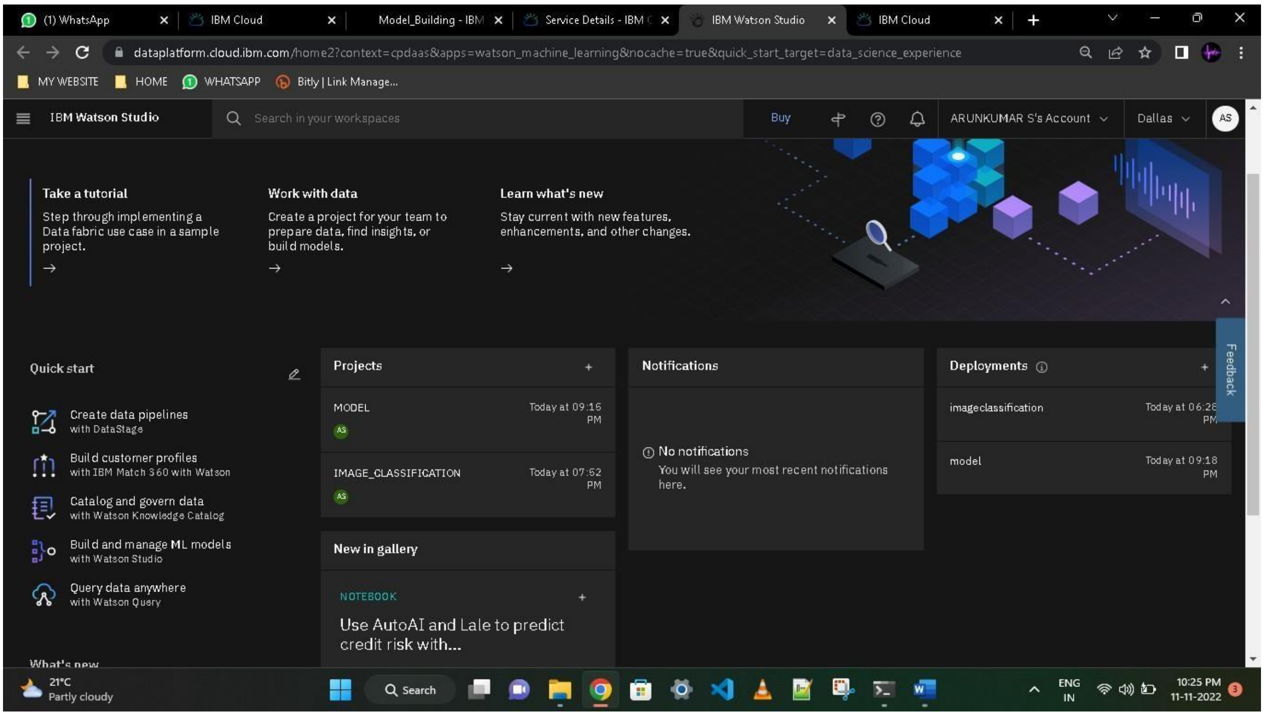
Train Model On IBM

Date	07 November 2022
Team ID	PNT2022TMID30778
Project Name	AI-Powered Nutrition Analyzer for Fitness Enthusiasts



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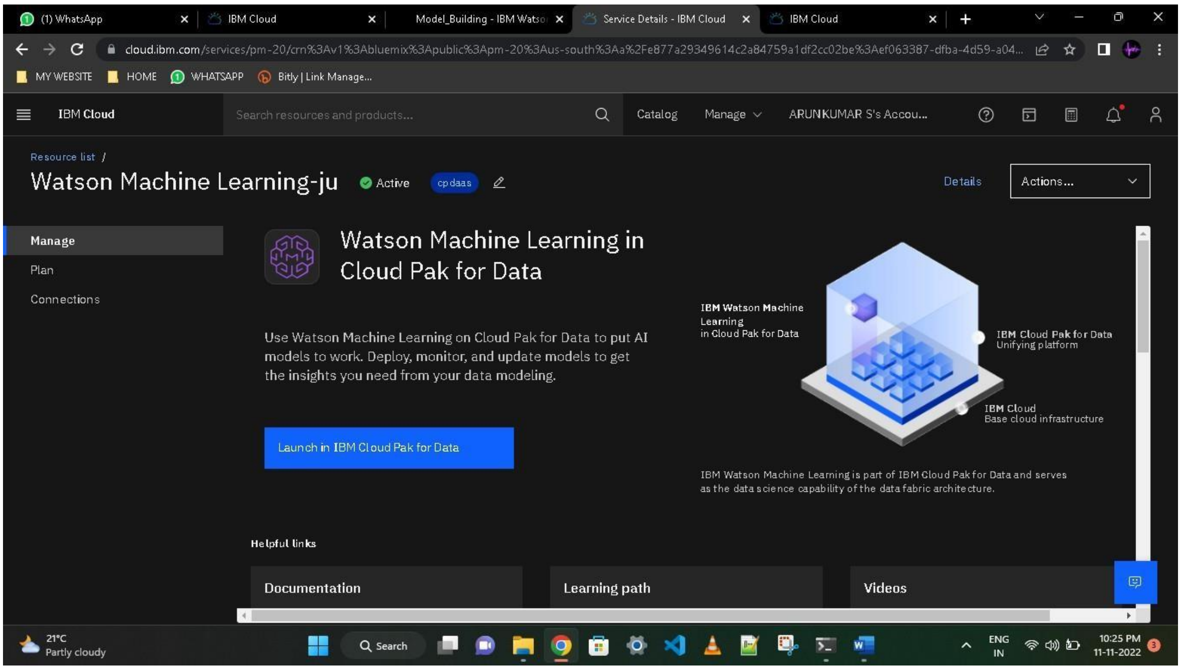
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Use Watson Machine Learning on Cloud Pak for Data to put AI models to work. Deploy, monitor, and update models to get the insights you need from your data modeling.

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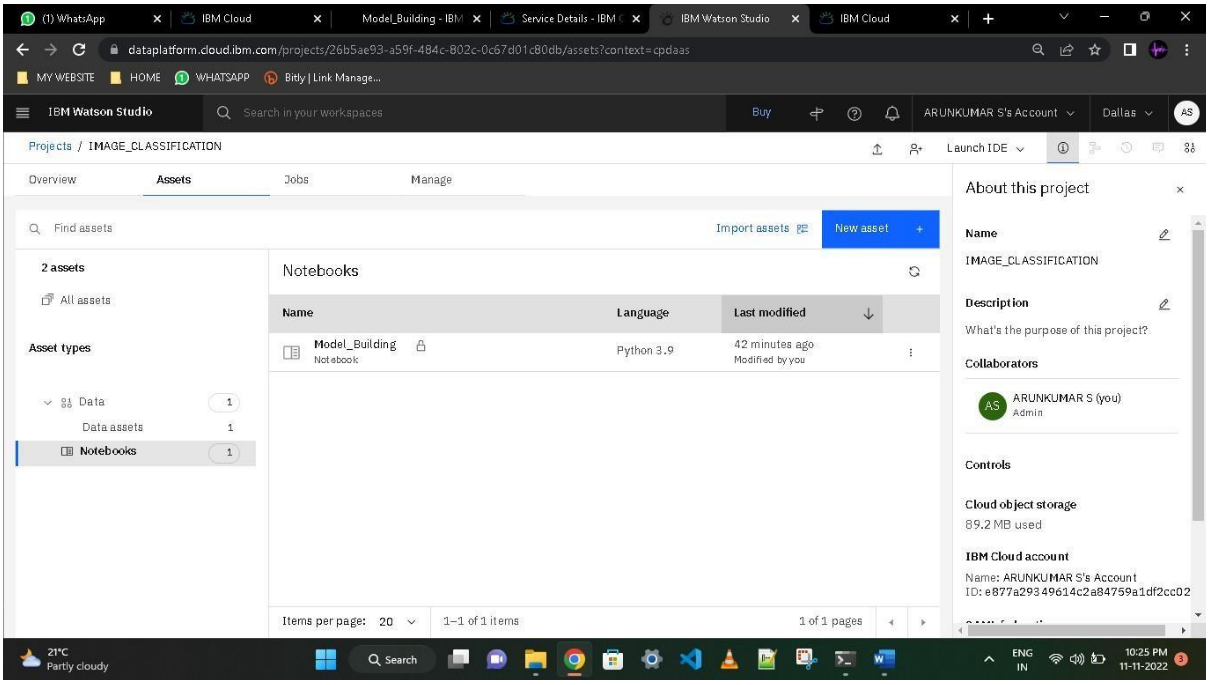


Notebooks

Name	Language	Last modified
Model_Building Notebook	Python 3.9	42 minutes ago Modified by you

About this project

Name

IMAGE_CLASSIFICATION

Description

What's the purpose of this project?

