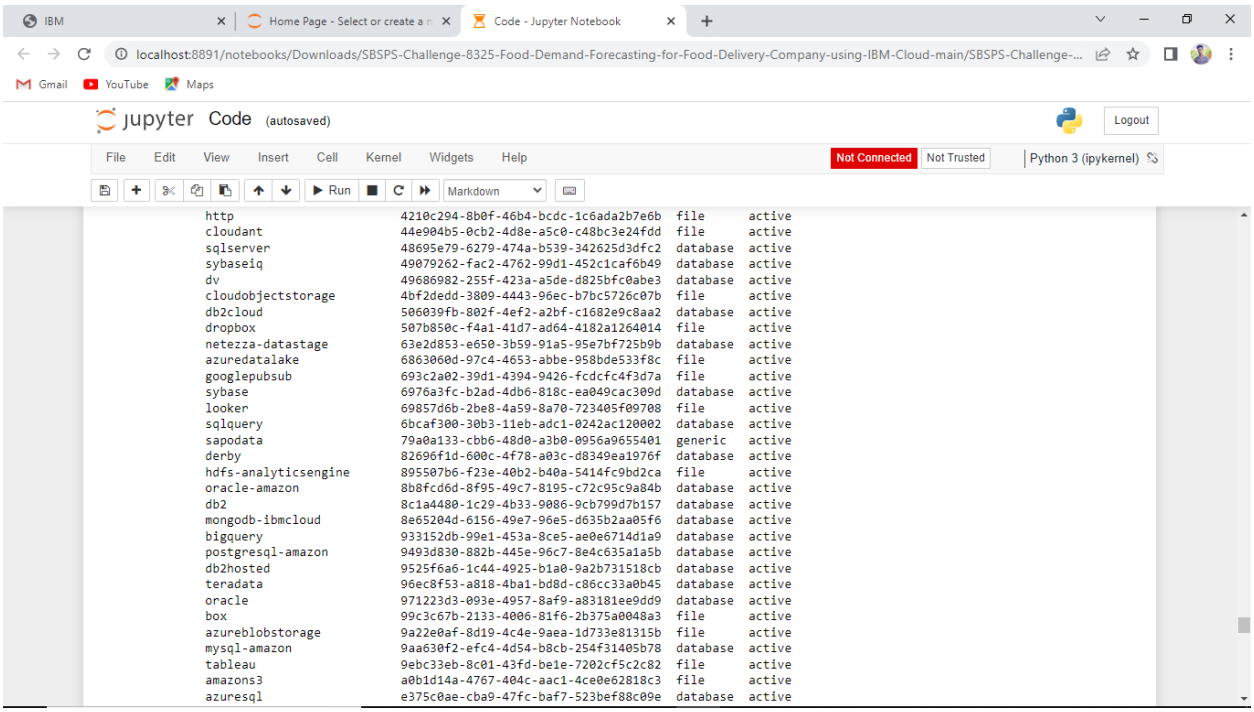
Out[160]: 'bf955ab5-895f-46e4-858b-115d2f088979'
In [161]: client.connections.list_datasource_types()
NAME DATASOURCE_ID TYPE STATUS
informix 029e5d1c-ba73-4b09-b742-14c3a39b6cf9 database active
postgresql-ibmcloud 048ed1bf-516c-46f0-ae90-fa3349d8bc1c database active
googlecloudstorage 05b7f0ea-6ae4-45e2-a455-cc280f110825 file active
impala 05c58384-862e-4597-b19a-c71ea7e760bc database active
salesforce 06847b16-07b4-4415-a924-c63d11a17aa1 database active
datastax-ibmcloud 0bd5946b-6fcb-4253-bf76-48b362d24a89 database active
cosmos 0c431748-2572-11ea-978f-2e728ce88125 file active
odbc-datastage 0ca92c3d-0e46-3b42-a573-77958d53c9be database active
mysql-compose 0cd4b64c-b485-47ed-a8c4-329c25412de3 database active
hive 0fd83fe5-8995-4e2e-a1be-679bb8813a6d database active
cognos-analytics 11f3029d-a1cf-4c4d-b8e7-64422fa54a94 file active
cassandra-datastage 123e4263-dd25-44e5-8282-cf1b2eeea9bd generic active
bluemixcloudobjectstorage 193a97c1-4475-4a19-b90c-295c4fdc6517 file active
elasticsearch 200d71ab-24a5-4b3d-85a4-a365bdd0d4cb file active
webspheremq-datastage 21364ca9-5b2d-323e-bd4d-59ba961f75fb database active
odata 27c3e1b0-b7d2-4e32-9511-1b8aaa197de0 generic active
azurefilestorage 2a7b4fa1-c770-4807-8871-a3c5def5aa2d file active
bigsql 2bdd9544-f13a-47b6-b6c3-f5964a08066a database active
snowflake 2fc1372f-b58c-4d45-b0c4-dfb32a1c78a5 database active
redshift 31170994-f54c-4148-9c5a-807832fa1d07 database active
db2iseries 335cbfe7-e495-474e-8ad7-78ad63c05091 database active
dvm 39a78d59-ef34-4108-8e46-4460433a3b99 database active
salesforce-datastage 3a00dbd2-2540-4976-afc2-5fc59f68ed35 generic active
http 4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b file active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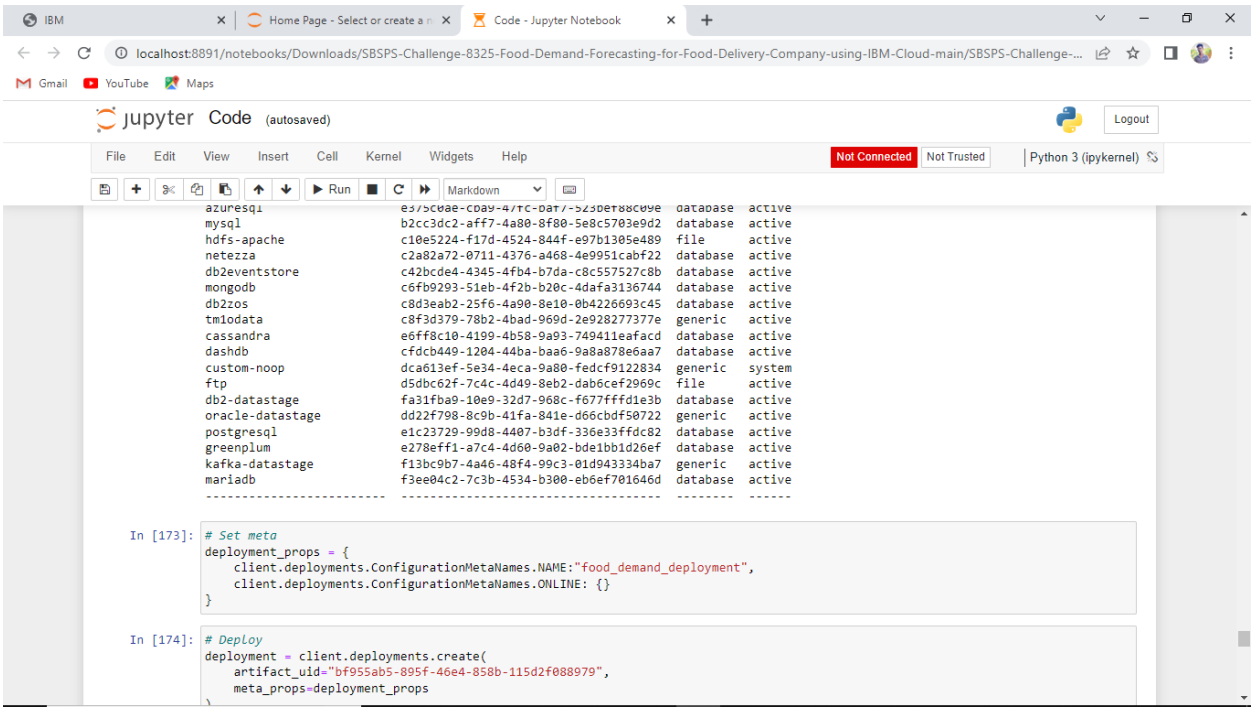
http 4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b file active
cloudant 44e904b5-0cb2-4d8e-a5c0-c48bc3e24fdd file active
sqlserver 48695e79-6279-474a-b539-342625d3dfc2 database active
sybaseiq 49079262-fac2-4762-99d1-452c1caf6b49 database active
dv 49686982-255f-423a-a5de-d825bfc0abe3 database active
cloudobjectstorage 4bf2dedd-3809-4443-96ec-b7bc5726c07b file active
db2cloud 506039fb-802f-4ef2-a2bf-c1682e9c8aa2 database active
dropbox 507b850c-f4a1-41d7-ad64-4182a1264014 file active
netezza-datastage 63e2d853-e650-3b59-91a5-95e7bf725b9b database active
azuredatalake 6863060d-97c4-4653-abbe-958bde533f8c file active
googlepubsub 693c2a02-39d1-4394-9426-fcdcfc4f3d7a file active
sybase 6976a3fc-b2ad-4db6-818c-ea049cac309d database active
looker 69857d6b-2be8-4a59-8a70-723405f09708 file active
sqlquery 6bcaf300-30b3-11eb-adc1-0242ac120002 database active
sapodata 79a0a133-cbb6-48d0-a3b0-0956a9655401 generic active
derby 82696f1d-600c-4f78-a03c-d8349ea1976f database active
hdfs-analyticsengine 895507b6-f23e-40b2-b40a-5414fc9bd2ca file active
oracle-amazon 8b8fcd6d-8f95-49c7-8195-c72c95c9a84b database active
db2 8c1a4480-1c29-4b33-9086-9cb799d7b157 database active
mongodb-ibmcloud 8e65204d-6156-49e7-96e5-d635b2aa05f6 database active
bigquery 933152db-99e1-453a-8ce5-ae0e6714d1a9 database active
postgresql-amazon 9493d830-882b-445e-96c7-8e4c635a1a5b database active
db2hosted 9525f6a6-1c44-4925-b1a0-9a2b731518cb database active