Collaborators

ARUNKUMAR S (you)
Admin

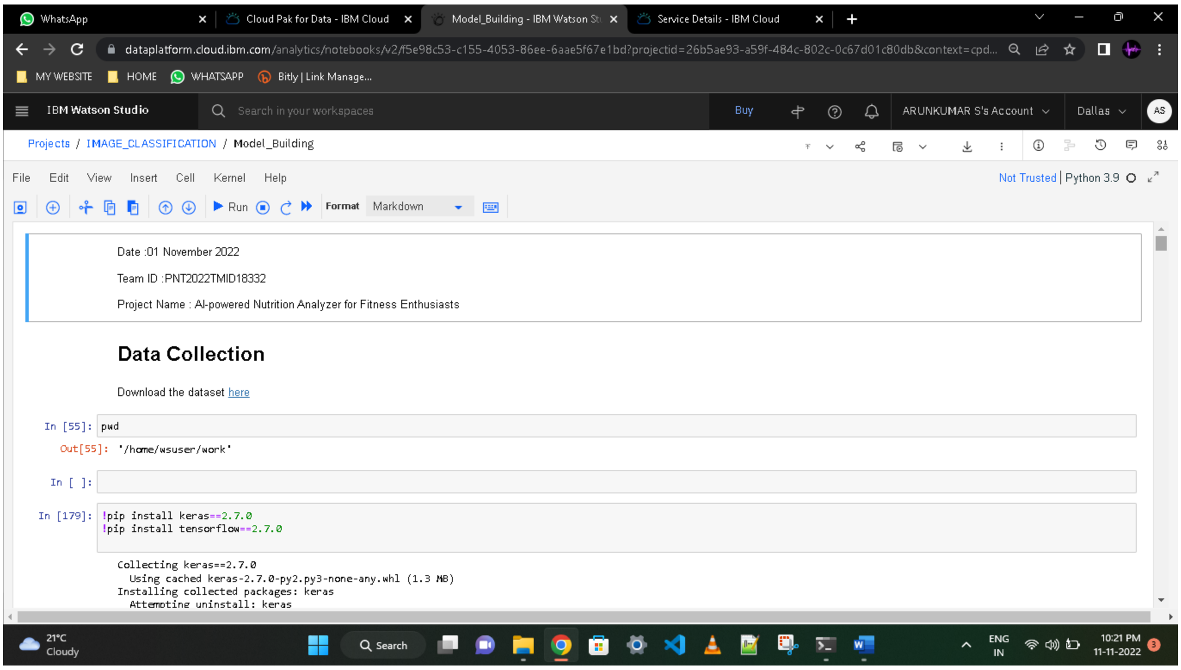
Controls

Cloud object storage

89.2 MB used

IBM Cloud account

Name: ARUNKUMAR S's Account
ID: e877a29349614c2a84759a1df2cc02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Date :01 November 2022

Team ID :PNT2022TMID18332

Project Name : AI-powered Nutrition Analyzer for Fitness Enthusiasts

Data Collection

Download the dataset here

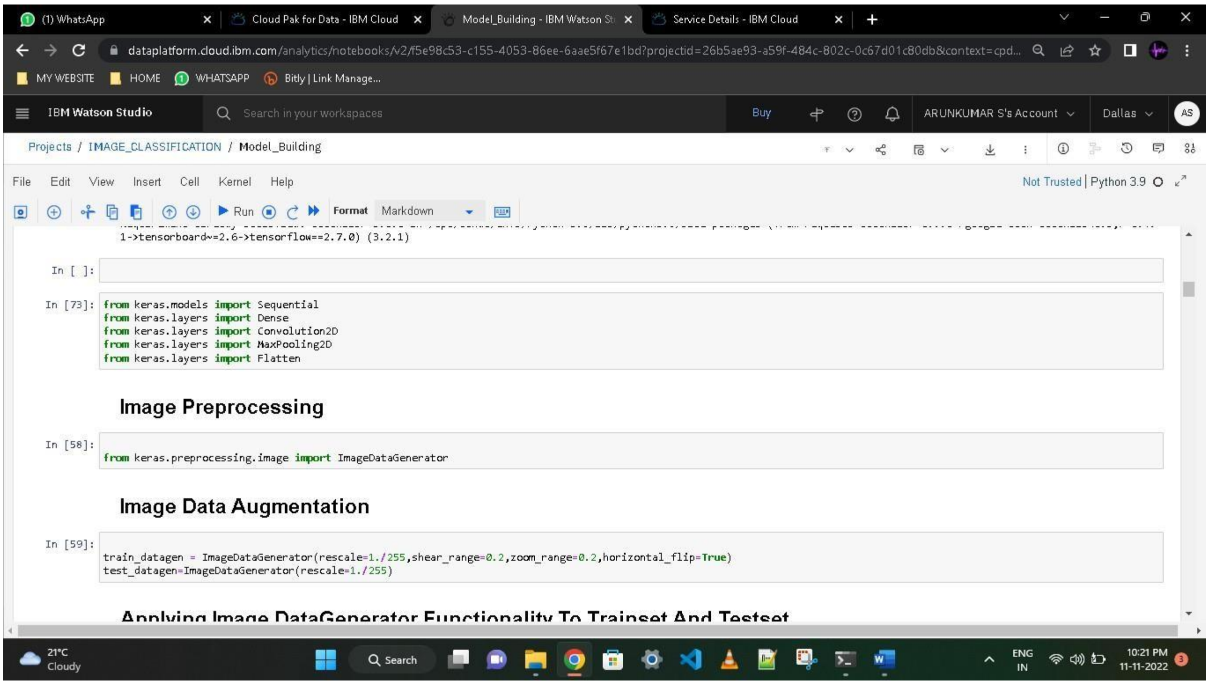
```
In [55]: pwd

Out[55]: '/home/wsuser/work'

In [ ]:

In [179]: !pip install keras==2.7.0
          !pip install tensorflow==2.7.0

          Collecting keras==2.7.0
            Using cached keras-2.7.0-py2.py3-none-any.whl (1.3 MB)
          Installing collected packages: keras
            Attempting uninstall: keras
```



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```
1->tensorboard~=2.6->tensorflow==2.7.0) (3.2.1)
```

In [ ]:

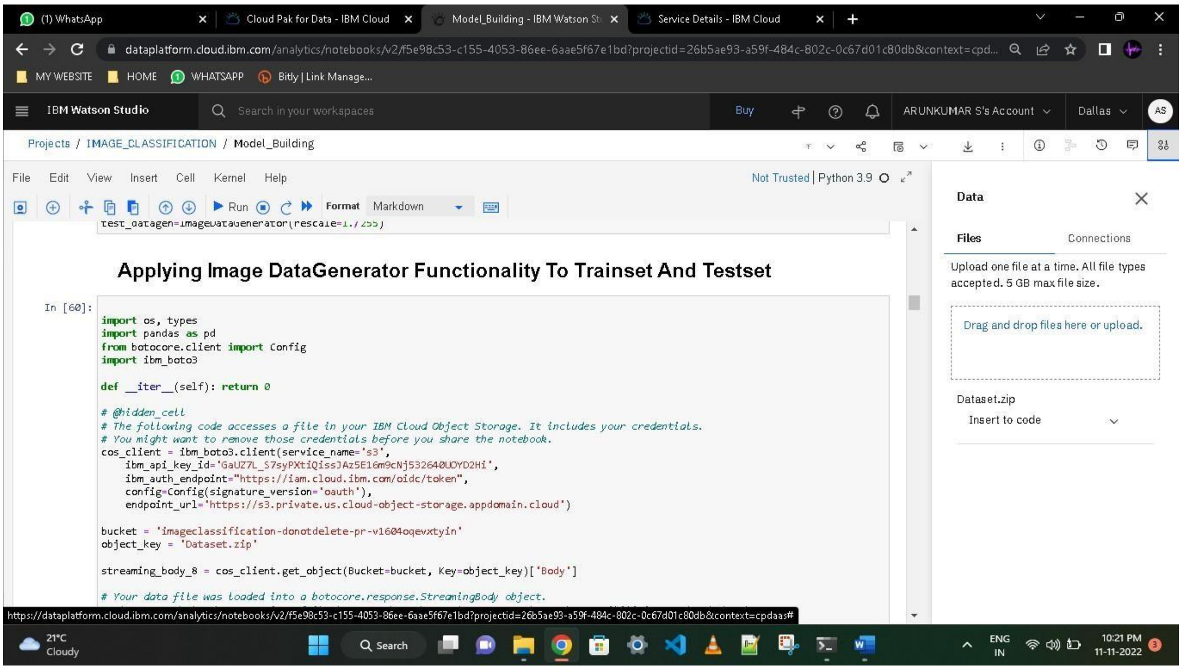
In [73]:
```
from keras.models import Sequential
from keras.layers import Dense
from keras.layers import Convolution2D
from keras.layers import MaxPooling2D
from keras.layers import Flatten
```

Image Preprocessing

In [58]:
```
from keras.preprocessing.image import ImageDataGenerator
```

Image Data Augmentation

In [59]:
```
train_datagen = ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_flip=True)
test_datagen=ImageDataGenerator(rescale=1./255)
```



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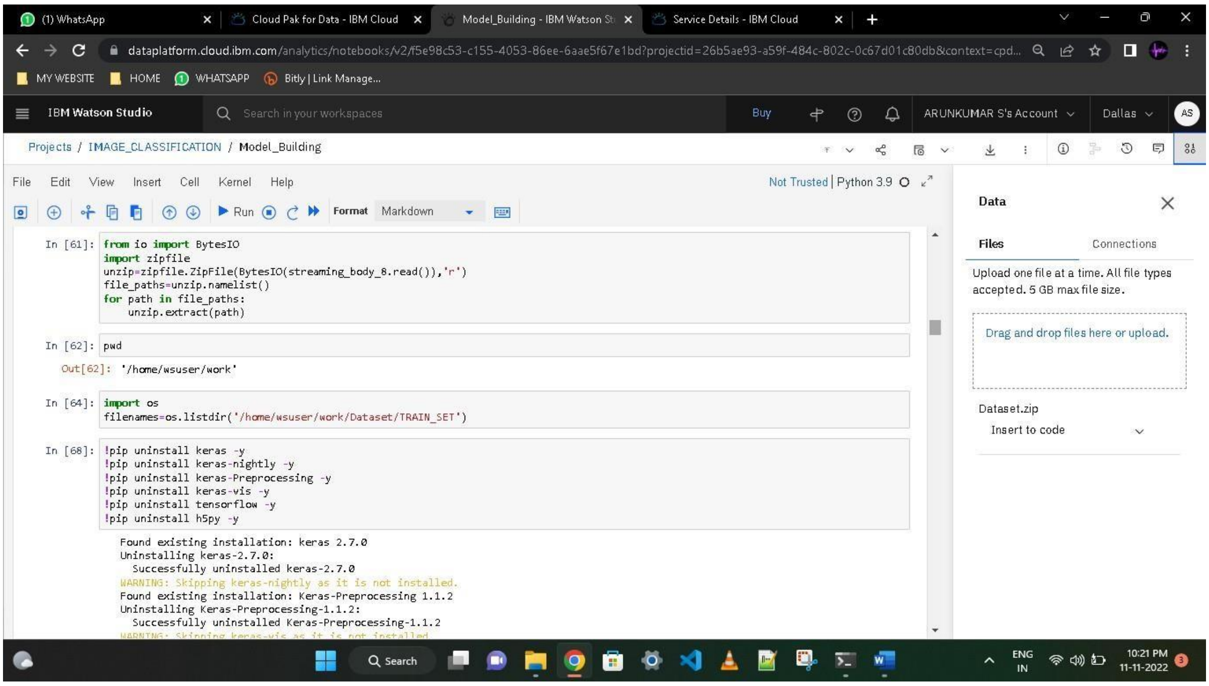
Dataset.zip

Insert to code

Applying Image DataGenerator Functionality To Trainset And Testset

In [60]:
```
import os, types
import pandas as pd
from botocore.client import Config
import ibm_boto3

def __iter__(self): return 0

# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.
cos_client = ibm_boto3.client(service_name='s3',
    ibm_api_key_id='GaUZ7L_S7syPXtiQissJAz5E16m9cNj532640UOYD2Hi',
    ibm_auth_endpoint="https://iam.cloud.ibm.com/oidc/token",
    config=Config(signature_version='oauth'),
    endpoint_url='https://s3.private.us.cloud-object-storage.appdomain.cloud')

bucket = 'imageclassification-donotdelete-pr-v1604oqevxtyin'
object_key = 'Dataset.zip'

streaming_body_8 = cos_client.get_object(Bucket=bucket, Key=object_key)['Body']

# Your data file was loaded into a botocore.response.StreamingBody object.
```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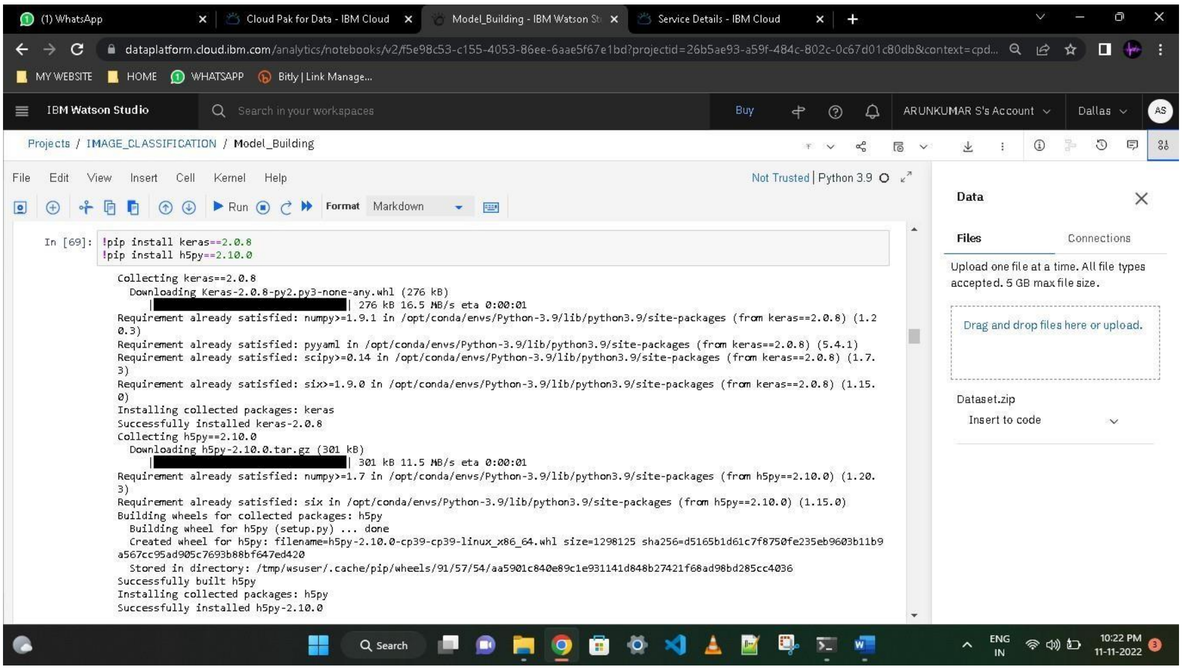
```
In [61]: from io import BytesIO
         import zipfile
         unzip=zipfile.ZipFile(BytesIO(streaming_body_8.read()),'r')
         file_paths=unzip.namelist()
         for path in file_paths:
             unzip.extract(path)

In [62]: pwd

Out[62]: '/home/wsuser/work'

In [64]: import os
         filenames=os.listdir('/home/wsuser/work/Dataset/TRAIN_SET')

In [68]: !pip uninstall keras -y
         !pip uninstall keras-nightly -y
         !pip uninstall keras-Preprocessing -y
         !pip uninstall keras-vis -y
         !pip uninstall tensorflow -y
         !pip uninstall h5py -y

           Found existing installation: keras 2.7.0
           Uninstalling keras-2.7.0:
             Successfully uninstalled keras-2.7.0
           WARNING: Skipping keras-nightly as it is not installed.
           Found existing installation: Keras-Preprocessing 1.1.2
           Uninstalling Keras-Preprocessing-1.1.2:
             Successfully uninstalled Keras-Preprocessing-1.1.2
           WARNING: Skipping keras-vis as it is not installed.
```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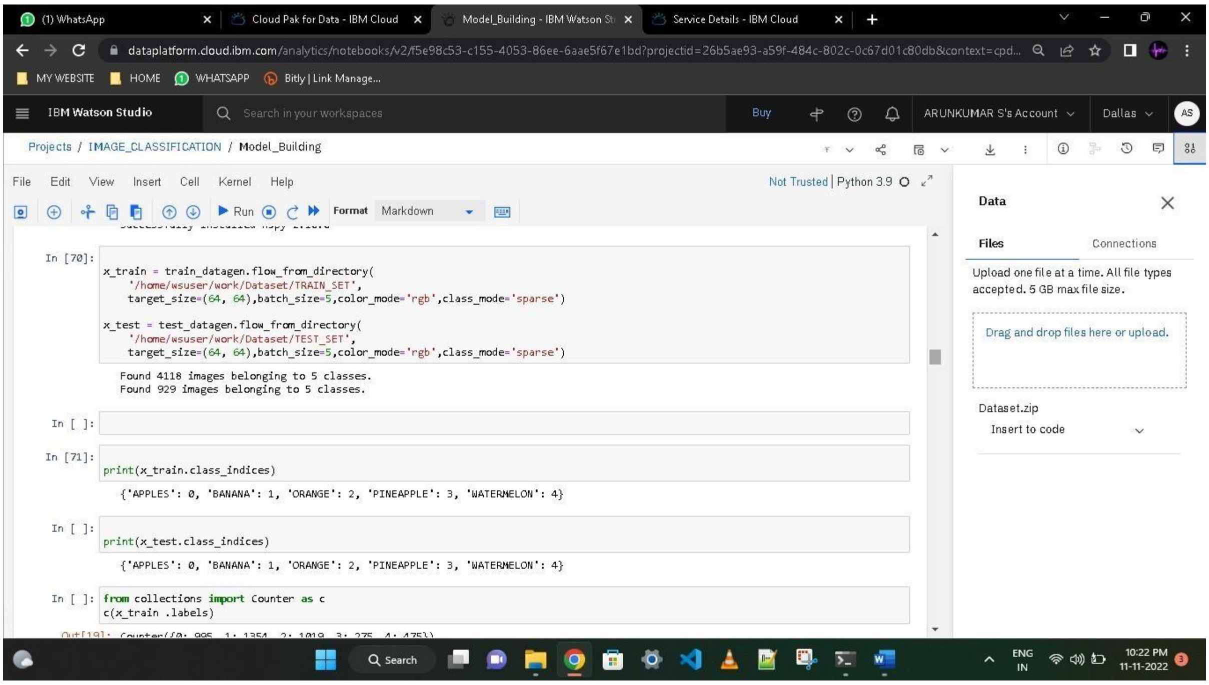
```
In [69]: !pip install keras==2.0.8
         !pip install h5py==2.10.0