teradata 96ec8f53-a818-4ba1-bd8d-c86cc33a0b45 database active
oracle 971223d3-093e-4957-8af9-a83181ee9dd9 database active
box 99c3c67b-2133-4006-81f6-2b375a0048a3 file active
azureblobstorage 9a22e0af-8d19-4c4e-9aea-1d733e81315b file active
mysql-amazon 9aa630f2-efc4-4d54-b8cb-254f31405b78 database active
tableau 9ebc33eb-8c01-43fd-be1e-7202cf5c2c82 file active
amazons3 a0b1d14a-4767-404c-aac1-4ce0e62818c3 file active
azuresql e375c0ae-cba9-47fc-baf7-523bef88c09e database active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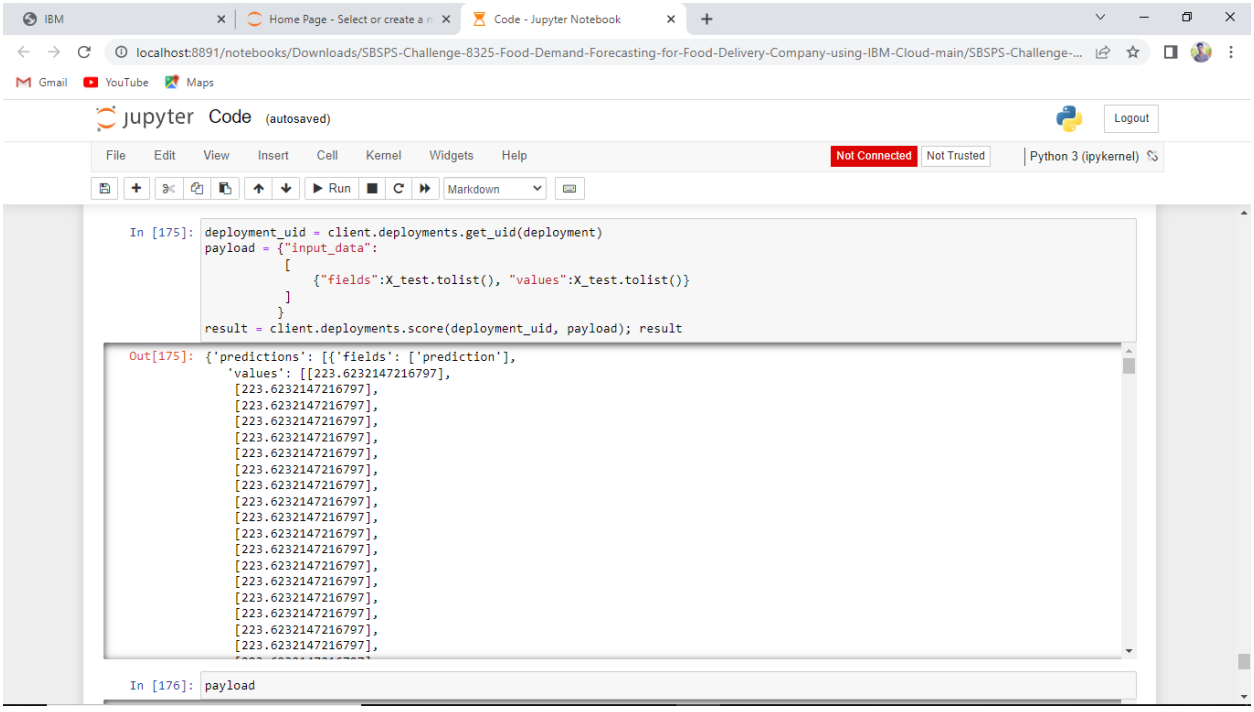
azuresql e575cdae-cda9-47fc-baf7-523bef88c09e database active
mysql b2cc3dc2-aff7-4a80-8f80-5e8c5703e9d2 database active
hdfs-apache c10e5224-f17d-4524-844f-e97b1305e489 file active
netezza c2a82a72-0711-4376-a468-4e9951cabf22 database active
db2eventstore c42bcde4-4345-4fb4-b7da-c8c557527c8b database active
mongodb c6fb9293-51eb-4f2b-b20c-4dafa3136744 database active
db2zos c8d3eab2-25f6-4a90-8e10-0b4226693c45 database active
tm1odata c8f3d379-78b2-4bad-969d-2e928277377e generic active
cassandra e6ff8c10-4199-4b58-9a93-749411eafacd database active
dashdb cfdcb449-1204-44ba-baa6-9a8a878e6aa7 database active
custom-noop dca613ef-5e34-4eca-9a80-fedcf9122834 generic system
ftp d5dbc62f-7c4c-4d49-8eb2-dab6cef2969c file active
db2-datastage fa31fba9-10e9-32d7-968c-f677fffd1e3b database active
oracle-datastage dd22f798-8c9b-41fa-841e-d66cbdf50722 generic active
postgresql e1c23729-99d8-4407-b3df-336e33ffdc82 database active
greenplum e278eff1-a7c4-4d60-9a02-bde1bb1d26ef database active
kafka-datastage f13bc9b7-4a46-48f4-99c3-01d943334ba7 generic active
mariadb f3ee04c2-7c3b-4534-b300-eb6ef701646d database active
In [173]:
# Set meta
deployment_props = {
client.deployments.ConfigurationMetaNames.NAME:"food_demand_deployment",
client.deployments.ConfigurationMetaNames.ONLINE: {}
}
In [174]:
# Deploy
deployment = client.deployments.create(
artifact_uid="bf955ab5-895f-46e4-858b-115d2f088979",
meta_props=deployment_props
)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In [175]:
deployment_uid = client.deployments.get_uid(deployment)
payload = {"input_data":
[
{"fields":X_test.tolist(), "values":X_test.tolist()}
]
}
result = client.deployments.score(deployment_uid, payload); result
Out[175]: {'predictions': [{'fields': ['prediction'],
'values': [[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
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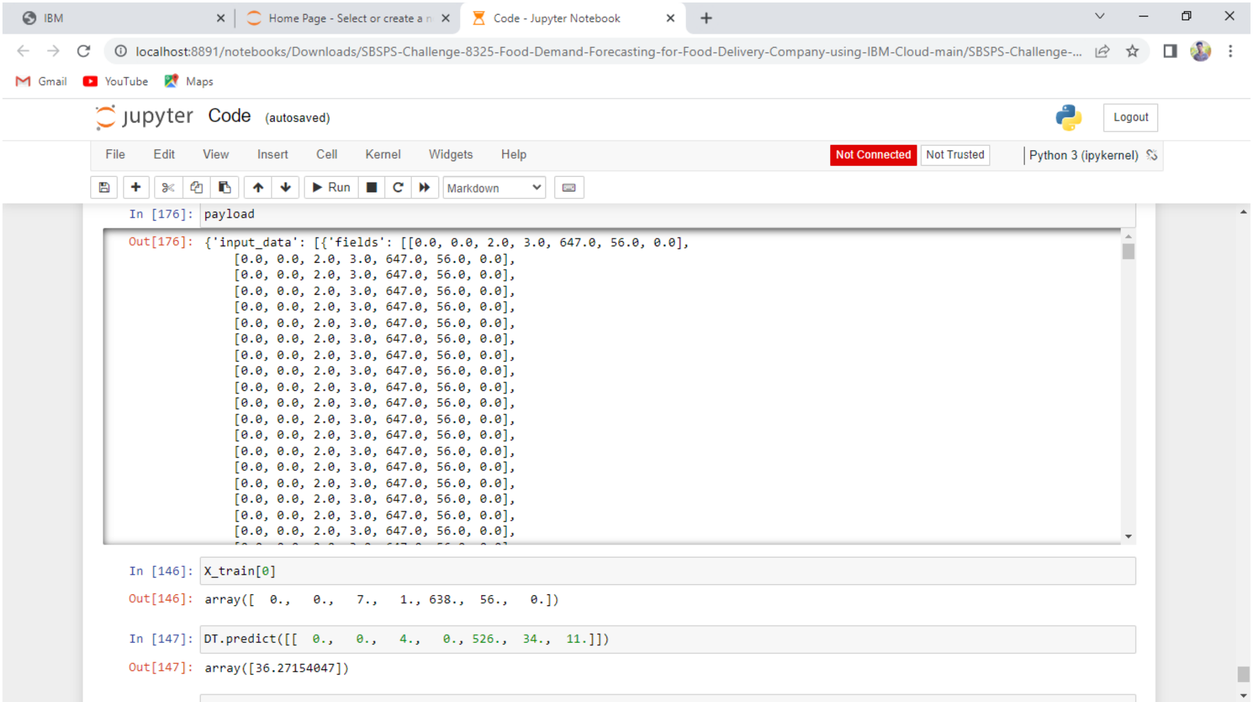
In [176]:
payload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Python 3 (ipykernel)
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In [176]: payload
Out[176]: {'input_data': [{'fields': [[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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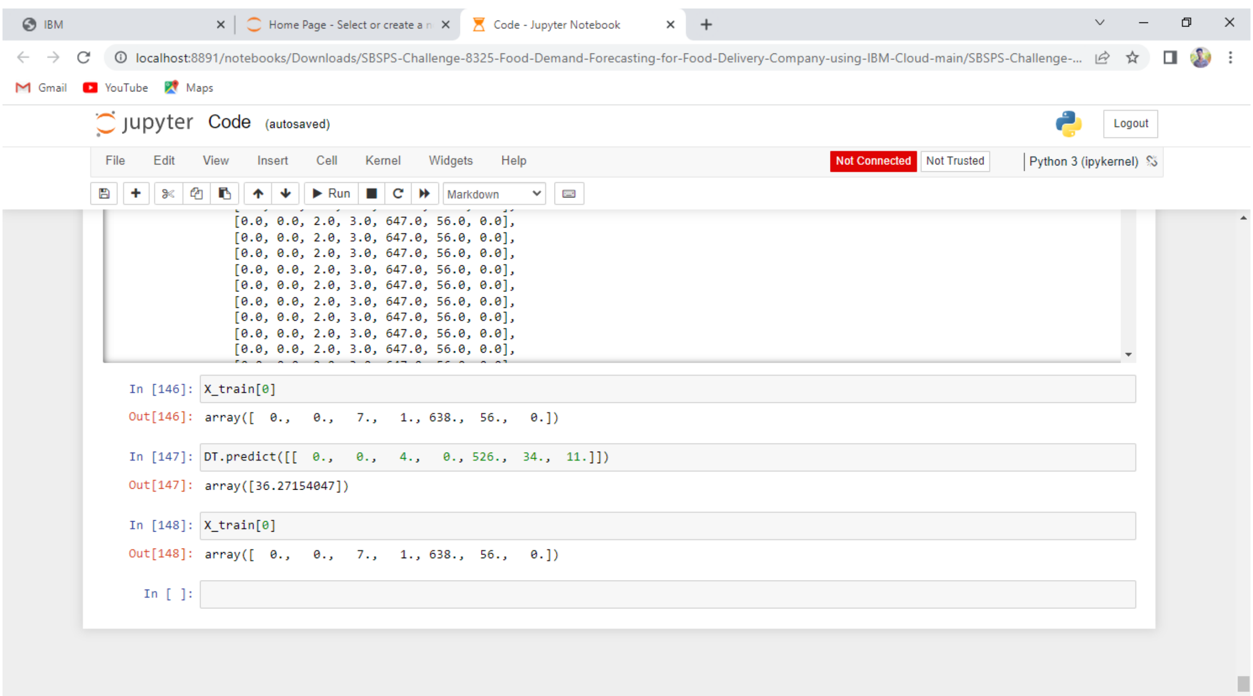
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])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[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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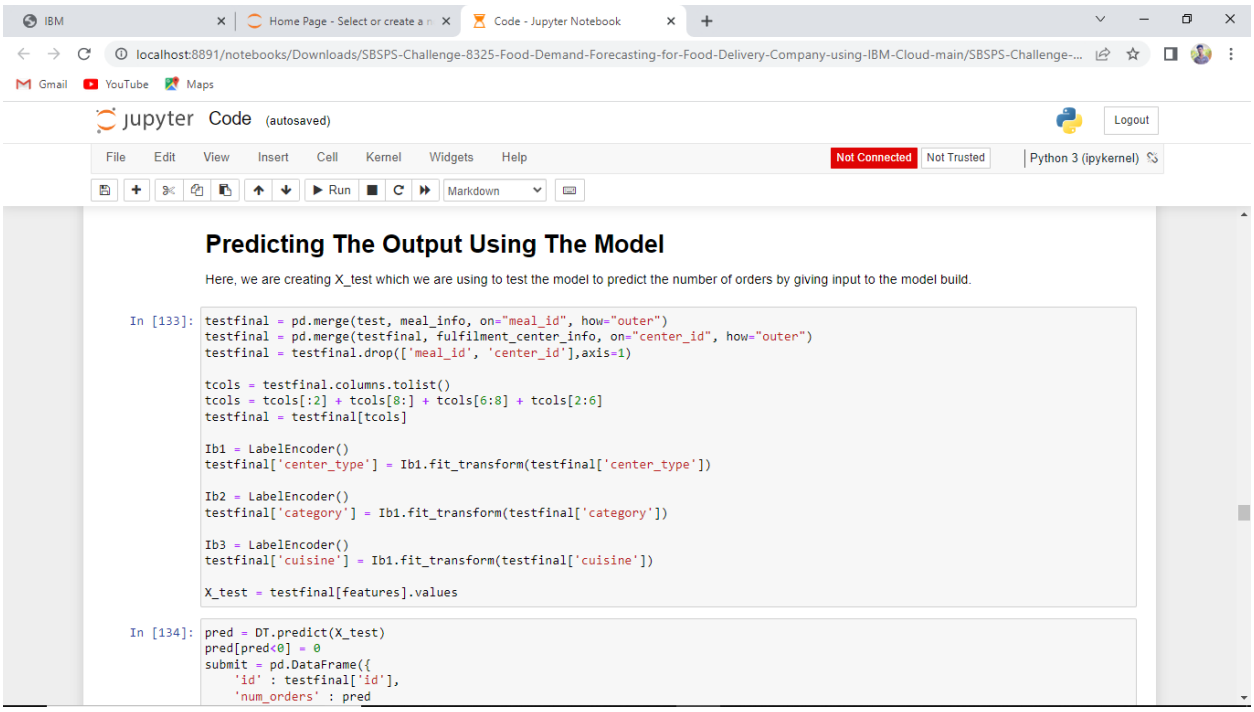
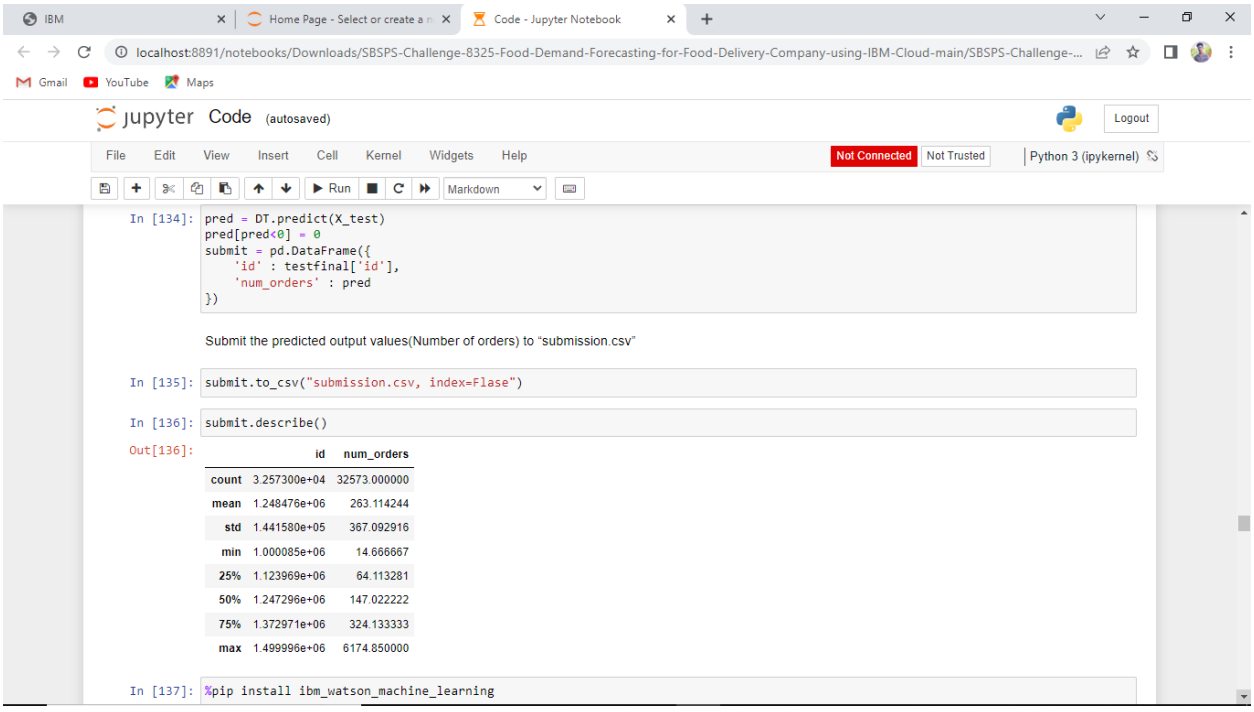
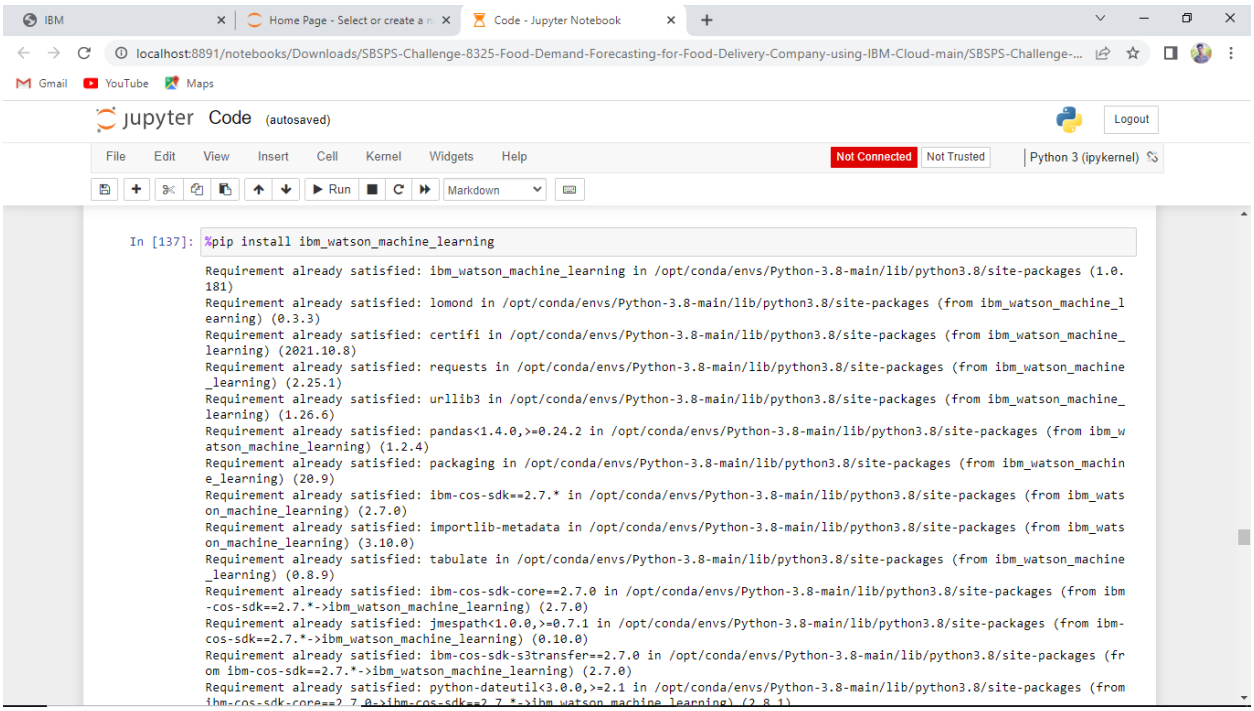
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])
In [148]: X_train[0]
Out[148]: array([0., 0., 7., 1., 638., 56., 0.])