           Collecting keras==2.0.8
             Downloading Keras-2.0.8-py2.py3-none-any.whl (276 kB)
                |████████████████████████████████| 276 kB 16.5 MB/s eta 0:00:01
           Requirement already satisfied: numpy>=1.9.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.0.8) (1.2
           0.3)
           Requirement already satisfied: pyyaml in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.0.8) (5.4.1)
           Requirement already satisfied: scipy>=0.14 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.0.8) (1.7.
           3)
           Requirement already satisfied: six>=1.9.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from keras==2.0.8) (1.15.
           0)
           Installing collected packages: keras
           Successfully installed keras-2.0.8
           Collecting h5py==2.10.0
             Downloading h5py-2.10.0.tar.gz (301 kB)
                |████████████████████████████████| 301 kB 11.5 MB/s eta 0:00:01
           Requirement already satisfied: numpy>=1.7 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from h5py==2.10.0) (1.20.
           3)
           Requirement already satisfied: six in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from h5py==2.10.0) (1.15.0)
           Building wheels for collected packages: h5py
             Building wheel for h5py (setup.py) ... done
             Created wheel for h5py: filename=h5py-2.10.0-cp39-cp39-linux_x86_64.whl size=1298125 sha256=d5165b1d61c7f8750fe235eb9603b11b9
           a567cc95ad905c7693b88bf647ed420
             Stored in directory: /tmp/wsuser/.cache/pip/wheels/91/57/54/aa5901c840e89c1e931141d848b27421f68ad98bd285cc4036
           Successfully built h5py
           Installing collected packages: h5py
           Successfully installed h5py-2.10.0
```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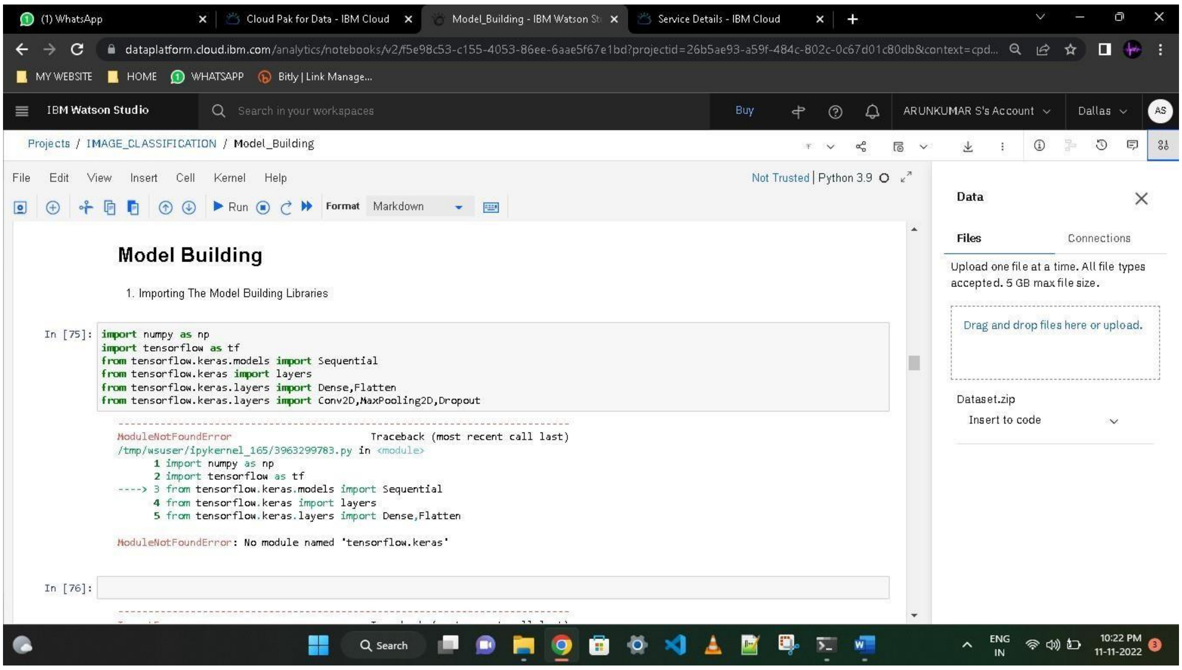
```
In [70]:
x_train = train_datagen.flow_from_directory(
    '/home/wsuser/work/Dataset/TRAIN_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')

x_test = test_datagen.flow_from_directory(
    '/home/wsuser/work/Dataset/TEST_SET',
    target_size=(64, 64),batch_size=5,color_mode='rgb',class_mode='sparse')

  Found 4118 images belonging to 5 classes.
  Found 929 images belonging to 5 classes.

In [ ]:

In [71]:
print(x_train.class_indices)

  {'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}

In [ ]:
print(x_test.class_indices)

  {'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}

In [ ]: from collections import Counter as c
        c(x_train .labels)

Out[19]: Counter({0: 995, 1: 1354, 2: 1019, 3: 275, 4: 475})
```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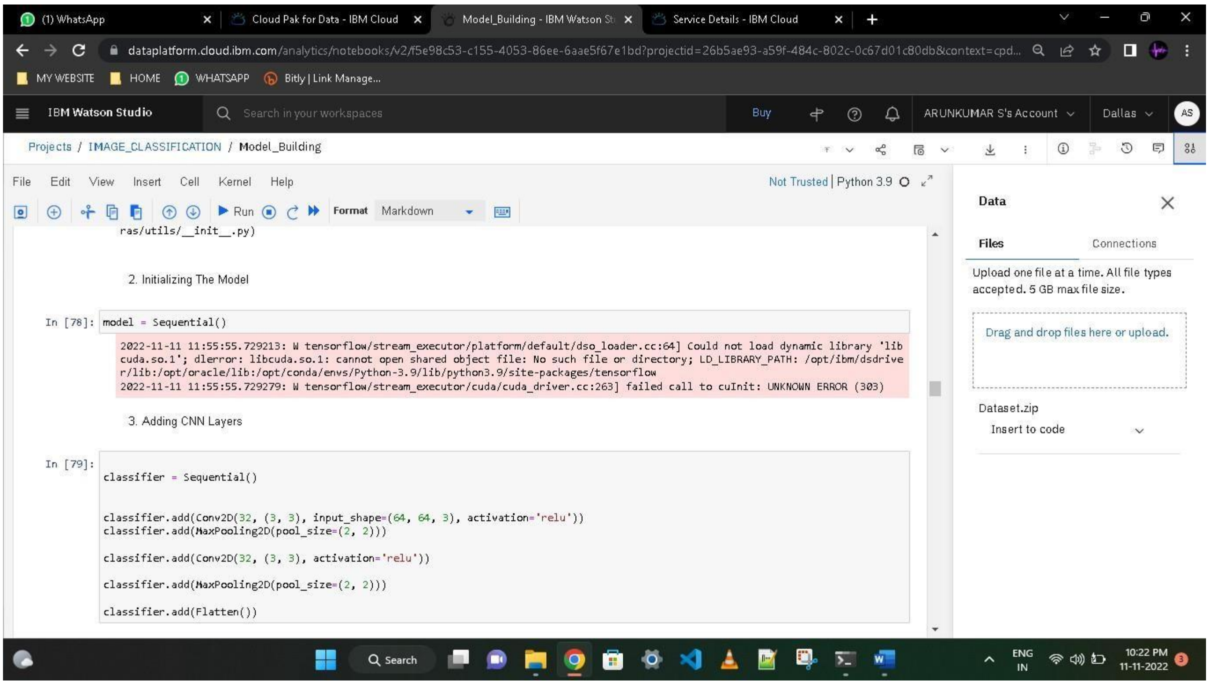
Model Building

1. Importing The Model Building Libraries

```
In [75]: import numpy as np
         import tensorflow as tf
         from tensorflow.keras.models import Sequential
         from tensorflow.keras import layers
         from tensorflow.keras.layers import Dense,Flatten
         from tensorflow.keras.layers import Conv2D,MaxPooling2D,Dropout

  ---------------------------------------------------------------------------
  ModuleNotFoundError                       Traceback (most recent call last)
  /tmp/wsuser/ipykernel_165/3963299783.py in <module>
        1 import numpy as np
        2 import tensorflow as tf
  ----> 3 from tensorflow.keras.models import Sequential
        4 from tensorflow.keras import layers
        5 from tensorflow.keras.layers import Dense,Flatten

  ModuleNotFoundError: No module named 'tensorflow.keras'

In [76]:
```



```
ras/utils/__init__.py)
```

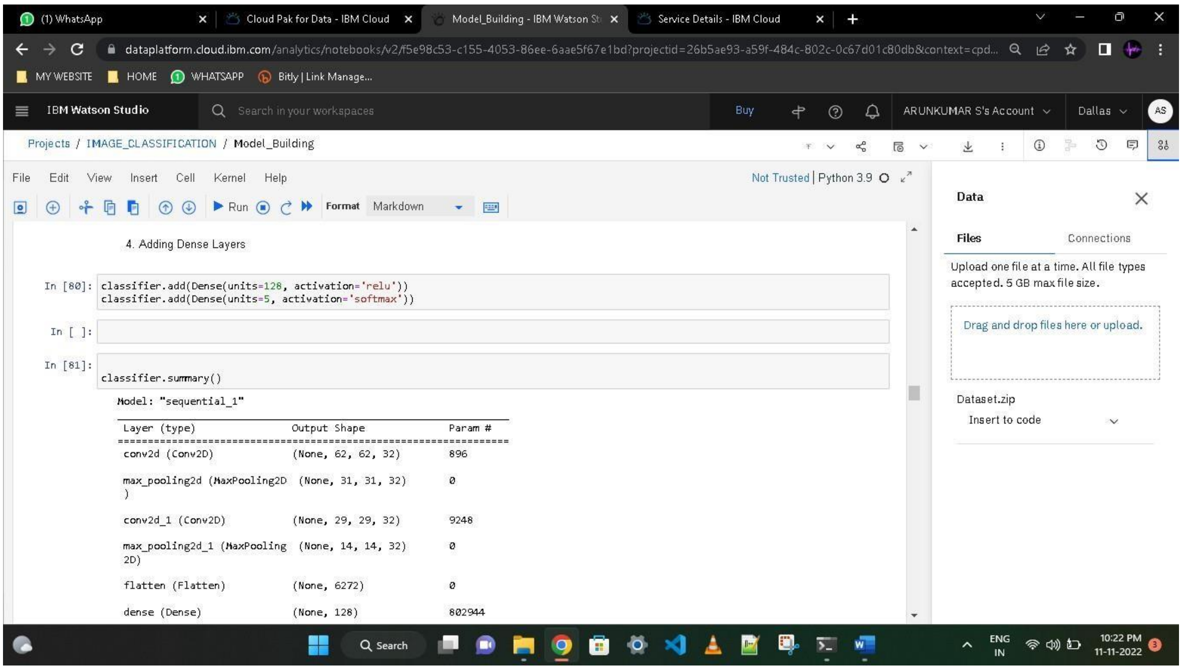
2. Initializing The Model

```
In [78]: model = Sequential()
```

```
2022-11-11 11:55:55.729213: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'lib
cuda.so.1'; dlerror: libcuda.so.1: cannot open shared object file: No such file or directory; LD_LIBRARY_PATH: /opt/ibm/dsdrive
r/lib:/opt/oracle/lib:/opt/conda/envs/Python-3.9/lib/python3.9/site-packages/tensorflow
2022-11-11 11:55:55.729279: W tensorflow/stream_executor/cuda/cuda_driver.cc:263] failed call to cuInit: UNKNOWN ERROR (303)
```

3. Adding CNN Layers

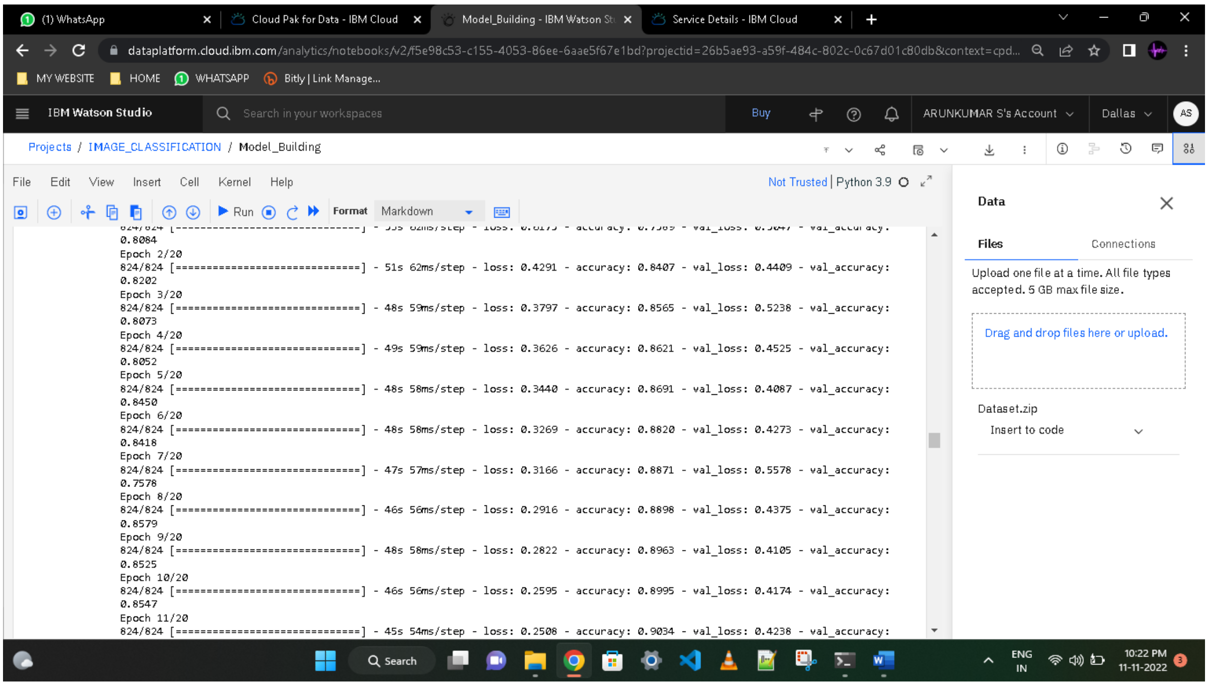
```
In [79]:
classifier = Sequential()


classifier.add(Conv2D(32, (3, 3), input_shape=(64, 64, 3), activation='relu'))
classifier.add(MaxPooling2D(pool_size=(2, 2)))

classifier.add(Conv2D(32, (3, 3), activation='relu'))

classifier.add(MaxPooling2D(pool_size=(2, 2)))

classifier.add(Flatten())
```



4. Adding Dense Layers

```
In [80]: classifier.add(Dense(units=128, activation='relu'))
         classifier.add(Dense(units=5, activation='softmax'))

In [ ]:

In [81]:
classifier.summary()
```

```
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d (Conv2D)             (None, 62, 62, 32)        896

 max_pooling2d (MaxPooling2D  (None, 31, 31, 32)       0
 )

 conv2d_1 (Conv2D)           (None, 29, 29, 32)        9248

 max_pooling2d_1 (MaxPooling  (None, 14, 14, 32)       0
 2D)

 flatten (Flatten)           (None, 6272)              0

 dense (Dense)               (None, 128)               802944
```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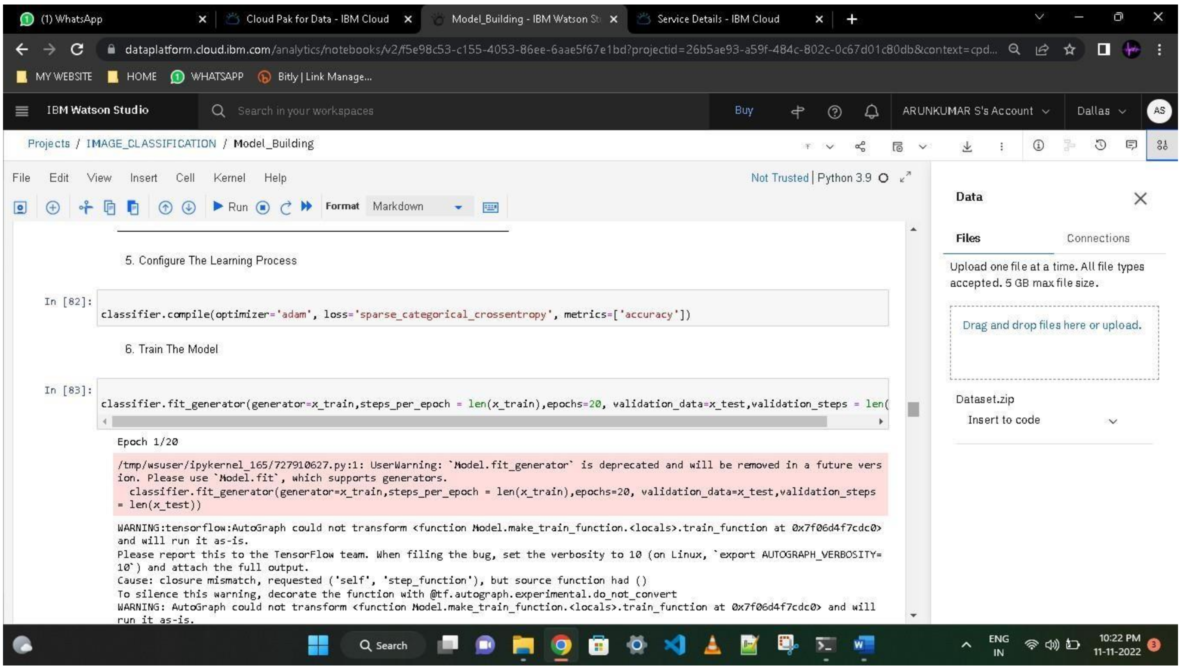
```
0.8084
Epoch 2/20
824/824 [==============================] - 51s 62ms/step - loss: 0.4291 - accuracy: 0.8407 - val_loss: 0.4409 - val_accuracy:
0.8202
Epoch 3/20
824/824 [==============================] - 48s 59ms/step - loss: 0.3797 - accuracy: 0.8565 - val_loss: 0.5238 - val_accuracy:
0.8073
Epoch 4/20
824/824 [==============================] - 49s 59ms/step - loss: 0.3626 - accuracy: 0.8621 - val_loss: 0.4525 - val_accuracy:
0.8052
Epoch 5/20
824/824 [==============================] - 48s 58ms/step - loss: 0.3440 - accuracy: 0.8691 - val_loss: 0.4087 - val_accuracy:
0.8450
Epoch 6/20
824/824 [==============================] - 48s 58ms/step - loss: 0.3269 - accuracy: 0.8820 - val_loss: 0.4273 - val_accuracy:
0.8418
Epoch 7/20
824/824 [==============================] - 47s 57ms/step - loss: 0.3166 - accuracy: 0.8871 - val_loss: 0.5578 - val_accuracy:
0.7578
Epoch 8/20
824/824 [==============================] - 46s 56ms/step - loss: 0.2916 - accuracy: 0.8898 - val_loss: 0.4375 - val_accuracy:
0.8579
Epoch 9/20
824/824 [==============================] - 48s 58ms/step - loss: 0.2822 - accuracy: 0.8963 - val_loss: 0.4105 - val_accuracy:
0.8525
Epoch 10/20
824/824 [==============================] - 46s 56ms/step - loss: 0.2595 - accuracy: 0.8995 - val_loss: 0.4174 - val_accuracy:
0.8547
Epoch 11/20
824/824 [==============================] - 45s 54ms/step - loss: 0.2508 - accuracy: 0.9034 - val_loss: 0.4238 - val_accuracy:
```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5. Configure The Learning Process

In [82]:

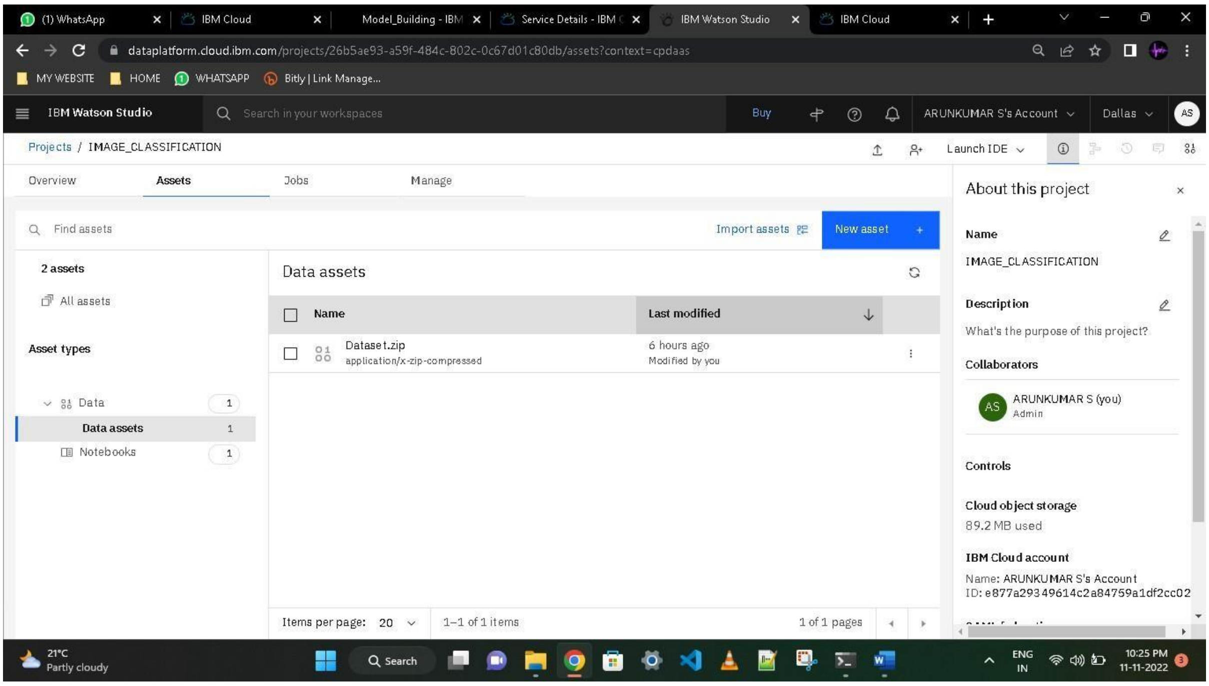
```
classifier.compile(optimizer='adam', loss='sparse_categorical_crossentropy', metrics=['accuracy'])
```

6. Train The Model

In [83]:

```
classifier.fit_generator(generator=x_train,steps_per_epoch = len(x_train),epochs=20, validation_data=x_test,validation_steps = len(
```

```
Epoch 1/20
/tmp/wsuser/ipykernel_165/727910627.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future vers
ion. Please use `Model.fit`, which supports generators.
  classifier.fit_generator(generator=x_train,steps_per_epoch = len(x_train),epochs=20, validation_data=x_test,validation_steps
= len(x_test))
WARNING:tensorflow:AutoGraph could not transform <function Model.make_train_function.<locals>.train_function at 0x7f06d4f7cdc0>
and will run it as-is.
Please report this to the TensorFlow team. When filing the bug, set the verbosity to 10 (on Linux, `export AUTOGRAPH_VERBOSITY=
10`) and attach the full output.
Cause: closure mismatch, requested ('self', 'step_function'), but source function had ()
To silence this warning, decorate the function with @tf.autograph.experimental.do_not_convert
WARNING: AutoGraph could not transform <function Model.make_train_function.<locals>.train_function at 0x7f06d4f7cdc0> and will
run it as-is.
```



dataplatform.cloud.ibm.com/projects/26b5ae93-a59f-484c-802c-0c67d01c80db/assets?context=cpdaas

IBM Watson Studio

Projects / IMAGE_CLASSIFICATION

Overview Assets Jobs Manage

Data assets

2 assets

Name	Last modified
Dataset.zip application/x-zip-compressed	6 hours ago Modified by you

Asset types: Data 1, Data assets 1, Notebooks 1

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

About this project

Name: IMAGE_CLASSIFICATION

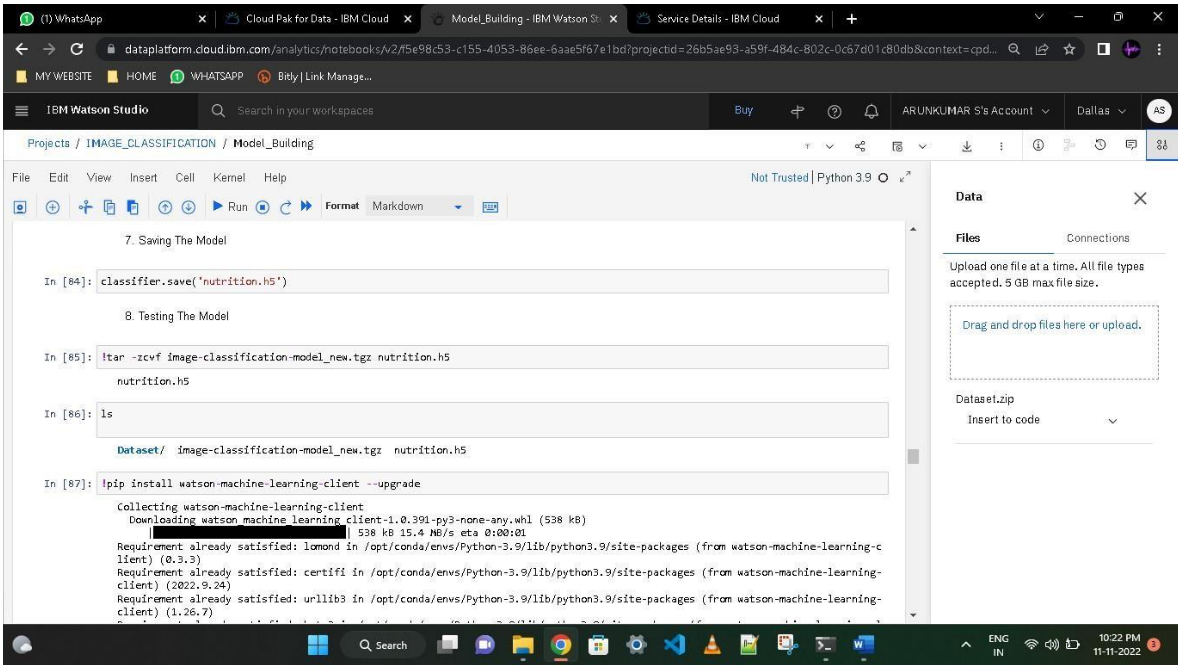
Description: What's the purpose of this project?

Collaborators: ARUNKUMAR S (you) Admin

Controls

Cloud object storage: 89.2 MB used

IBM Cloud account
Name: ARUNKUMAR S's Account
ID: e877a29349614c2a84759a1df2cc02



dataplatform.cloud.ibm.com/analytics/notebooks/v2/f5e98c53-c155-4053-86ee-6aae5f67e1bd?projectid=26b5ae93-a59f-484c-802c-0c67d01c80db&context=cpd...

Projects / IMAGE_CLASSIFICATION / Model_Building

Not Trusted | Python 3.9

7. Saving The Model