In [ ]:

Team Member 2



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Maps
jupyter Code (autosaved)
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Not Connected
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Python 3 (ipykernel)
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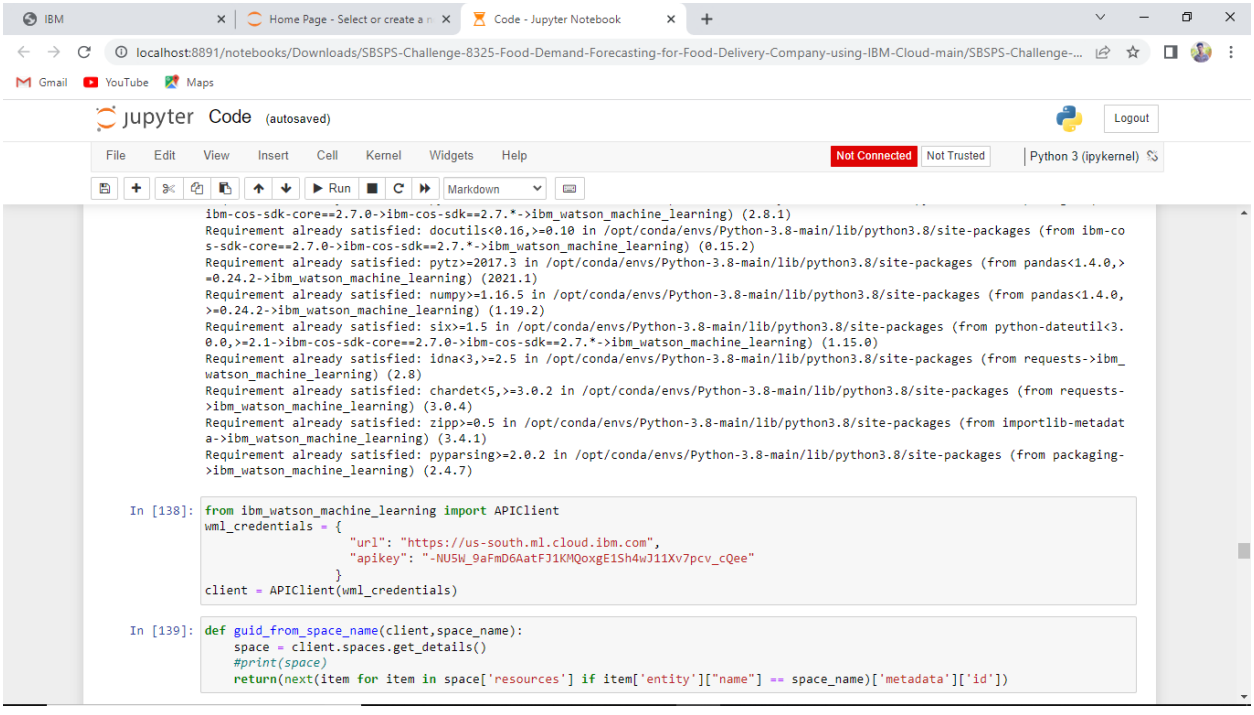
Markdown
In [137]: %pip install ibm_watson_machine_learning
Requirement already satisfied: ibm_watson_machine_learning in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (1.0.181)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.3.3)
Requirement already satisfied: certifi in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2021.10.8)
Requirement already satisfied: requests in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.25.1)
Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.26.6)
Requirement already satisfied: pandas<1.4.0,>=0.24.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.2.4)
Requirement already satisfied: packaging in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (20.9)
Requirement already satisfied: ibm-cos-sdk==2.7.* in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: importlib-metadata in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (3.10.0)
Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.8.9)
Requirement already satisfied: ibm-cos-sdk-core==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.10.0)
Requirement already satisfied: ibm-cos-sdk-s3transfer==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from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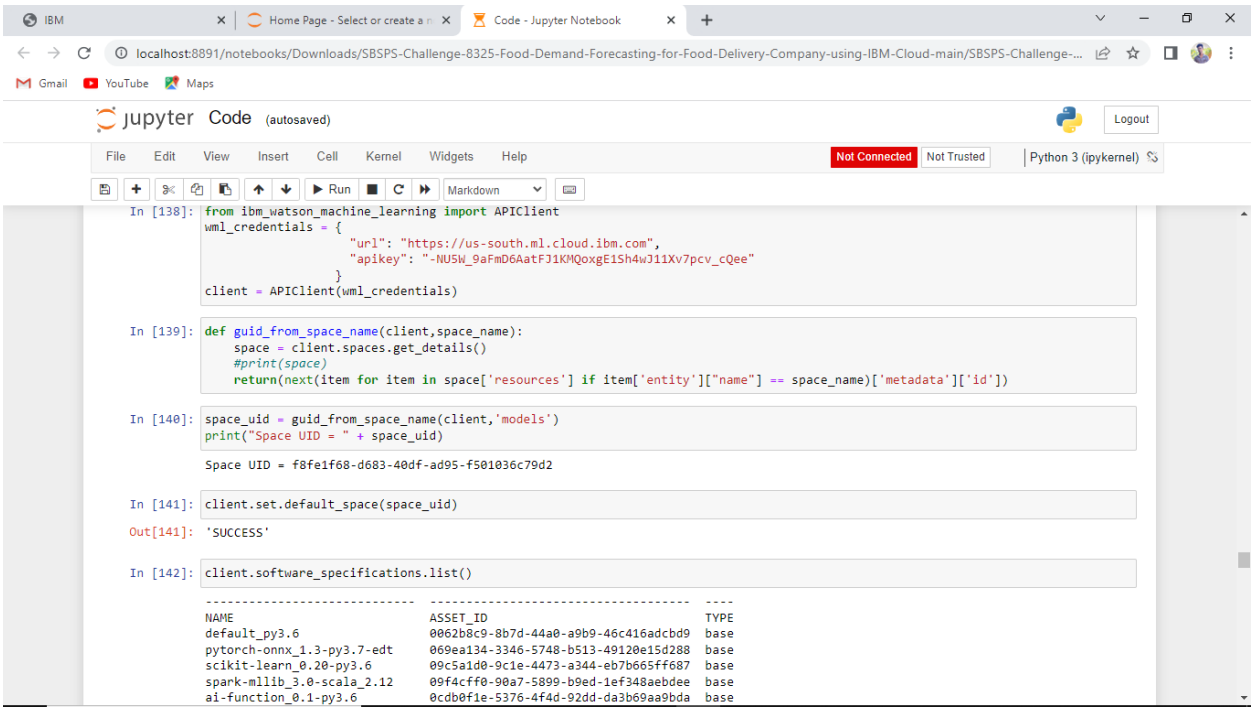
ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.8.1)
Requirement already satisfied: docutils<0.16,>=0.10 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.15.2)
Requirement already satisfied: pytz>=2017.3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (2021.1)
Requirement already satisfied: numpy>=1.16.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (1.19.2)
Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from python-dateutil<3.0.0,>=2.1->ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (1.15.0)
Requirement already satisfied: idna<3,>=2.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (2.8)
Requirement already satisfied: chardet<5,>=3.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (3.0.4)
Requirement already satisfied: zipp>=0.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from importlib-metadata->ibm_watson_machine_learning) (3.4.1)
Requirement already satisfied: pyparsing>=2.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from packaging->ibm_watson_machine_learning) (2.4.7)
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])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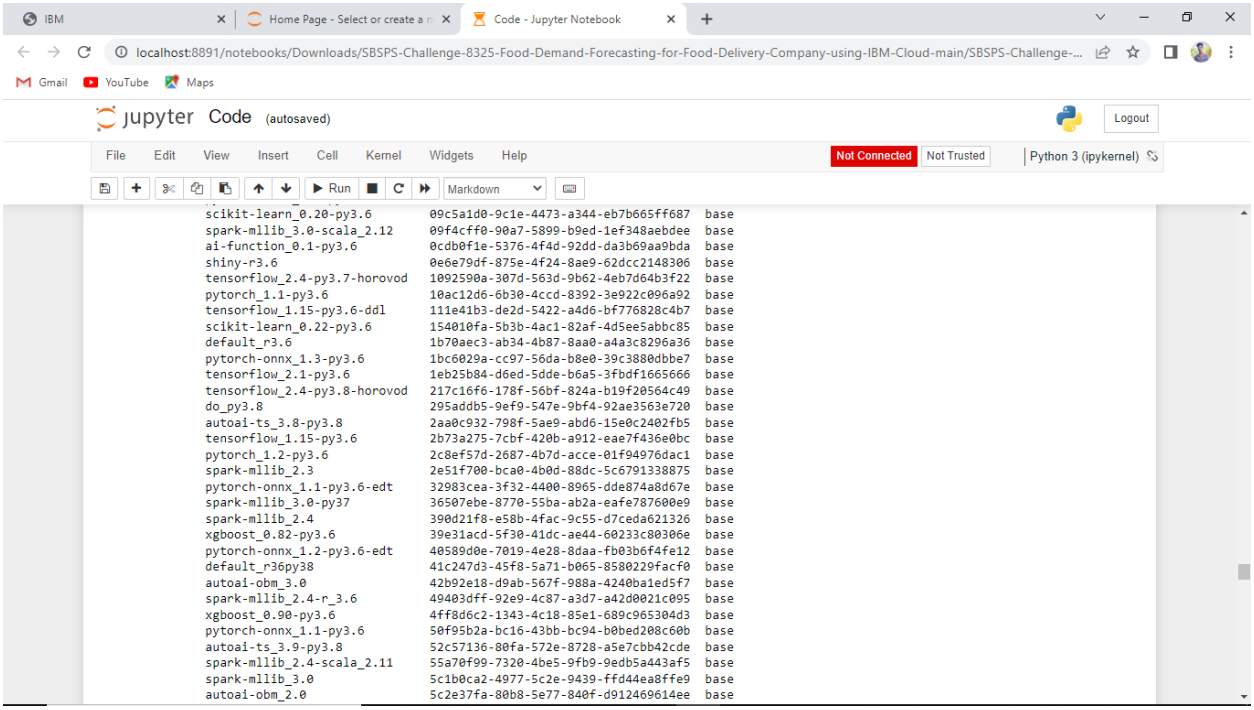
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])
In [140]:
space_uid = guid_from_space_name(client,'models')
print("Space UID = " + space_uid)
Space UID = f8fe1f68-d683-40df-ad95-f501036c79d2
In [141]:
client.set.default_space(space_uid)
Out[141]:
'SUCCESS'
In [142]:
client.software_specifications.list()
NAME ASSET_ID TYPE
default_py3.6 0062b8c9-8b7d-44a0-a9b9-46c416adcbd9 base
pytorch-onnx_1.3-py3.7-edt 069ea134-3346-5748-b513-49120e15d288 base
scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base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scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base
shiny-r3.6 0e6e79df-875e-4f24-8ae9-62dcc2148306 base
tensorflow_2.4-py3.7-horovod 1092590a-307d-563d-9b62-4eb7d64b3f22 base
pytorch_1.1-py3.6 10ac12d6-6b30-4ccd-8392-3e922c096a92 base
tensorflow_1.15-py3.6-ddl 111e41b3-de2d-5422-a4d6-bf776828c4b7 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
tensorflow_2.1-py3.6 1eb25b84-d6ed-5dde-b6a5-3fbdf1665666 base
tensorflow_2.4-py3.8-horovod 217c16f6-178f-56bf-824a-b19f20564c49 base
do_py3.8 295addb5-9ef9-547e-9bf4-92ae3563e720 base
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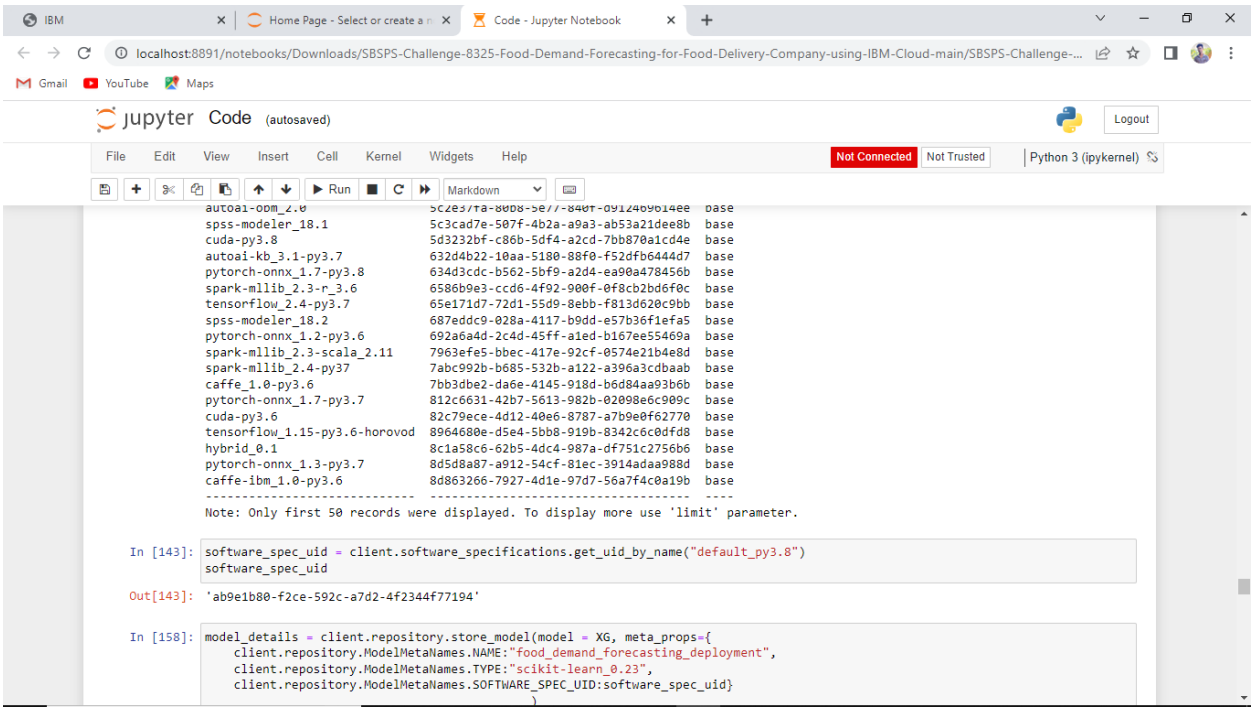
spark-mllib_3.0-py37 36507ebe-8770-55ba-ab2a-eafe787600e9 base
spark-mllib_2.4 390d21f8-e58b-4fac-9c55-d7ceda621326 base
xgboost_0.82-py3.6 39e31acd-5f30-41dc-ae44-60233c80306e base
pytorch-onnx_1.2-py3.6-edt 40589d0e-7019-4e28-8daa-fb03b6f4fe12 base
default_r36py38 41c247d3-45f8-5a71-b065-8580229facf0 base
autoai-obm_3.0 42b92e18-d9ab-567f-988a-4240ba1ed5f7 base
spark-mllib_2.4-r_3.6 49403dff-92e9-4c87-a3d7-a42d0021c095 base
xgboost_0.90-py3.6 4ff8d6c2-1343-4c18-85e1-689c965304d3 base
pytorch-onnx_1.1-py3.6 50f95b2a-bc16-43bb-bc94-b0bed208c60b base
autoai-ts_3.9-py3.8 52c57136-80fa-572e-8728-a5e7cbb42cde base
spark-mllib_2.4-scala_2.11 55a70f99-7320-4be5-9fb9-9edb5a443af5 base
spark-mllib_3.0 5c1b0ca2-4977-5c2e-9439-ffd44ea8ffe9 base
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base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jupyter Code (autosaved)
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Not Connected
Not Trusted
Python 3 (ipykernel)
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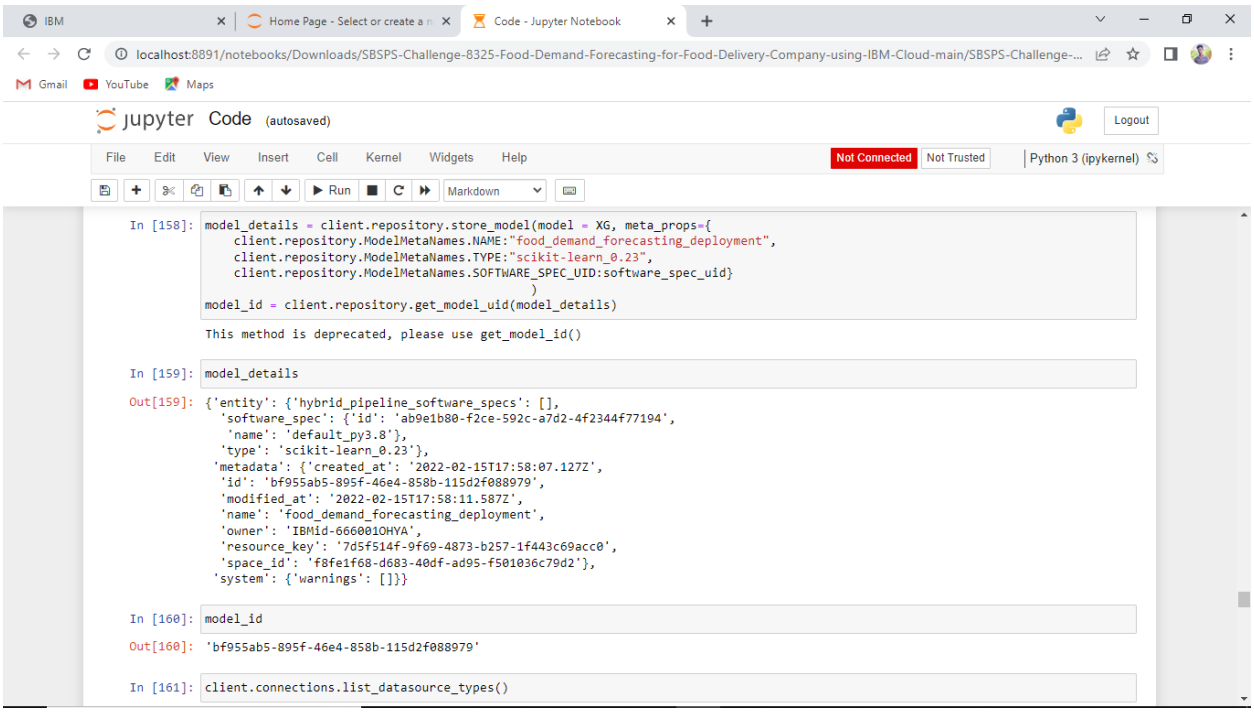
Markdown
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base
spss-modeler_18.1 5c3cad7e-507f-4b2a-a9a3-ab53a21dee8b base
cuda-py3.8 5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e base
autoai-kb_3.1-py3.7 632d4b22-10aa-5180-88f0-f52dfb6444d7 base
pytorch-onnx_1.7-py3.8 634d3cdc-b562-5bf9-a2d4-ea90a478456b base
spark-mllib_2.3-r_3.6 6586b9e3-ccd6-4f92-900f-0f8cb2bd6f0c base
tensorflow_2.4-py3.7 65e171d7-72d1-55d9-8ebb-f813d620c9bb base
spss-modeler_18.2 687eddc9-028a-4117-b9dd-e57b36f1efa5 base
pytorch-onnx_1.2-py3.6 692a6a4d-2c4d-45ff-a1ed-b167ee55469a base
spark-mllib_2.3-scala_2.11 7963efe5-bbec-417e-92cf-0574e21b4e8d base
spark-mllib_2.4-py37 7abc992b-b685-532b-a122-a396a3cdbaab base
caffe_1.0-py3.6 7bb3dbe2-da6e-4145-918d-b6d84aa93b6b base
pytorch-onnx_1.7-py3.7 812c6631-42b7-5613-982b-02098e6c909c base
cuda-py3.6 82c79ece-4d12-40e6-8787-a7b9e0f62770 base
tensorflow_1.15-py3.6-horovod 8964680e-d5e4-5bb8-919b-8342c6c0dfd8 base
hybrid_0.1 8c1a58c6-62b5-4dc4-987a-df751c2756b6 base
pytorch-onnx_1.3-py3.7 8d5d8a87-a912-54cf-81ec-3914adaa988d base
caffe-ibm_1.0-py3.6 8d863266-7927-4d1e-97d7-56a7f4c0a19b base
Note: Only first 50 records were displayed. To display more use 'limit' parameter.
In [143]:
software_spec_uid = client.software_specifications.get_uid_by_name("default_py3.8")
software_spec_uid
Out[143]: 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194'
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}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Maps
jupyter Code (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
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Python 3 (ipykernel)
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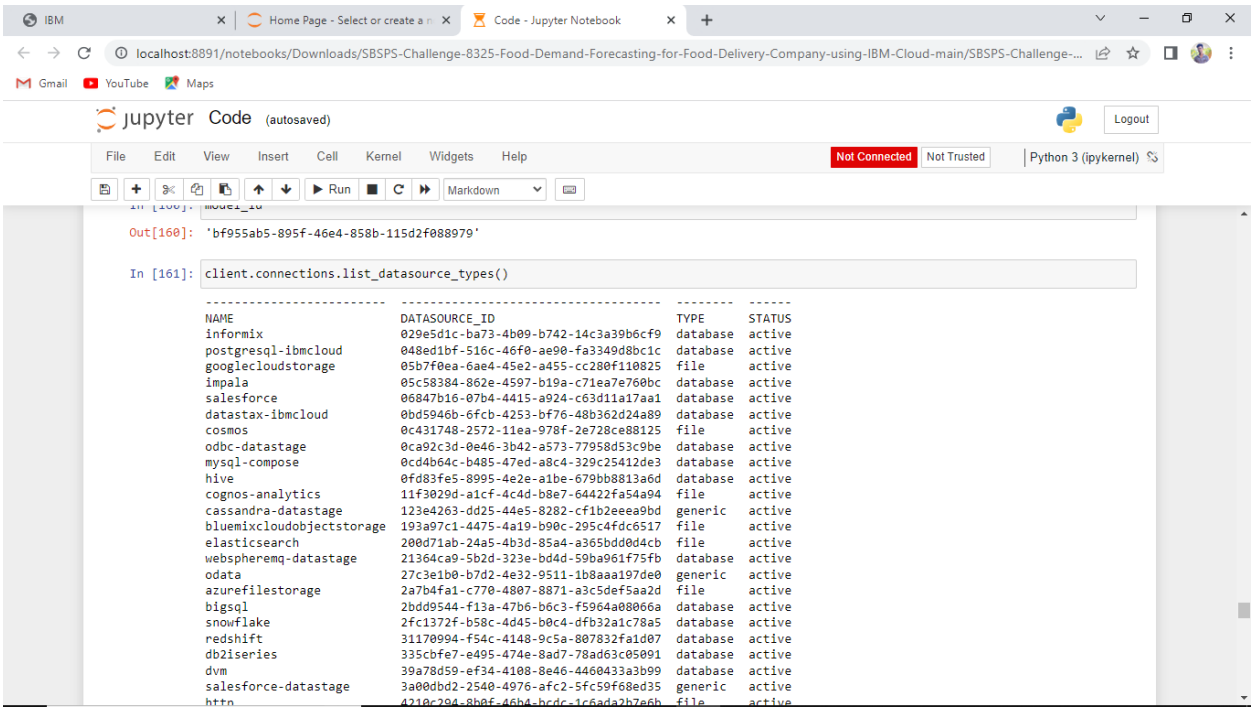
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}
)
model_id = client.repository.get_model_uid(model_details)
This method is deprecated, please use get_model_id()
In [159]:
model_details
Out[159]: {'entity': {'hybrid_pipeline_software_specs': [],
'software_spec': {'id': 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194',
'name': 'default_py3.8'},
'type': 'scikit-learn_0.23'},
'metadata': {'created_at': '2022-02-15T17:58:07.127Z',
'id': 'bf955ab5-895f-46e4-858b-115d2f088979',
'modified_at': '2022-02-15T17:58:11.587Z',
'name': 'food_demand_forecasting_deployment',
'owner': 'IBMid-666001OHYA',
'resource_key': '7d5f514f-9f69-4873-b257-1f443c69acc0',
'space_id': 'f8fe1f68-d683-40df-ad95-f501036c79d2'},
'system': {'warnings': []}}
In [160]:
model_id
Out[160]: 'bf955ab5-895f-46e4-858b-115d2f088979'
In [161]:
client.connections.list_datasource_types()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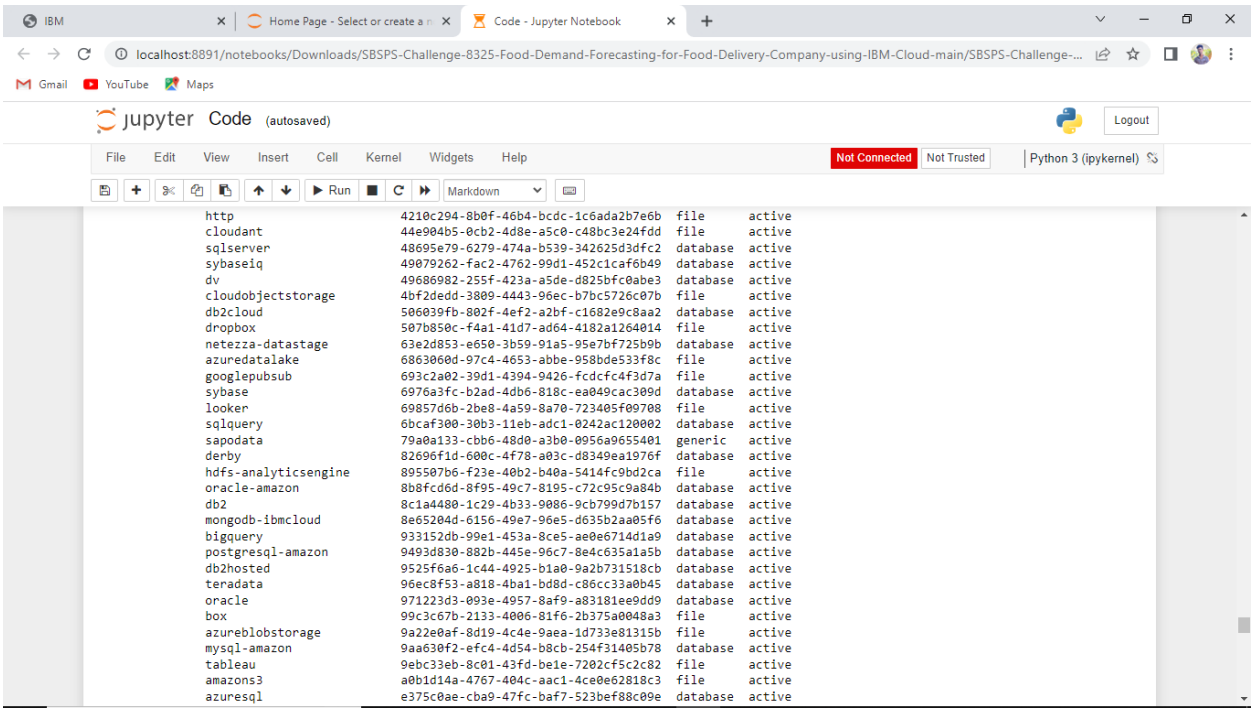
Out[160]: 'bf955ab5-895f-46e4-858b-115d2f088979'
In [161]: client.connections.list_datasource_types()
NAME DATASOURCE_ID TYPE STATUS
informix 029e5d1c-ba73-4b09-b742-14c3a39b6cf9 database active
postgresql-ibmcloud 048ed1bf-516c-46f0-ae90-fa3349d8bc1c database active
googlecloudstorage 05b7f0ea-6ae4-45e2-a455-cc280f110825 file active
impala 05c58384-862e-4597-b19a-c71ea7e760bc database active
salesforce 06847b16-07b4-4415-a924-c63d11a17aa1 database active
datastax-ibmcloud 0bd5946b-6fcb-4253-bf76-48b362d24a89 database active
cosmos 0c431748-2572-11ea-978f-2e728ce88125 file active
odbc-datastage 0ca92c3d-0e46-3b42-a573-77958d53c9be database active
mysql-compose 0cd4b64c-b485-47ed-a8c4-329c25412de3 database active
hive 0fd83fe5-8995-4e2e-a1be-679bb8813a6d database active
cognos-analytics 11f3029d-a1cf-4c4d-b8e7-64422fa54a94 file active
cassandra-datastage 123e4263-dd25-44e5-8282-cf1b2eeea9bd generic active
bluemixcloudobjectstorage 193a97c1-4475-4a19-b90c-295c4fdc6517 file active
elasticsearch 200d71ab-24a5-4b3d-85a4-a365bdd0d4cb file active
webspheremq-datastage 21364ca9-5b2d-323e-bd4d-59ba961f75fb database active
odata 27c3e1b0-b7d2-4e32-9511-1b8aaa197de0 generic active
azurefilestorage 2a7b4fa1-c770-4807-8871-a3c5def5aa2d file active
bigsql 2bdd9544-f13a-47b6-b6c3-f5964a08066a database active
snowflake 2fc1372f-b58c-4d45-b0c4-dfb32a1c78a5 database active
redshift 31170994-f54c-4148-9c5a-807832fa1d07 database active
db2iseries 335cbfe7-e495-474e-8ad7-78ad63c05091 database active
dvm 39a78d59-ef34-4108-8e46-4460433a3b99 database active
salesforce-datastage 3a00dbd2-2540-4976-afc2-5fc59f68ed35 generic active
http 4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b file active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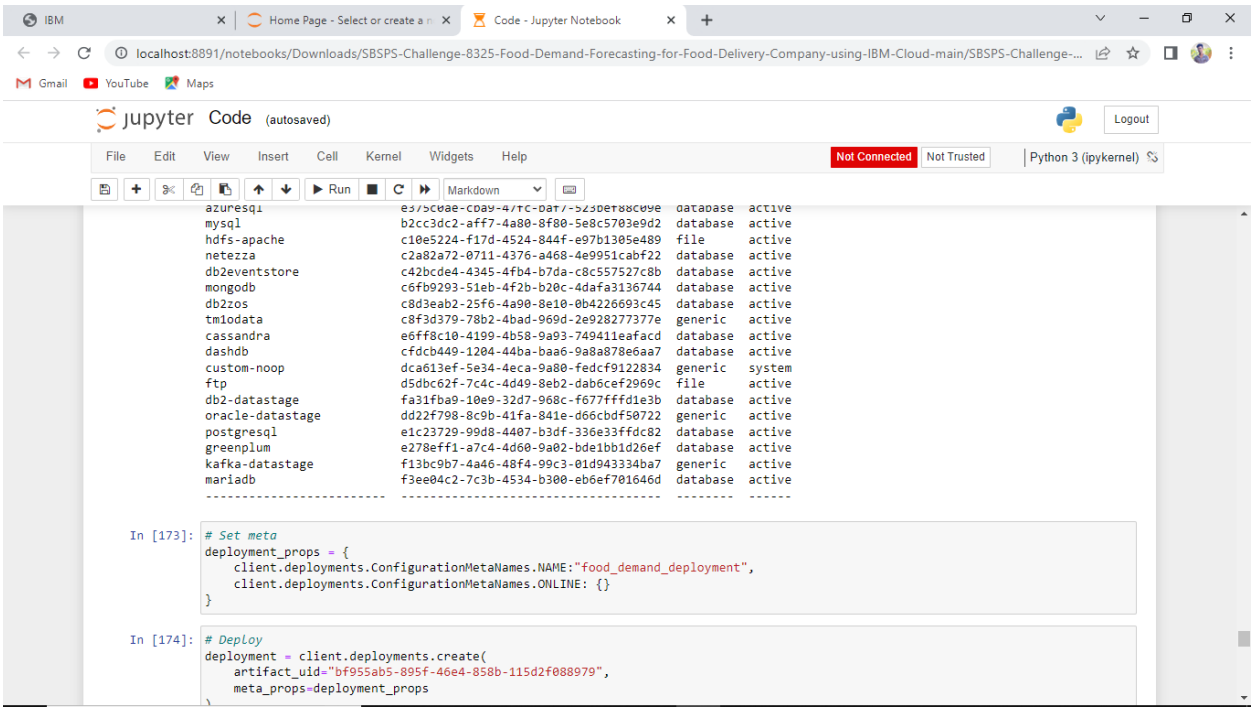
http 4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b file active
cloudant 44e904b5-0cb2-4d8e-a5c0-c48bc3e24fdd file active
sqlserver 48695e79-6279-474a-b539-342625d3dfc2 database active
sybaseiq 49079262-fac2-4762-99d1-452c1caf6b49 database active
dv 49686982-255f-423a-a5de-d825bfc0abe3 database active
cloudobjectstorage 4bf2dedd-3809-4443-96ec-b7bc5726c07b file active
db2cloud 506039fb-802f-4ef2-a2bf-c1682e9c8aa2 database active
dropbox 507b850c-f4a1-41d7-ad64-4182a1264014 file active
netezza-datastage 63e2d853-e650-3b59-91a5-95e7bf725b9b database active
azuredatalake 6863060d-97c4-4653-abbe-958bde533f8c file active
googlepubsub 693c2a02-39d1-4394-9426-fcdcfc4f3d7a file active
sybase 6976a3fc-b2ad-4db6-818c-ea049cac309d database active
looker 69857d6b-2be8-4a59-8a70-723405f09708 file active