```
In [84]: classifier.save('nutrition.h5')
```

8. Testing The Model

```
In [85]: !tar -zcvf image-classification-model_new.tgz nutrition.h5

         nutrition.h5

In [86]: ls

         Dataset/  image-classification-model_new.tgz  nutrition.h5

In [87]: !pip install watson-machine-learning-client --upgrade

         Collecting watson-machine-learning-client
           Downloading watson_machine_learning_client-1.0.391-py3-none-any.whl (538 kB)
              |████████████████████████████████| 538 kB 15.4 MB/s eta 0:00:01
         Requirement already satisfied: lomond in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-c
         lient) (0.3.3)
         Requirement already satisfied: certifi in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-
         client) (2022.9.24)
         Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-
         client) (1.26.7)
```

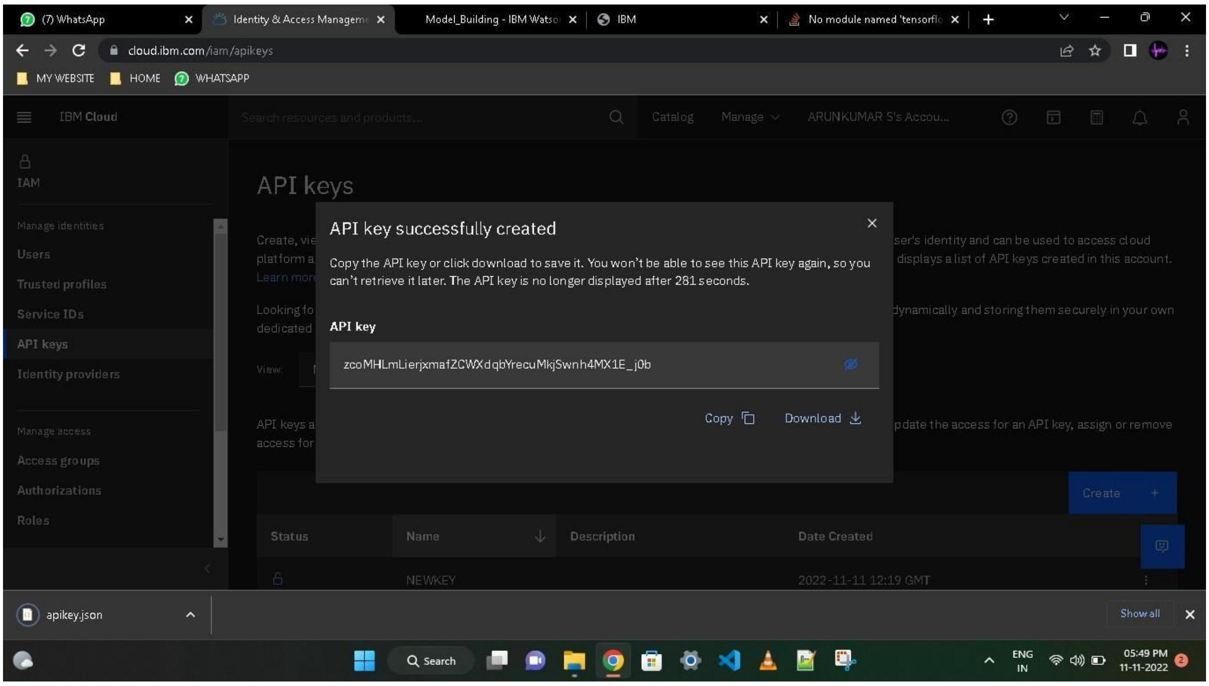
Data

Files Connections

Upload one file at a time. All file types accepted. 5 GB max file size.

Drag and drop files here or upload.

Dataset.zip
Insert to code



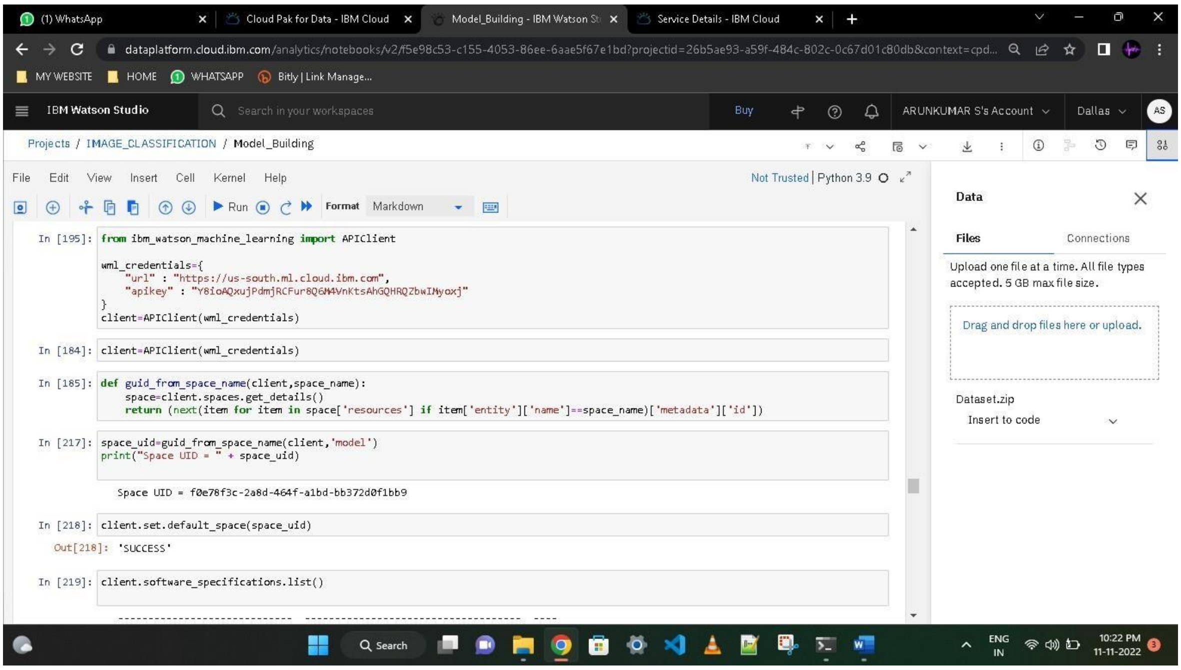
API key successfully created

Copy the API key or click download to save it. You won't be able to see this API key again, so you can't retrieve it later. The API key is no longer displayed after 281 seconds.

API key

zcoMHLmLierjxmafZCWXdqbYrecuMkjSwnh4MX1E_j0b

Status	Name	Description	Date Created
	NEWKEY		2022-11-11 12:19 GMT



Projects / IMAGE_CLASSIFICATION / Model_Building

```
In [195]: from ibm_watson_machine_learning import APIClient

          wml_credentials={
              "url" : "https://us-south.ml.cloud.ibm.com",
              "apikey" : "Y8ioAQxujPdmjRCFur8Q6M4VnKtsAhGQHRQZbwIMyoxj"
          }
          client=APIClient(wml_credentials)

In [184]: client=APIClient(wml_credentials)

In [185]: def guid_from_space_name(client,space_name):
              space=client.spaces.get_details()
              return (next(item for item in space['resources'] if item['entity']['name']==space_name)['metadata']['id'])

In [217]: space_uid=guid_from_space_name(client,'model')
          print("Space UID = " + space_uid)

            Space UID = f0e78f3c-2a8d-464f-a1bd-bb372d0f1bb9

In [218]: client.set.default_space(space_uid)

 Out[218]: 'SUCCESS'

In [219]: client.software_specifications.list()