sqlquery 6bcaf300-30b3-11eb-adc1-0242ac120002 database active
sapodata 79a0a133-cbb6-48d0-a3b0-0956a9655401 generic active
derby 82696f1d-600c-4f78-a03c-d8349ea1976f database active
hdfs-analyticsengine 895507b6-f23e-40b2-b40a-5414fc9bd2ca file active
oracle-amazon 8b8fcd6d-8f95-49c7-8195-c72c95c9a84b database active
db2 8c1a4480-1c29-4b33-9086-9cb799d7b157 database active
mongodb-ibmcloud 8e65204d-6156-49e7-96e5-d635b2aa05f6 database active
bigquery 933152db-99e1-453a-8ce5-ae0e6714d1a9 database active
postgresql-amazon 9493d830-882b-445e-96c7-8e4c635a1a5b database active
db2hosted 9525f6a6-1c44-4925-b1a0-9a2b731518cb database active
teradata 96ec8f53-a818-4ba1-bd8d-c86cc33a0b45 database active
oracle 971223d3-093e-4957-8af9-a83181ee9dd9 database active
box 99c3c67b-2133-4006-81f6-2b375a0048a3 file active
azureblobstorage 9a22e0af-8d19-4c4e-9aea-1d733e81315b file active
mysql-amazon 9aa630f2-efc4-4d54-b8cb-254f31405b78 database active
tableau 9ebc33eb-8c01-43fd-be1e-7202cf5c2c82 file active
amazons3 a0b1d14a-4767-404c-aac1-4ce0e62818c3 file active
azuresql e375c0ae-cba9-47fc-baf7-523bef88c09e database active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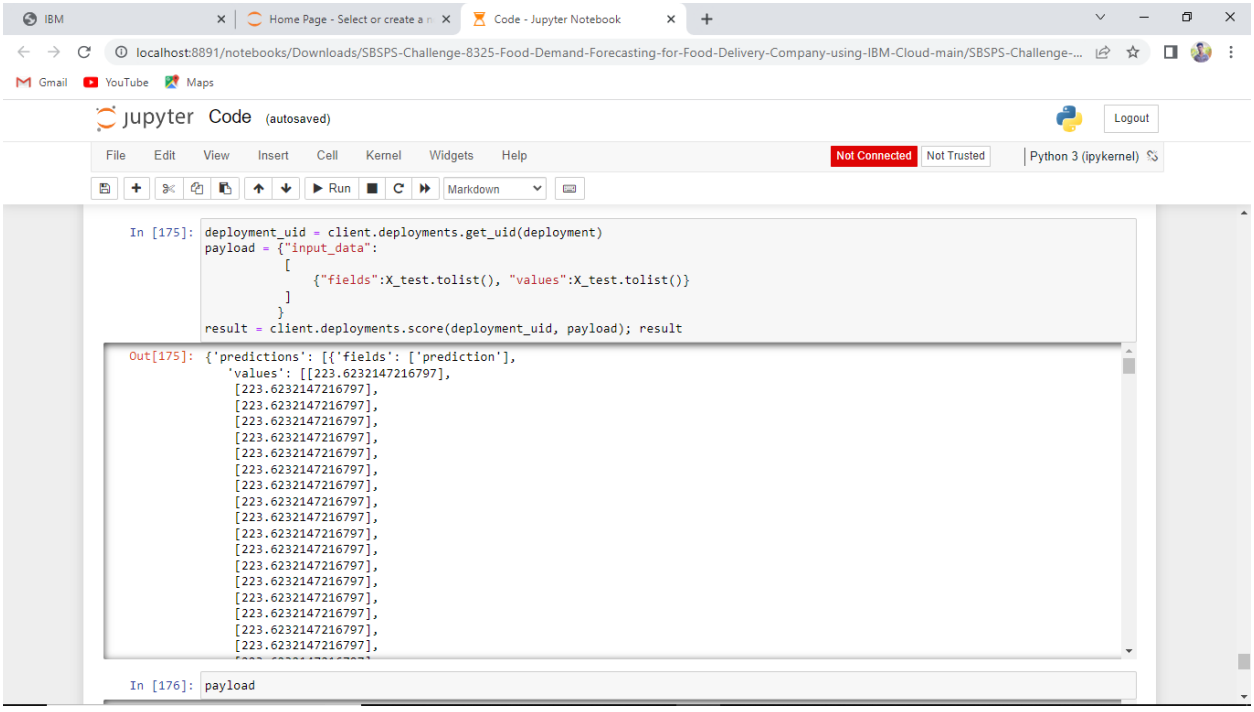
azuresql e575cdae-cda9-47fc-baf7-523bef88c09e database active
mysql b2cc3dc2-aff7-4a80-8f80-5e8c5703e9d2 database active
hdfs-apache c10e5224-f17d-4524-844f-e97b1305e489 file active
netezza c2a82a72-0711-4376-a468-4e9951cabf22 database active
db2eventstore c42bcde4-4345-4fb4-b7da-c8c557527c8b database active
mongodb c6fb9293-51eb-4f2b-b20c-4dafa3136744 database active
db2zos c8d3eab2-25f6-4a90-8e10-0b4226693c45 database active
tm1odata c8f3d379-78b2-4bad-969d-2e928277377e generic active
cassandra e6ff8c10-4199-4b58-9a93-749411eafacd database active
dashdb cfdcb449-1204-44ba-baa6-9a8a878e6aa7 database active
custom-noop dca613ef-5e34-4eca-9a80-fedcf9122834 generic system
ftp d5dbc62f-7c4c-4d49-8eb2-dab6cef2969c file active
db2-datastage fa31fba9-10e9-32d7-968c-f677fffd1e3b database active
oracle-datastage dd22f798-8c9b-41fa-841e-d66cbdf50722 generic active
postgresql e1c23729-99d8-4407-b3df-336e33ffdc82 database active
greenplum e278eff1-a7c4-4d60-9a02-bde1bb1d26ef database active
kafka-datastage f13bc9b7-4a46-48f4-99c3-01d943334ba7 generic active
mariadb f3ee04c2-7c3b-4534-b300-eb6ef701646d database active
In [173]:
# Set meta
deployment_props = {
client.deployments.ConfigurationMetaNames.NAME:"food_demand_deployment",
client.deployments.ConfigurationMetaNames.ONLINE: {}
}
In [174]:
# Deploy
deployment = client.deployments.create(
artifact_uid="bf955ab5-895f-46e4-858b-115d2f088979",
meta_props=deployment_props
)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In [175]:
deployment_uid = client.deployments.get_uid(deployment)
payload = {"input_data":
[
{"fields":X_test.tolist(), "values":X_test.tolist()}
]
}
result = client.deployments.score(deployment_uid, payload); result
Out[175]: {'predictions': [{'fields': ['prediction'],
'values': [[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
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[223.6232147216797],
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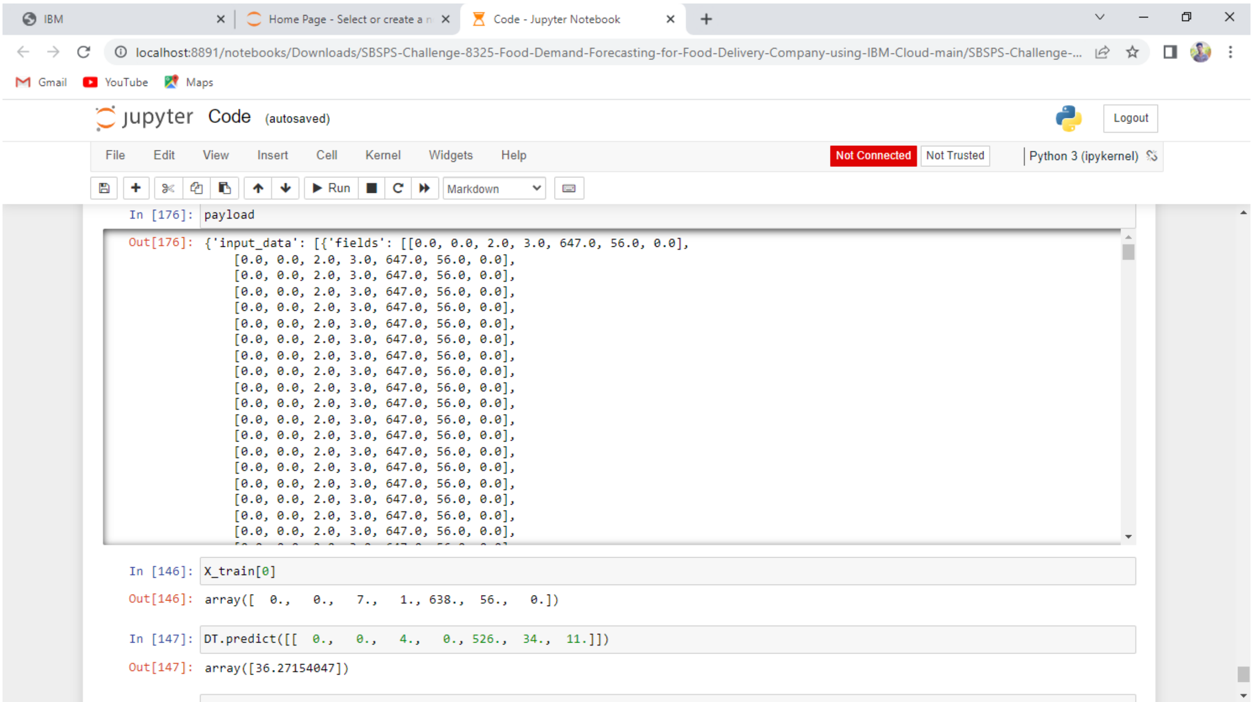
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
In [176]:
payload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Logout
File
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Python 3 (ipykernel)
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Markdown
In [176]: payload
Out[176]: {'input_data': [{'fields': [[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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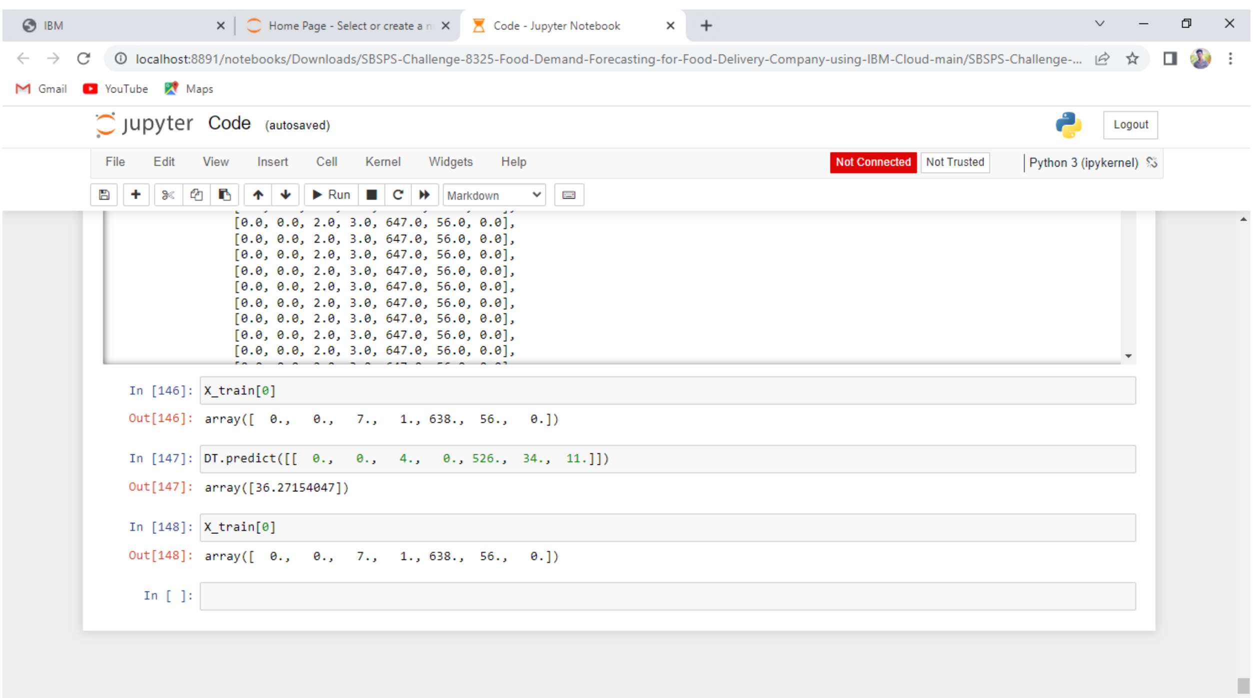
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])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[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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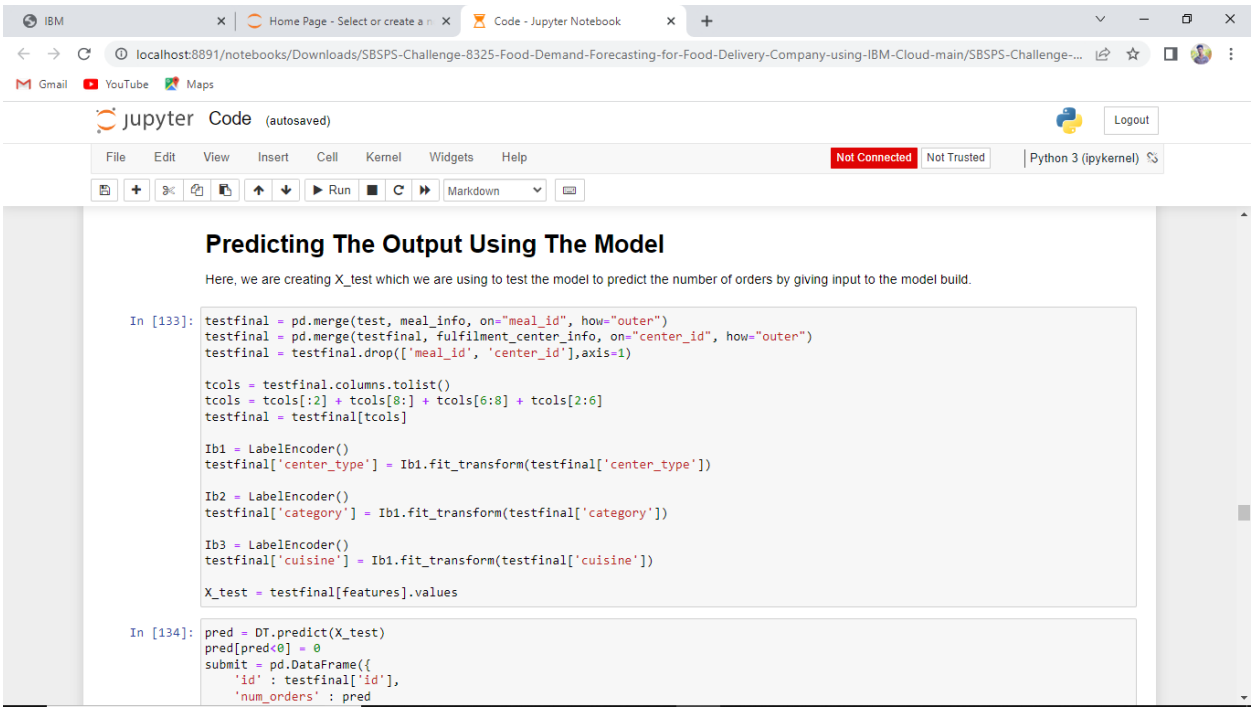
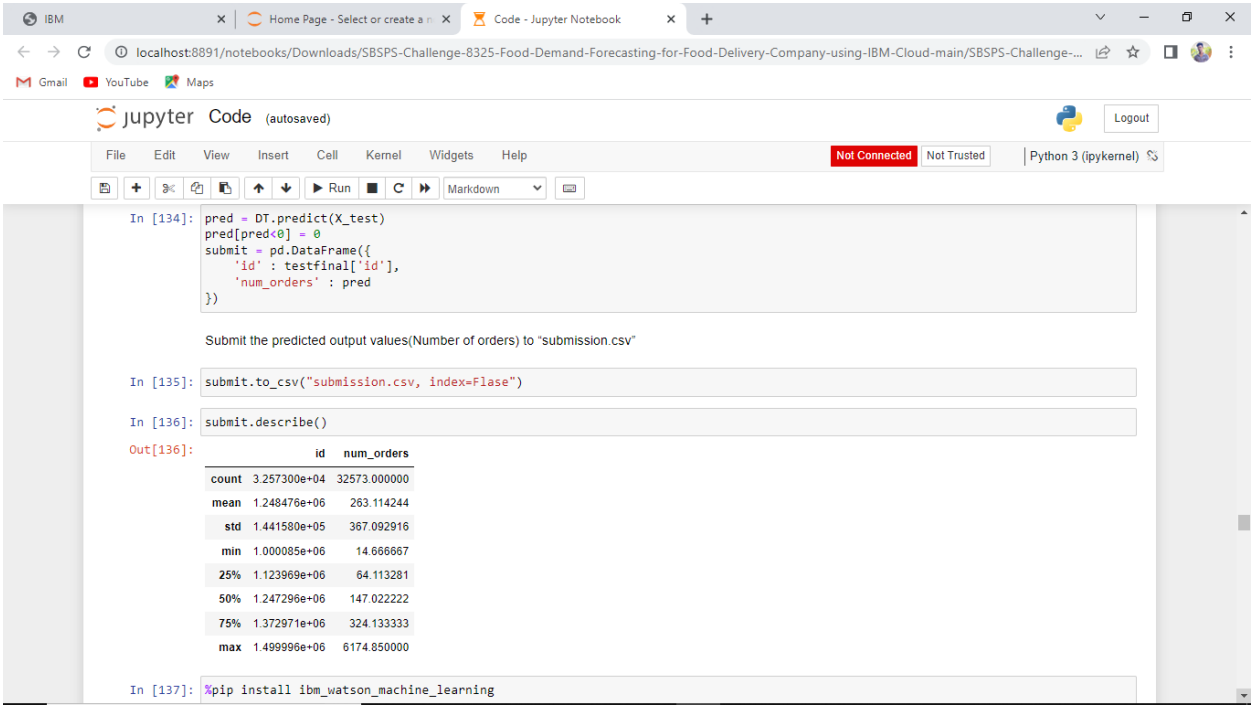
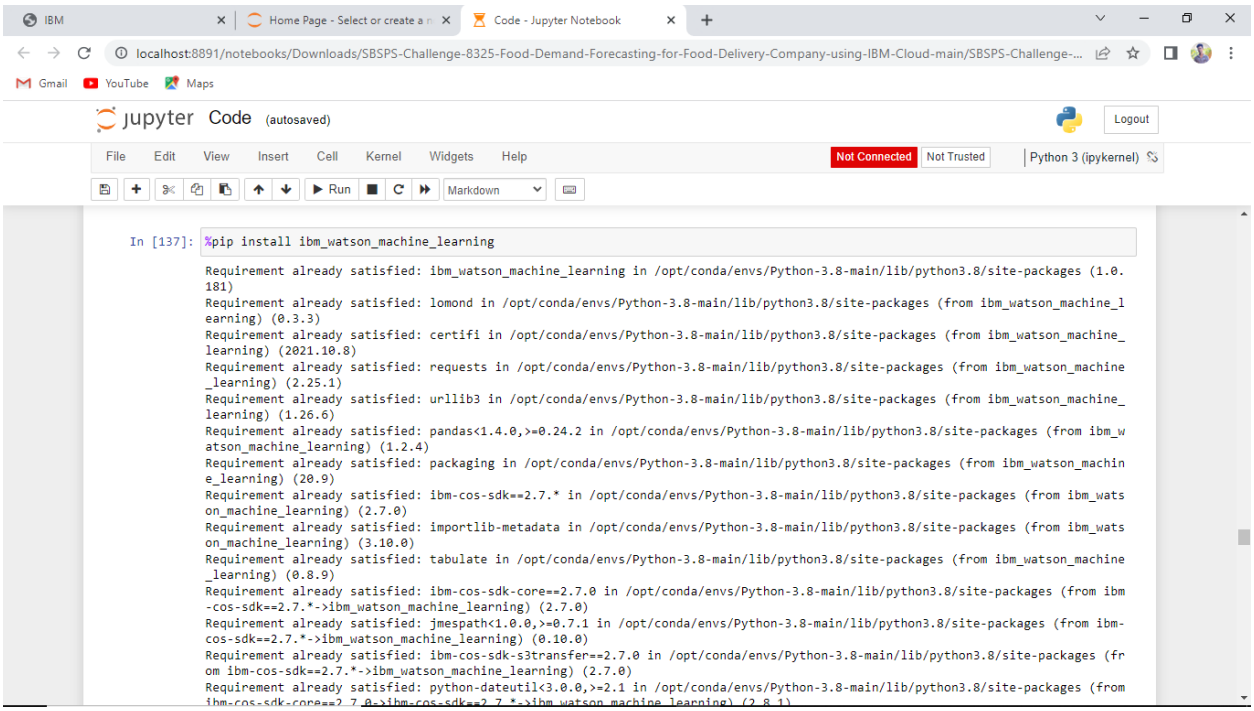
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])
In [148]: X_train[0]
Out[148]: array([0., 0., 7., 1., 638., 56., 0.])
In [ ]:

Team Member 3



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jupyter Code (autosaved)
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Python 3 (ipykernel)
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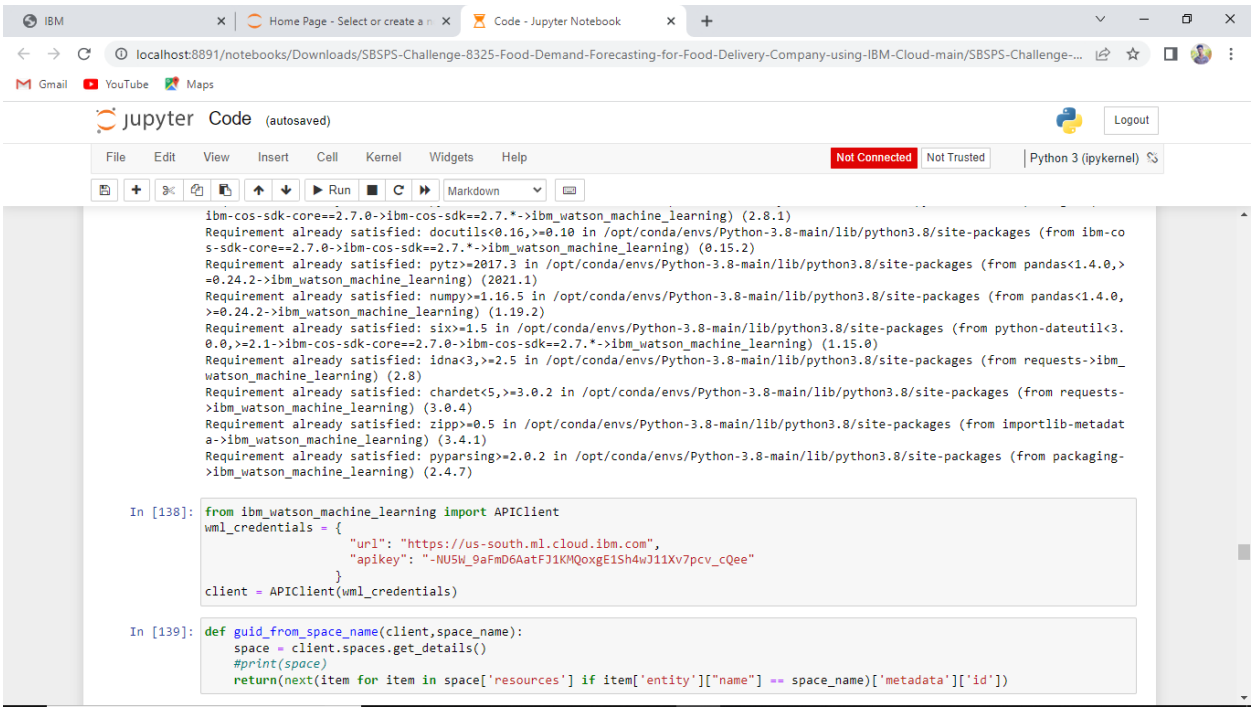
In [137]: %pip install ibm_watson_machine_learning
Requirement already satisfied: ibm_watson_machine_learning in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (1.0.181)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.3.3)
Requirement already satisfied: certifi in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2021.10.8)
Requirement already satisfied: requests in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.25.1)
Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.26.6)
Requirement already satisfied: pandas<1.4.0,>=0.24.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (1.2.4)
Requirement already satisfied: packaging in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (20.9)
Requirement already satisfied: ibm-cos-sdk==2.7.* in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: importlib-metadata in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (3.10.0)
Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm_watson_machine_learning) (0.8.9)
Requirement already satisfied: ibm-cos-sdk-core==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.10.0)
Requirement already satisfied: ibm-cos-sdk-s3transfer==2.7.0 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.7.0)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from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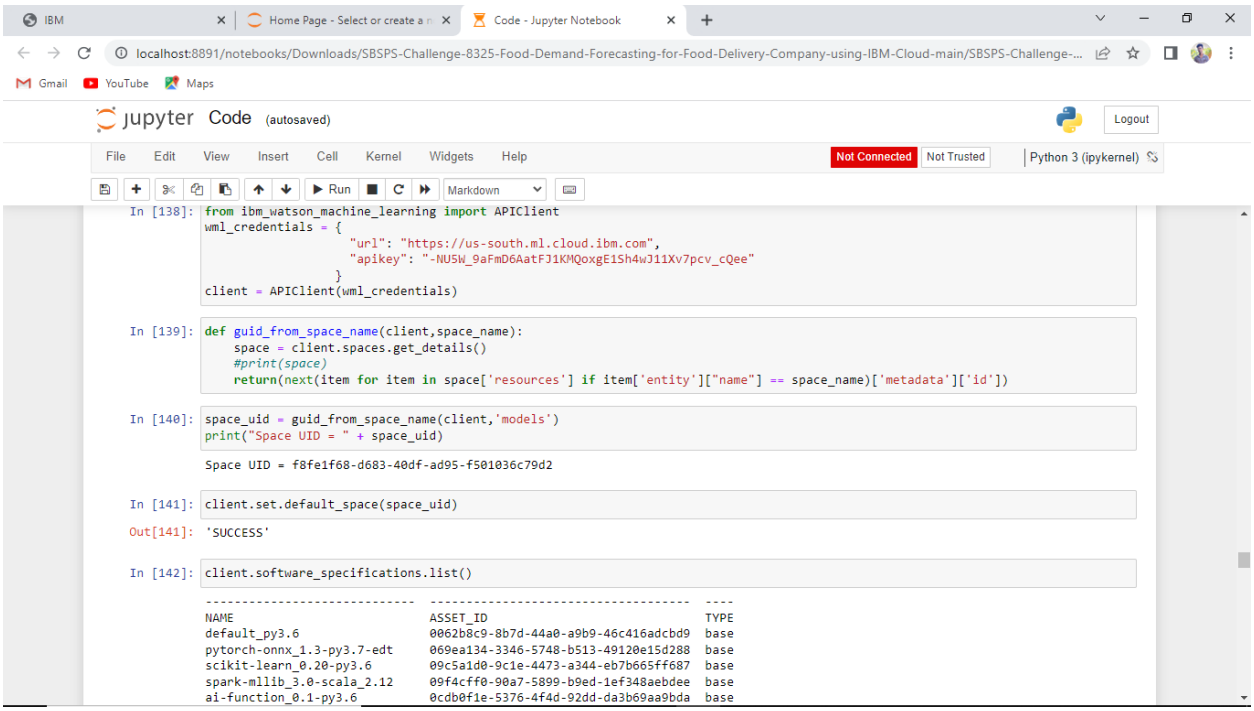
ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (2.8.1)
Requirement already satisfied: docutils<0.16,>=0.10 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (0.15.2)
Requirement already satisfied: pytz>=2017.3 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (2021.1)
Requirement already satisfied: numpy>=1.16.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from pandas<1.4.0,>=0.24.2->ibm_watson_machine_learning) (1.19.2)
Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from python-dateutil<3.0.0,>=2.1->ibm-cos-sdk-core==2.7.0->ibm-cos-sdk==2.7.*->ibm_watson_machine_learning) (1.15.0)
Requirement already satisfied: idna<3,>=2.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (2.8)
Requirement already satisfied: chardet<5,>=3.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from requests->ibm_watson_machine_learning) (3.0.4)
Requirement already satisfied: zipp>=0.5 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from importlib-metadata->ibm_watson_machine_learning) (3.4.1)
Requirement already satisfied: pyparsing>=2.0.2 in /opt/conda/envs/Python-3.8-main/lib/python3.8/site-packages (from packaging->ibm_watson_machine_learning) (2.4.7)
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])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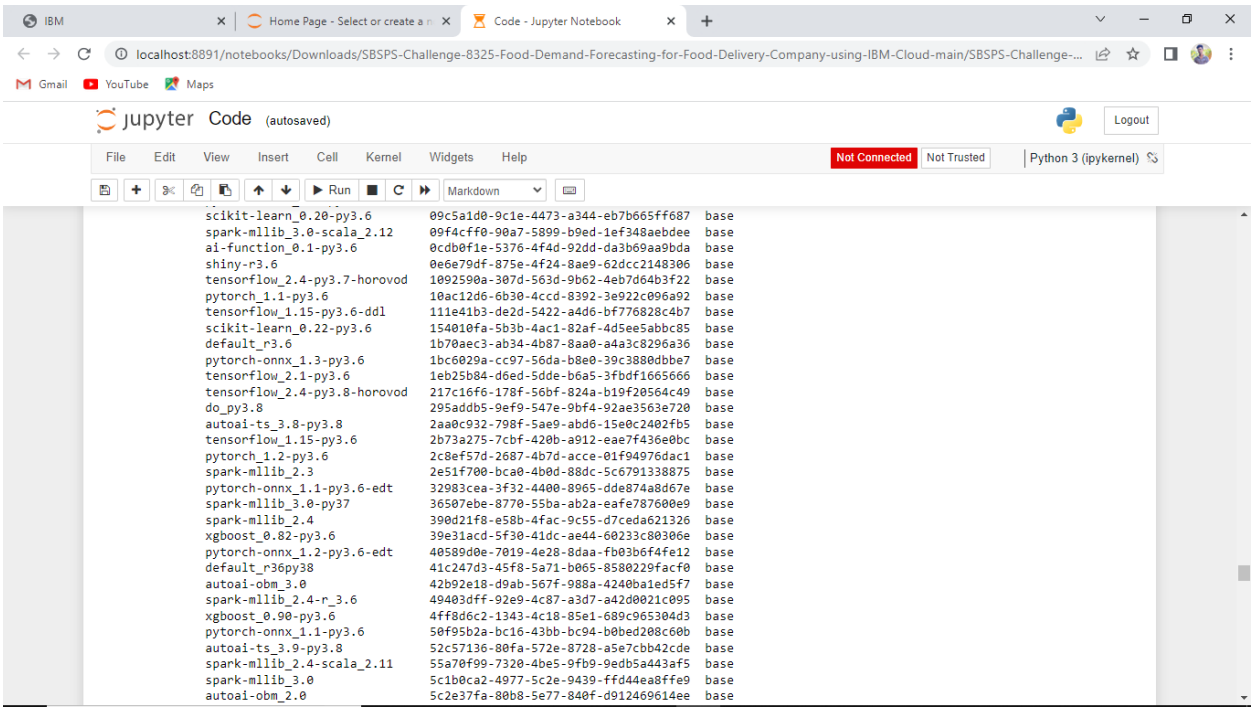
In [138]:
from ibm_watson_machine_learning import APIClient
wml_credentials = {
"url": "https://us-south.ml.cloud.ibm.com",
"apikey": "-NU5W_9aFmD6AatFJ1KMQoxgE1Sh4wJ11Xv7pcv_cQee"
}
client = APIClient(wml_credentials)
In [139]:
def guid_from_space_name(client,space_name):
space = client.spaces.get_details()
#print(space)
return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']['id'])
In [140]:
space_uid = guid_from_space_name(client,'models')
print("Space UID = " + space_uid)
Space UID = f8fe1f68-d683-40df-ad95-f501036c79d2
In [141]:
client.set.default_space(space_uid)
Out[141]:
'SUCCESS'
In [142]:
client.software_specifications.list()
NAME ASSET_ID TYPE
default_py3.6 0062b8c9-8b7d-44a0-a9b9-46c416adcbd9 base
pytorch-onnx_1.3-py3.7-edt 069ea134-3346-5748-b513-49120e15d288 base
scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base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scikit-learn_0.20-py3.6 09c5a1d0-9c1e-4473-a344-eb7b665ff687 base
spark-mllib_3.0-scala_2.12 09f4cff0-90a7-5899-b9ed-1ef348aebdee base
ai-function_0.1-py3.6 0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda base
shiny-r3.6 0e6e79df-875e-4f24-8ae9-62dcc2148306 base
tensorflow_2.4-py3.7-horovod 1092590a-307d-563d-9b62-4eb7d64b3f22 base
pytorch_1.1-py3.6 10ac12d6-6b30-4ccd-8392-3e922c096a92 base
tensorflow_1.15-py3.6-ddl 111e41b3-de2d-5422-a4d6-bf776828c4b7 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
tensorflow_2.1-py3.6 1eb25b84-d6ed-5dde-b6a5-3fbdf1665666 base
tensorflow_2.4-py3.8-horovod 217c16f6-178f-56bf-824a-b19f20564c49 base
do_py3.8 295addb5-9ef9-547e-9bf4-92ae3563e720 base
autoai-ts_3.8-py3.8 2aa0c932-798f-5ae9-abd6-15e0c2402fb5 base
tensorflow_1.15-py3.6 2b73a275-7cbf-420b-a912-eae7f436e0bc base
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pytorch-onnx_1.1-py3.6-edt 32983cea-3f32-4400-8965-dde874a8d67e base
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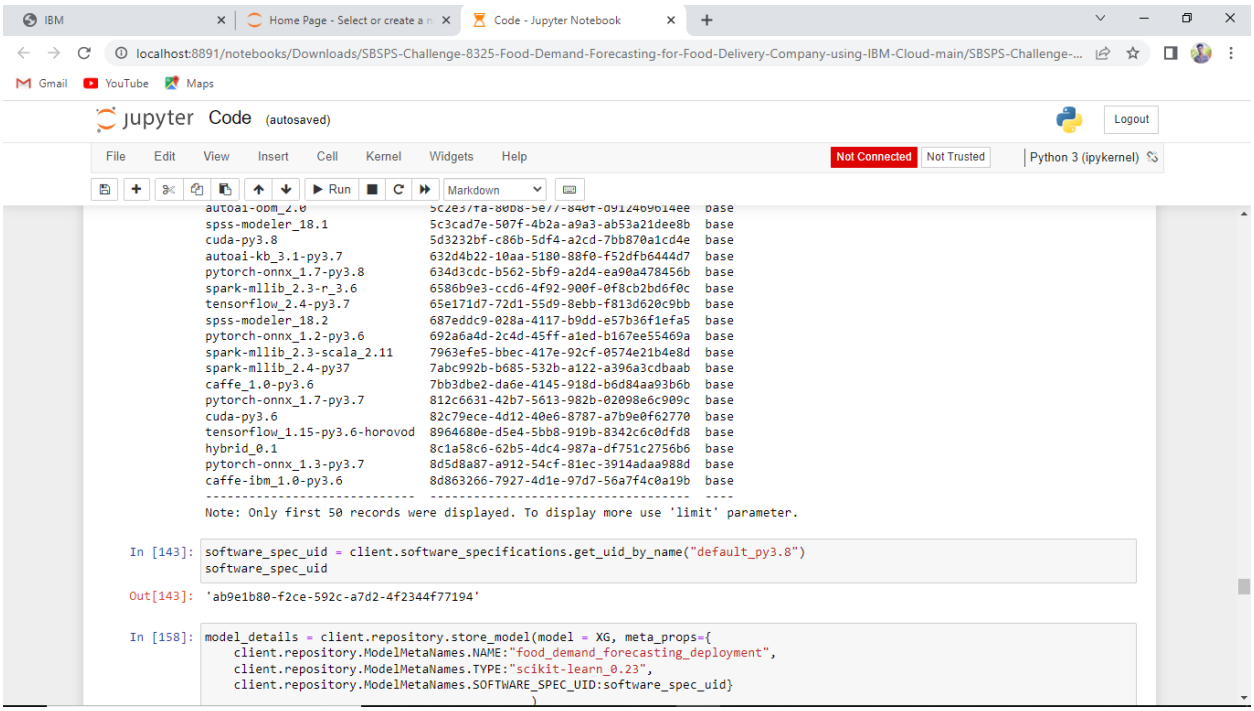
spark-mllib_2.4 390d21f8-e58b-4fac-9c55-d7ceda621326 base
xgboost_0.82-py3.6 39e31acd-5f30-41dc-ae44-60233c80306e base