            ----------------------------  ----------------------------------  ----
```

dataplatform.cloud.ibm.com/analytics/notebooks/v2/f5e98c53-c155-4053-86ee-6aae5f67e1bd?projectid=26b5ae93-a59f-484c-802c-0c67d01c80db&context=cpd...
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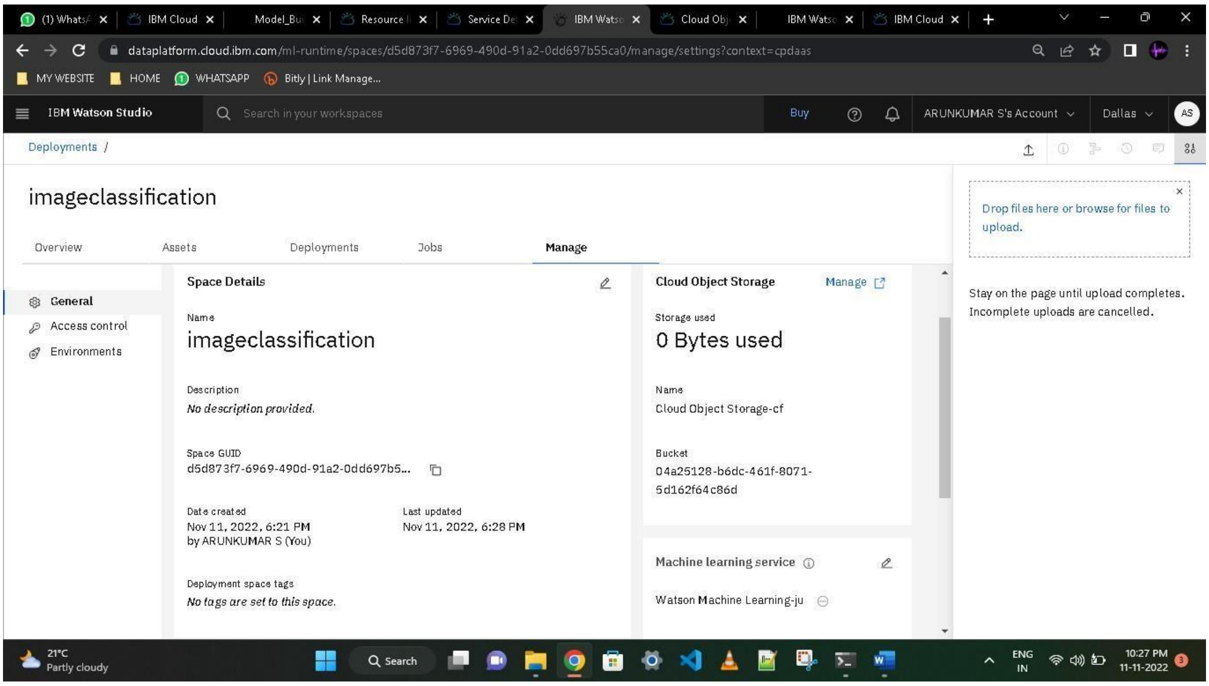
dataplatform.cloud.ibm.com/ml-runtime/spaces/d5d873f7-6969-490d-91a2-0dd697b55ca0/manage/settings?context=cpdaas
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21°C Partly cloudy
10:27 PM 11-11-2022

imageclassification

Space Details

Name
imageclassification

Description
No description provided.

Space GUID
d5d873f7-6969-490d-91a2-0dd697b5...

Date created
Nov 11, 2022, 6:21 PM
by ARUNKUMAR S (You)

Last updated
Nov 11, 2022, 6:28 PM

Deployment space tags
No tags are set to this space.

Cloud Object Storage Manage

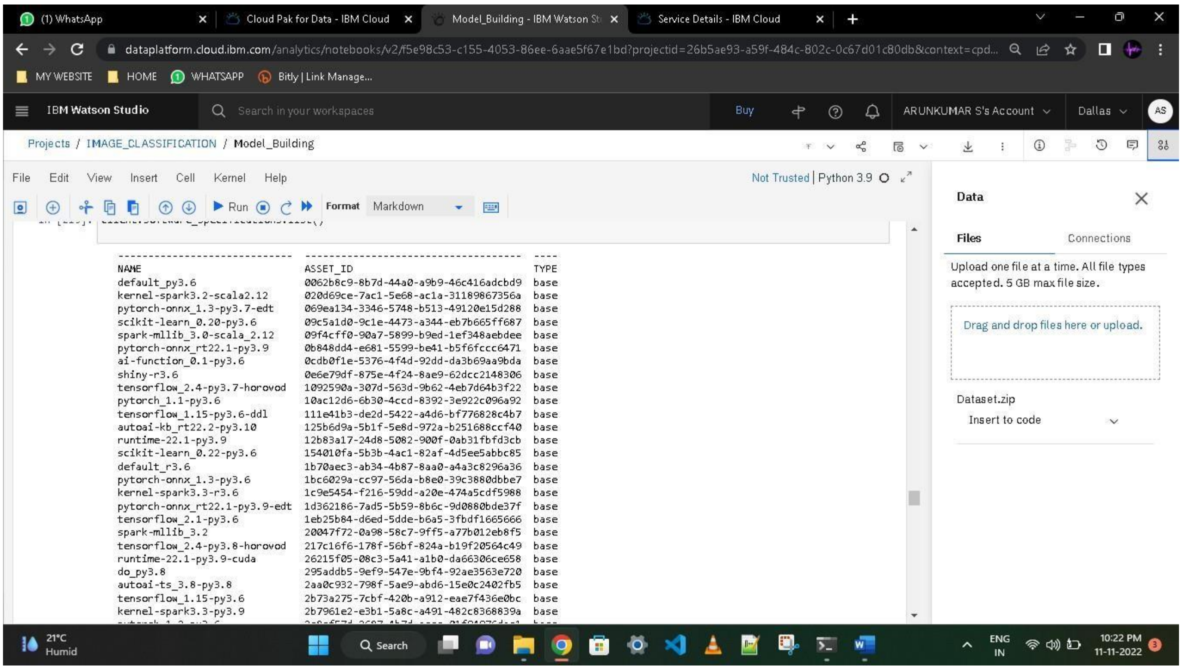
Storage used
0 Bytes used

Name
Cloud Object Storage-cf

Bucket
04a25128-b6dc-461f-8071-5d162f64c86d

Machine learning service

Watson Machine Learning-ju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dataplatform.cloud.ibm.com/analytics/notebooks/v2/f5e98c53-c155-4053-86ee-6aae5f67e1bd?projectid=26b5ae93-a59f-484c-802c-0c67d01c80db&context=cpd...
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Dataset.zip
Insert to code
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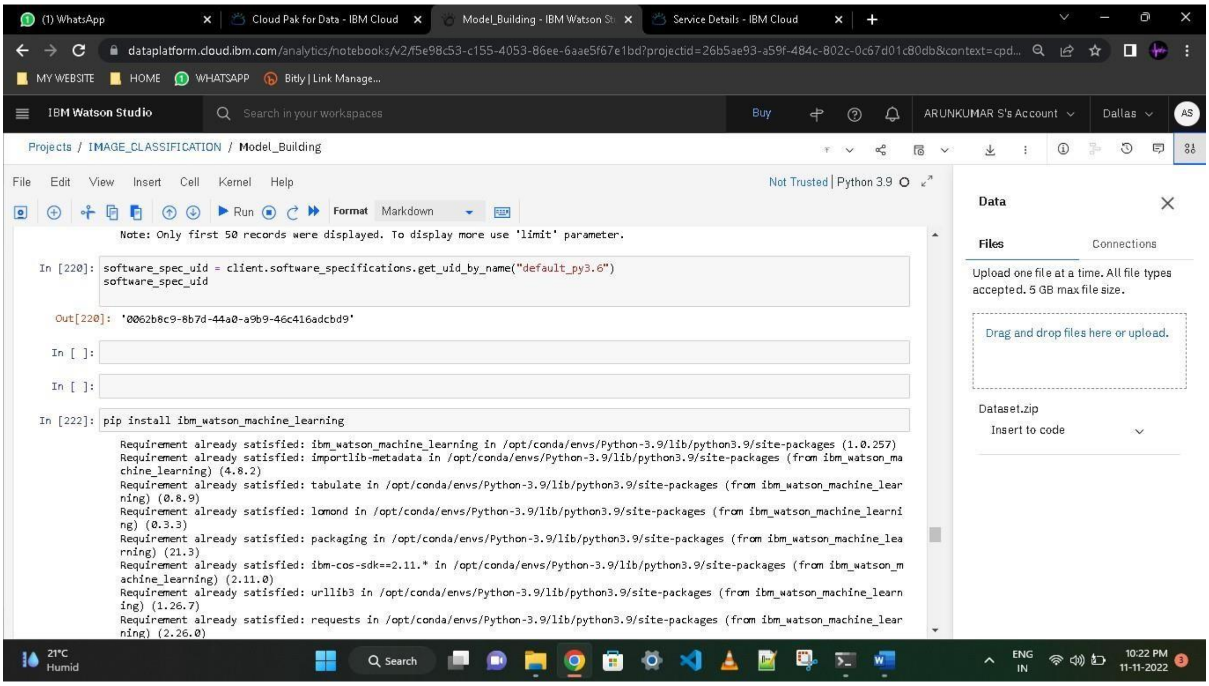
```
----------------------------  ------------------------------------  ----
NAME                          ASSET_ID                              TYPE
default_py3.6                 0062b8c9-8b7d-44a0-a9b9-46c416adcbd9  base
kernel-spark3.2-scala2.12     020d69ce-7ac1-5e68-ac1a-31189867356a  base
pytorch-onnx_1.3-py3.7-edt    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
pytorch-onnx_rt22.1-py3.9     0b848dd4-e681-5599-be41-b5f6fccc6471  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
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
pytorch-onnx_rt22.1-py3.9-edt 1d362186-7ad5-5b59-8b6c-9d0880bde37f  base
tensorflow_2.1-py3.6          1eb25b84-d6ed-5dde-b6a5-3fbdf1665666  base
spark-mllib_3.2               20047f72-0a98-58c7-9ff5-a77b012eb8f5  base
tensorflow_2.4-py3.8-horovod  217c16f6-178f-56bf-824a-b19f20564c49  base
runtime-22.1-py3.9-cuda       26215f05-08c3-5a41-a1b0-da66306ce658  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
kernel-spark3.3-py3.9         2b7961e2-e3b1-5a8c-a491-482c8368839a  base
```



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dataplatform.cloud.ibm.com/analytics/notebooks/v2/f5e98c53-c155-4053-86ee-6aae5f67e1bd?projectid=26b5ae93-a59f-484c-802c-0c67d01c80db&context=cpd...
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Drag and drop files here or upload.
Dataset.zip
Insert to code
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Humid
Search
ENG
IN
10:22 PM
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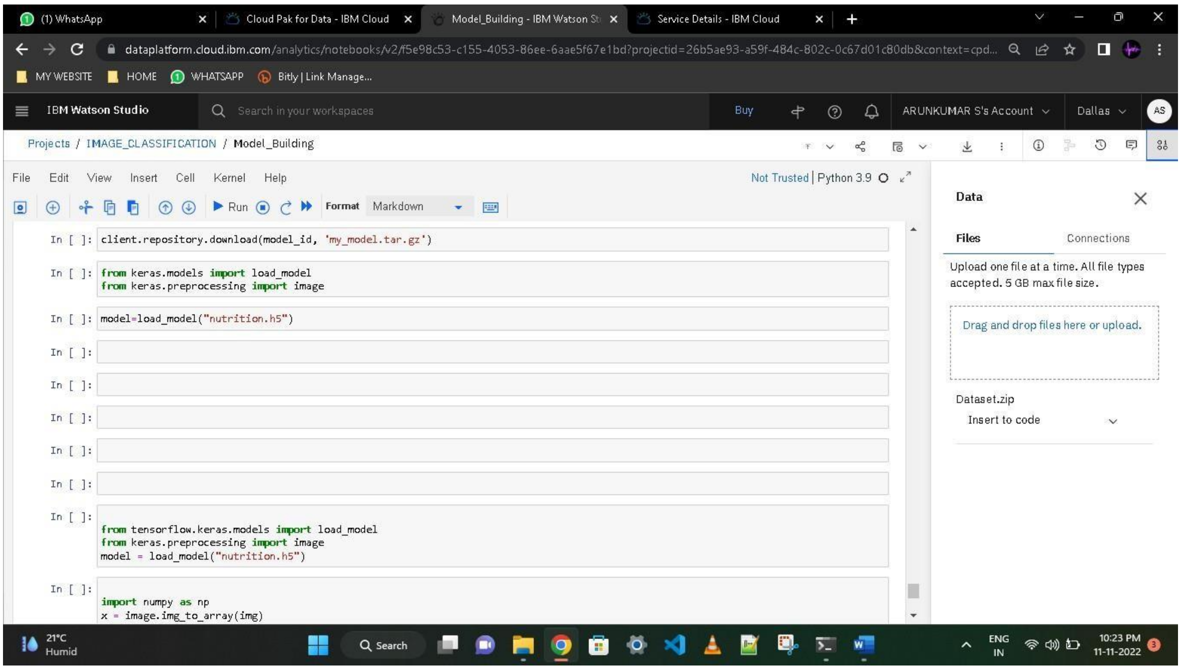
```
          Note: Only first 50 records were displayed. To display more use 'limit' parameter.

In [220]: software_spec_uid = client.software_specifications.get_uid_by_name("default_py3.6")
          software_spec_uid

Out[220]: '0062b8c9-8b7d-44a0-a9b9-46c416adcbd9'

In [ ]:

In [ ]:

In [222]: pip install ibm_watson_machine_learning

          Requirement already satisfied: ibm_watson_machine_learning in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (1.0.257)
          Requirement already satisfied: importlib-metadata in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_ma
          chine_learning) (4.8.2)
          Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_lear
          ning) (0.8.9)
          Requirement already satisfied: lomond in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learni
          ng) (0.3.3)
          Requirement already satisfied: packaging in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_lea
          rning) (21.3)
          Requirement already satisfied: ibm-cos-sdk==2.11.* in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_m
          achine_learning) (2.11.0)
          Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_learn
          ing) (1.26.7)
          Requirement already satisfied: requests in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm_watson_machine_lear
          ning) (2.26.0)
```



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