pytorch-onnx_1.2-py3.6-edt 40589d0e-7019-4e28-8daa-fb03b6f4fe12 base
default_r36py38 41c247d3-45f8-5a71-b065-8580229facf0 base
autoai-obm_3.0 42b92e18-d9ab-567f-988a-4240ba1ed5f7 base
spark-mllib_2.4-r_3.6 49403dff-92e9-4c87-a3d7-a42d0021c095 base
xgboost_0.90-py3.6 4ff8d6c2-1343-4c18-85e1-689c965304d3 base
pytorch-onnx_1.1-py3.6 50f95b2a-bc16-43bb-bc94-b0bed208c60b base
autoai-ts_3.9-py3.8 52c57136-80fa-572e-8728-a5e7cbb42cde base
spark-mllib_2.4-scala_2.11 55a70f99-7320-4be5-9fb9-9edb5a443af5 base
spark-mllib_3.0 5c1b0ca2-4977-5c2e-9439-ffd44ea8ffe9 base
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base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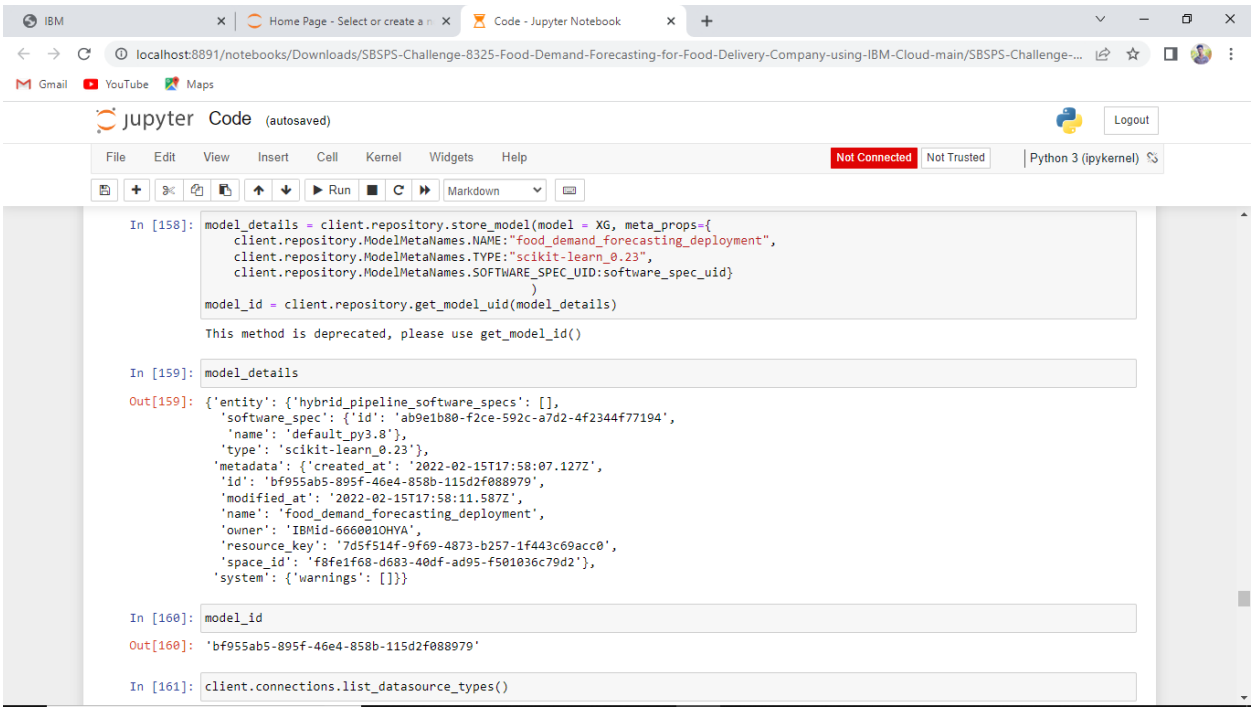
autoai-obm_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base
spss-modeler_18.1 5c3cad7e-507f-4b2a-a9a3-ab53a21dee8b base
cuda-py3.8 5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e base
autoai-kb_3.1-py3.7 632d4b22-10aa-5180-88f0-f52dfb6444d7 base
pytorch-onnx_1.7-py3.8 634d3cdc-b562-5bf9-a2d4-ea90a478456b base
spark-mllib_2.3-r_3.6 6586b9e3-ccd6-4f92-900f-0f8cb2bd6f0c base
tensorflow_2.4-py3.7 65e171d7-72d1-55d9-8ebb-f813d620c9bb base
spss-modeler_18.2 687eddc9-028a-4117-b9dd-e57b36f1efa5 base
pytorch-onnx_1.2-py3.6 692a6a4d-2c4d-45ff-a1ed-b167ee55469a base
spark-mllib_2.3-scala_2.11 7963efe5-bbec-417e-92cf-0574e21b4e8d base
spark-mllib_2.4-py37 7abc992b-b685-532b-a122-a396a3cdbaab base
caffe_1.0-py3.6 7bb3dbe2-da6e-4145-918d-b6d84aa93b6b base
pytorch-onnx_1.7-py3.7 812c6631-42b7-5613-982b-02098e6c909c base
cuda-py3.6 82c79ece-4d12-40e6-8787-a7b9e0f62770 base
tensorflow_1.15-py3.6-horovod 8964680e-d5e4-5bb8-919b-8342c6c0dfd8 base
hybrid_0.1 8c1a58c6-62b5-4dc4-987a-df751c2756b6 base
pytorch-onnx_1.3-py3.7 8d5d8a87-a912-54cf-81ec-3914adaa988d base
caffe-ibm_1.0-py3.6 8d863266-7927-4d1e-97d7-56a7f4c0a19b base
Note: Only first 50 records were displayed. To display more use 'limit' parameter.
In [143]:
software_spec_uid = client.software_specifications.get_uid_by_name("default_py3.8")
software_spec_uid
Out[143]: 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194'
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}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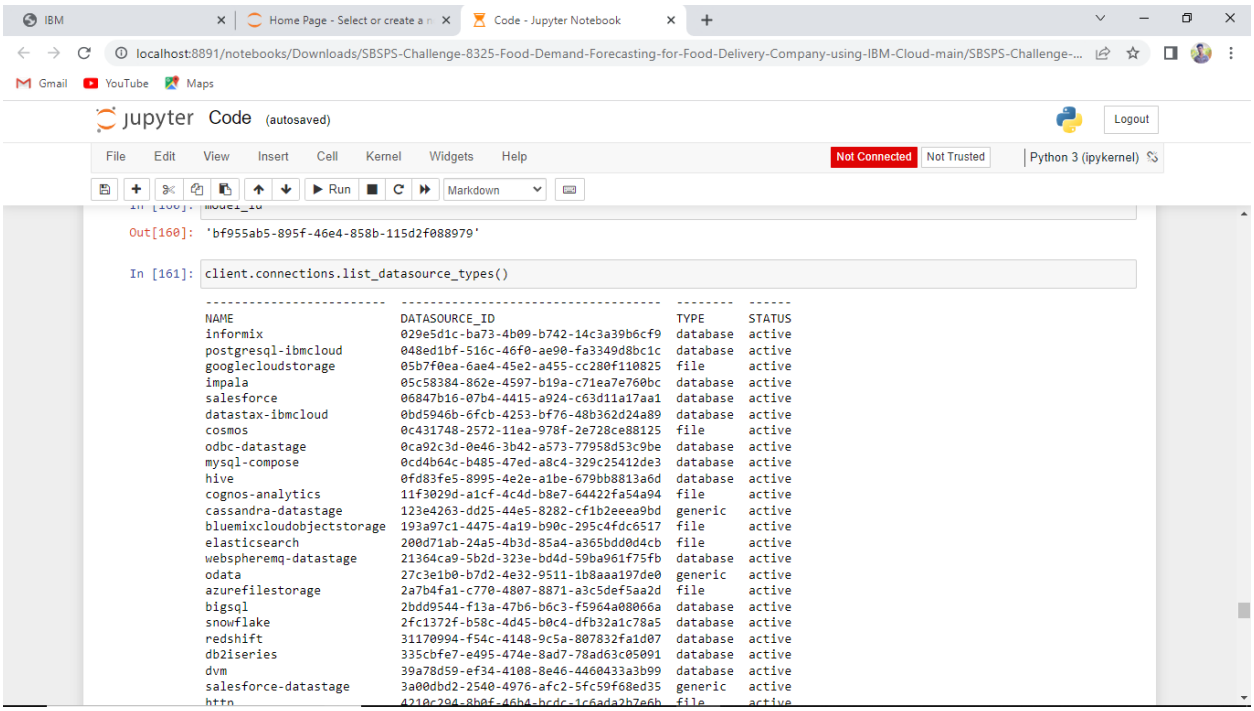
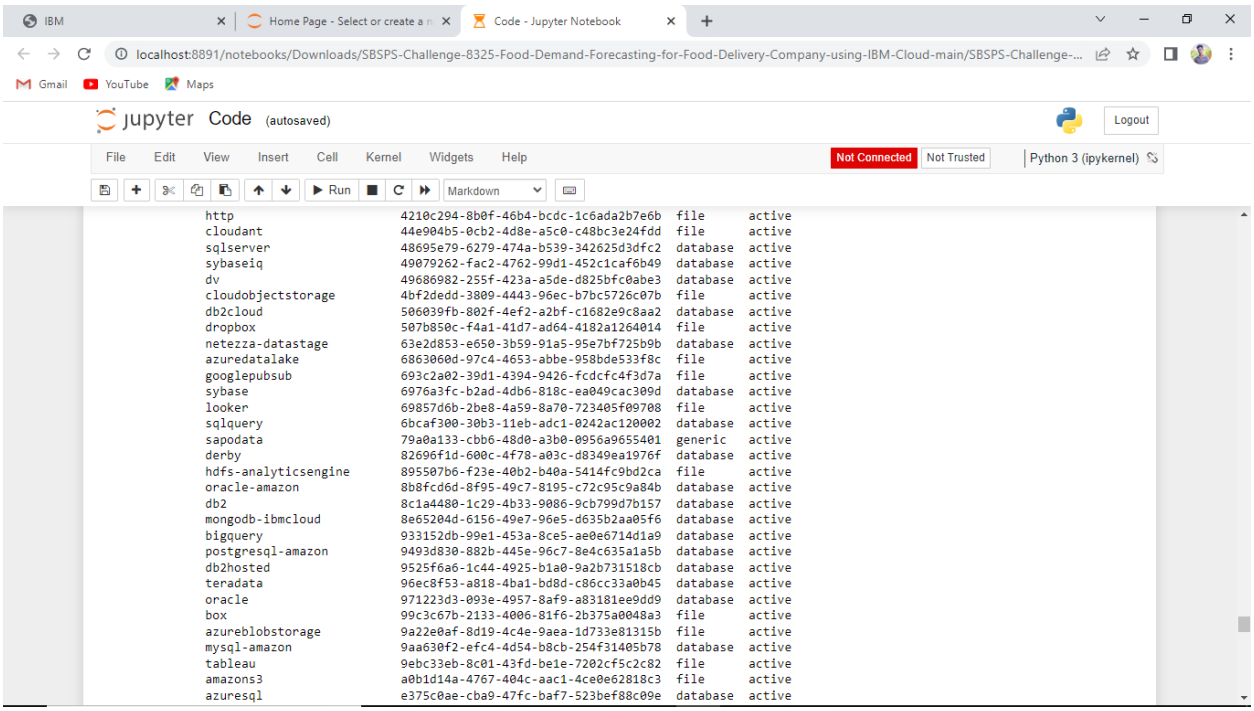
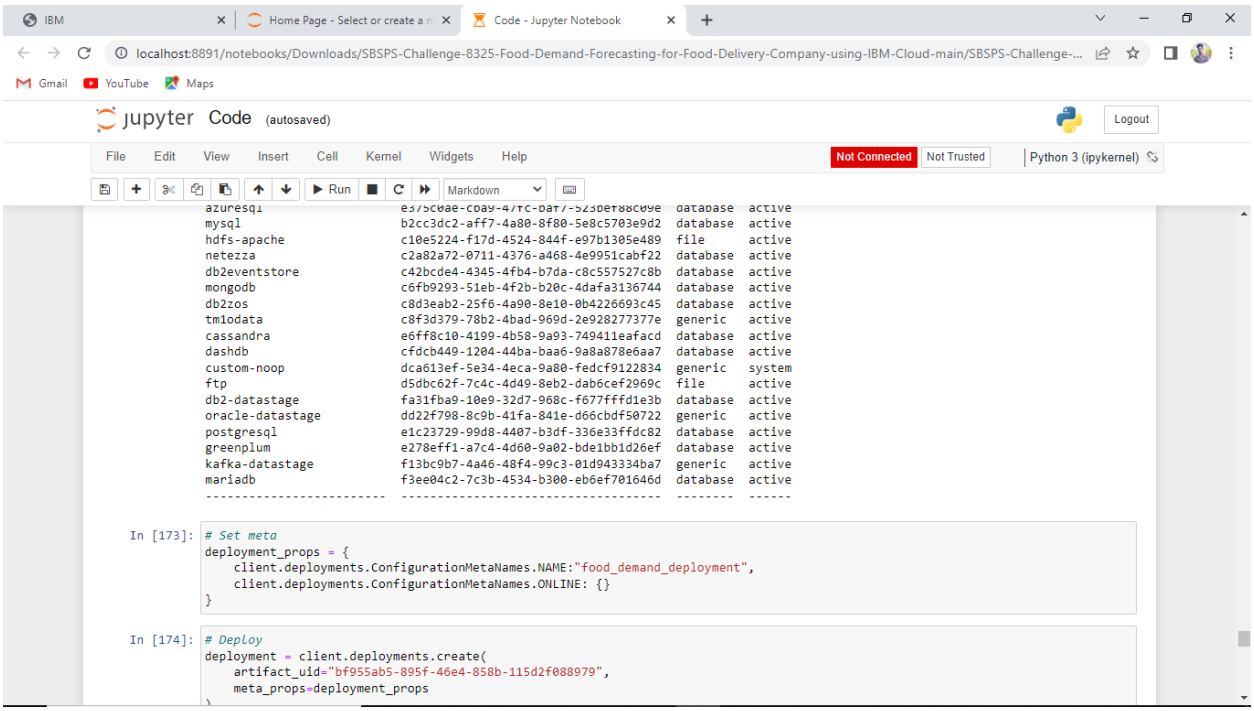
In [158]:
model_details = client.repository.store_model(model = XG, meta_props={
client.repository.ModelMetaNames.NAME:"food_demand_forecasting_deployment",
client.repository.ModelMetaNames.TYPE:"scikit-learn_0.23",
client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}
)
model_id = client.repository.get_model_uid(model_details)
This method is deprecated, please use get_model_id()
In [159]:
model_details
Out[159]: {'entity': {'hybrid_pipeline_software_specs': [],
'software_spec': {'id': 'ab9e1b80-f2ce-592c-a7d2-4f2344f77194',
'name': 'default_py3.8'},
'type': 'scikit-learn_0.23'},
'metadata': {'created_at': '2022-02-15T17:58:07.127Z',
'id': 'bf955ab5-895f-46e4-858b-115d2f088979',
'modified_at': '2022-02-15T17:58:11.587Z',
'name': 'food_demand_forecasting_deployment',
'owner': 'IBMid-666001OHYA',
'resource_key': '7d5f514f-9f69-4873-b257-1f443c69acc0',
'space_id': 'f8fe1f68-d683-40df-ad95-f501036c79d2'},
'system': {'warnings': []}}
In [160]:
model_id
Out[160]: 'bf955ab5-895f-46e4-858b-115d2f088979'
In [161]:
client.connections.list_datasource_types()



NAME	DATASOURCE_ID	TYPE	STATUS
informix	029e5d1c-ba73-4b09-b742-14c3a39b6cf9	database	active
postgresql-ibmcloud	048ed1bf-516c-46f0-ae90-fa3349d8bc1c	database	active
googlecloudstorage	05b7f0ea-6ae4-45e2-a455-cc280f110825	file	active
impala	05c58384-862e-4597-b19a-c71ea7e760bc	database	active
salesforce	06847b16-07b4-4415-a924-c63d11a17aa1	database	active
datastax-ibmcloud	0bd5946b-6fcb-4253-bf76-48b362d24a89	database	active
cosmos	0c431748-2572-11ea-978f-2e728ce88125	file	active
odbc-datastage	0ca92c3d-0e46-3b42-a573-77958d53c9be	database	active
mysql-compose	0cd4b64c-b485-47ed-a8c4-329c25412de3	database	active
hive	0fd83fe5-8995-4e2e-a1be-679bb8813a6d	database	active
cognos-analytics	11f3029d-a1cf-4c4d-b8e7-64422fa54a94	file	active
cassandra-datastage	123e4263-dd25-44e5-8282-cf1b2eeea9bd	generic	active
bluemixcloudobjectstorage	193a97c1-4475-4a19-b90c-295c4fdc6517	file	active
elasticsearch	200d71ab-24a5-4b3d-85a4-a365bdd0d4cb	file	active
webspheremq-datastage	21364ca9-5b2d-323e-bd4d-59ba961f75fb	database	active
odata	27c3e1b0-b7d2-4e32-9511-1b8aaa197de0	generic	active
azurefilestorage	2a7b4fa1-c770-4807-8871-a3c5def5aa2d	file	active
bigsql	2bdd9544-f13a-47b6-b6c3-f5964a08066a	database	active
snowflake	2fc1372f-b58c-4d45-b0c4-dfb32a1c78a5	database	active
redshift	31170994-f54c-4148-9c5a-807832fa1d07	database	active
db2iseries	335cbfe7-e495-474e-8ad7-78ad63c05091	database	active
dvm	39a78d59-ef34-4108-8e46-4460433a3b99	database	active
salesforce-datastage	3a00dbd2-2540-4976-afc2-5fc59f68ed35	generic	active
http	4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b	file	active



http	4210c294-8b0f-46b4-bcdc-1c6ada2b7e6b	file	active
cloudant	44e904b5-0cb2-4d8e-a5c0-c48bc3e24fdd	file	active
sqlserver	48695e79-6279-474a-b539-342625d3dfc2	database	active
sybaseiq	49079262-fac2-4762-99d1-452c1caf6b49	database	active
dv	49686982-255f-423a-a5de-d825bfc0abe3	database	active
cloudobjectstorage	4bf2dedd-3809-4443-96ec-b7bc5726c07b	file	active
db2cloud	506039fb-802f-4ef2-a2bf-c1682e9c8aa2	database	active
dropbox	507b850c-f4a1-41d7-ad64-4182a1264014	file	active
netezza-datastage	63e2d853-e650-3b59-91a5-95e7bf725b9b	database	active
azuredatalake	6863060d-97c4-4653-abbe-958bde533f8c	file	active
googlepubsub	693c2a02-39d1-4394-9426-fcdcfc4f3d7a	file	active
sybase	6976a3fc-b2ad-4db6-818c-ea049cac309d	database	active
looker	69857d6b-2be8-4a59-8a70-723405f09708	file	active
sqlquery	6bcaf300-30b3-11eb-adc1-0242ac120002	database	active
sapodata	79a0a133-cbb6-48d0-a3b0-0956a9655401	generic	active
derby	82696f1d-600c-4f78-a03c-d8349ea1976f	database	active
hdfs-analyticsengine	895507b6-f23e-40b2-b40a-5414fc9bd2ca	file	active
oracle-amazon	8b8fcd6d-8f95-49c7-8195-c72c95c9a84b	database	active
db2	8c1a4480-1c29-4b33-9086-9cb799d7b157	database	active
mongodb-ibmcloud	8e65204d-6156-49e7-96e5-d635b2aa05f6	database	active
bigquery	933152db-99e1-453a-8ce5-ae0e6714d1a9	database	active
postgresql-amazon	9493d830-882b-445e-96c7-8e4c635a1a5b	database	active
db2hosted	9525f6a6-1c44-4925-b1a0-9a2b731518cb	database	active
teradata	96ec8f53-a818-4ba1-bd8d-c86cc33a0b45	database	active
oracle	971223d3-093e-4957-8af9-a83181ee9dd9	database	active
box	99c3c67b-2133-4006-81f6-2b375a0048a3	file	active
azureblobstorage	9a22e0af-8d19-4c4e-9aea-1d733e81315b	file	active
mysql-amazon	9aa630f2-efc4-4d54-b8cb-254f31405b78	database	active
tableau	9ebc33eb-8c01-43fd-be1e-7202cf5c2c82	file	active
amazons3	a0b1d14a-4767-404c-aac1-4ce0e62818c3	file	active
azuresql	e375c0ae-cba9-47fc-baf7-523bef88c09e	database	active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Python 3 (ipykernel)
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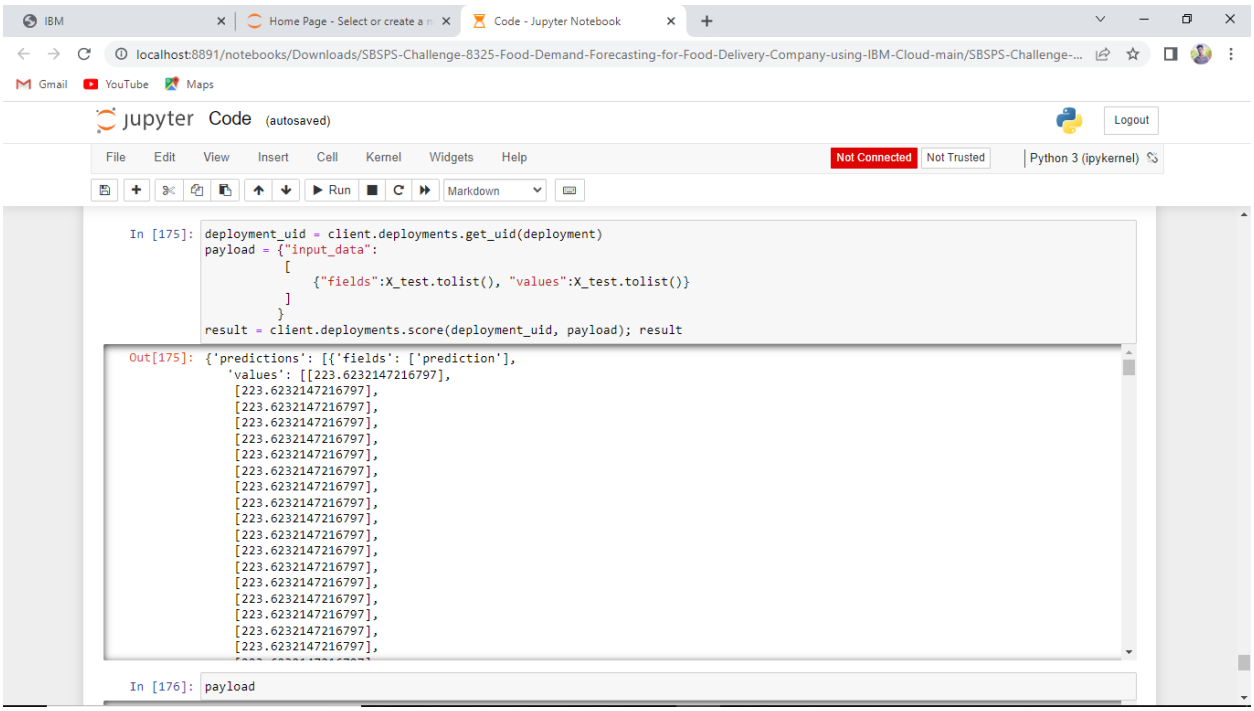
Markdown
azuresql e575cdae-cda9-47fc-baf7-523bef88c09e database active
mysql b2cc3dc2-aff7-4a80-8f80-5e8c5703e9d2 database active
hdfs-apache c10e5224-f17d-4524-844f-e97b1305e489 file active
netezza c2a82a72-0711-4376-a468-4e9951cabf22 database active
db2eventstore c42bcde4-4345-4fb4-b7da-c8c557527c8b database active
mongodb c6fb9293-51eb-4f2b-b20c-4dafa3136744 database active
db2zos c8d3eab2-25f6-4a90-8e10-0b4226693c45 database active
tm1odata c8f3d379-78b2-4bad-969d-2e928277377e generic active
cassandra e6ff8c10-4199-4b58-9a93-749411eafacd database active
dashdb cfdcb449-1204-44ba-baa6-9a8a878e6aa7 database active
custom-noop dca613ef-5e34-4eca-9a80-fedcf9122834 generic system
ftp d5dbc62f-7c4c-4d49-8eb2-dab6cef2969c file active
db2-datastage fa31fba9-10e9-32d7-968c-f677fffd1e3b database active
oracle-datastage dd22f798-8c9b-41fa-841e-d66cbdf50722 generic active
postgresql e1c23729-99d8-4407-b3df-336e33ffdc82 database active
greenplum e278eff1-a7c4-4d60-9a02-bde1bb1d26ef database active
kafka-datastage f13bc9b7-4a46-48f4-99c3-01d943334ba7 generic active
mariadb f3ee04c2-7c3b-4534-b300-eb6ef701646d database active
In [173]:
# Set meta
deployment_props = {
client.deployments.ConfigurationMetaNames.NAME:"food_demand_deployment",
client.deployments.ConfigurationMetaNames.ONLINE: {}
}
In [174]:
# Deploy
deployment = client.deployments.create(
artifact_uid="bf955ab5-895f-46e4-858b-115d2f088979",
meta_props=deployment_props
)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Maps
jupyter Code (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
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Not Trusted
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In [175]:
deployment_uid = client.deployments.get_uid(deployment)
payload = {"input_data":
[
{"fields":X_test.tolist(), "values":X_test.tolist()}
]
}
result = client.deployments.score(deployment_uid, payload); result
Out[175]: {'predictions': [{'fields': ['prediction'],
'values': [[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
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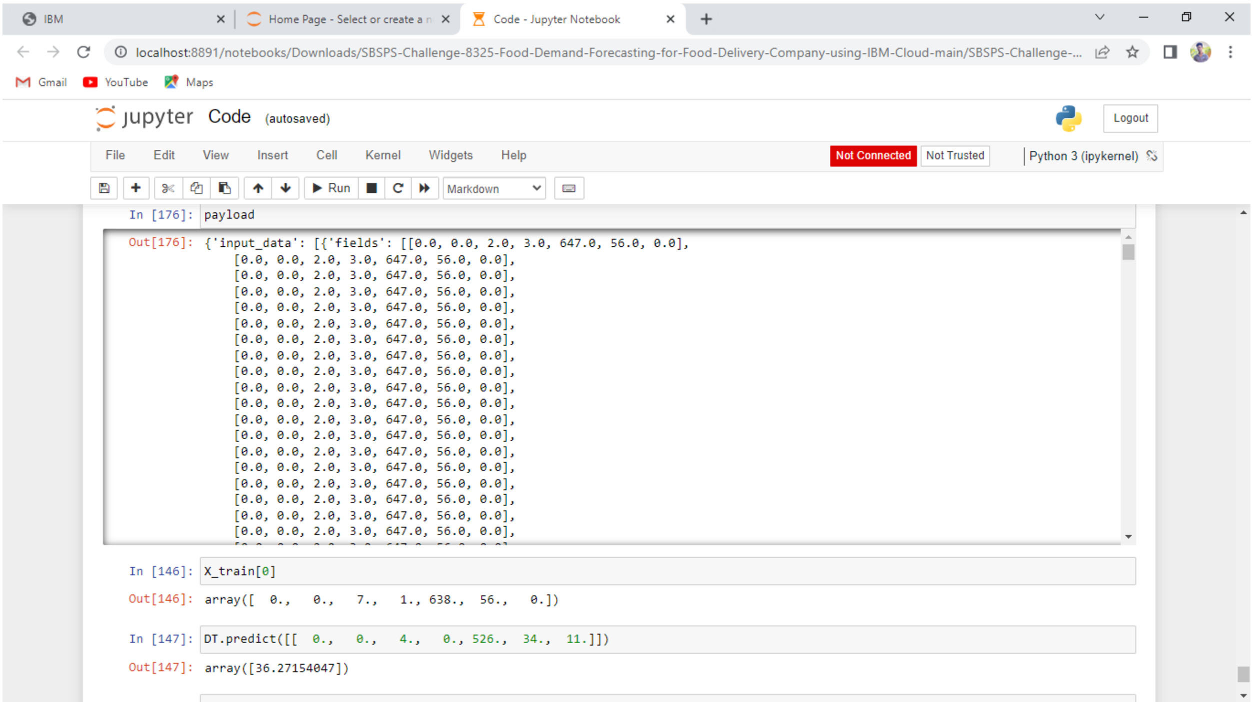
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
[223.6232147216797],
In [176]:
payload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Logout
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In [176]: payload
Out[176]: {'input_data': [{'fields': [[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
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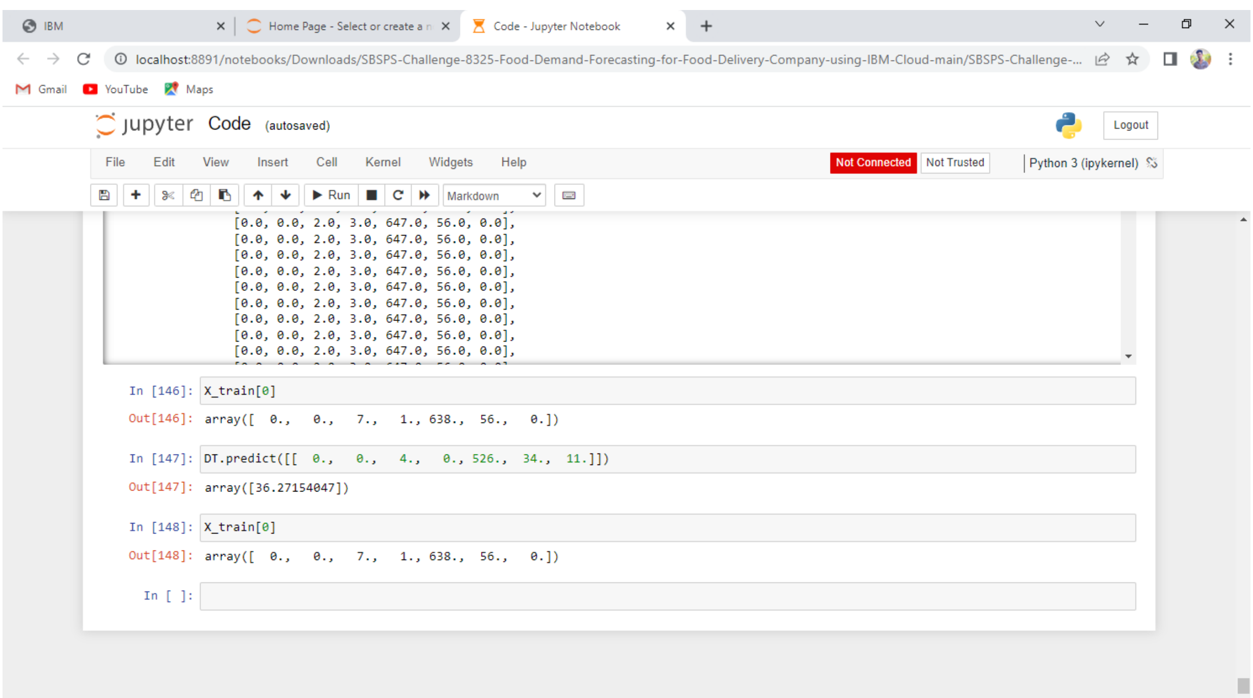
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])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jupyter Code (autosaved)
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[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
[0.0, 0.0, 2.0, 3.0, 647.0, 56.0, 0.0],
In [146]: X_train[0]
Out[146]: array([0., 0., 7., 1., 638., 56., 0.])
In [147]: DT.predict([[0., 0., 4., 0., 526., 34., 11.]])
Out[147]: array([36.27154047])
In [148]: X_train[0]
Out[148]: array([0., 0., 7., 1., 638., 56., 0.])
In [ ]: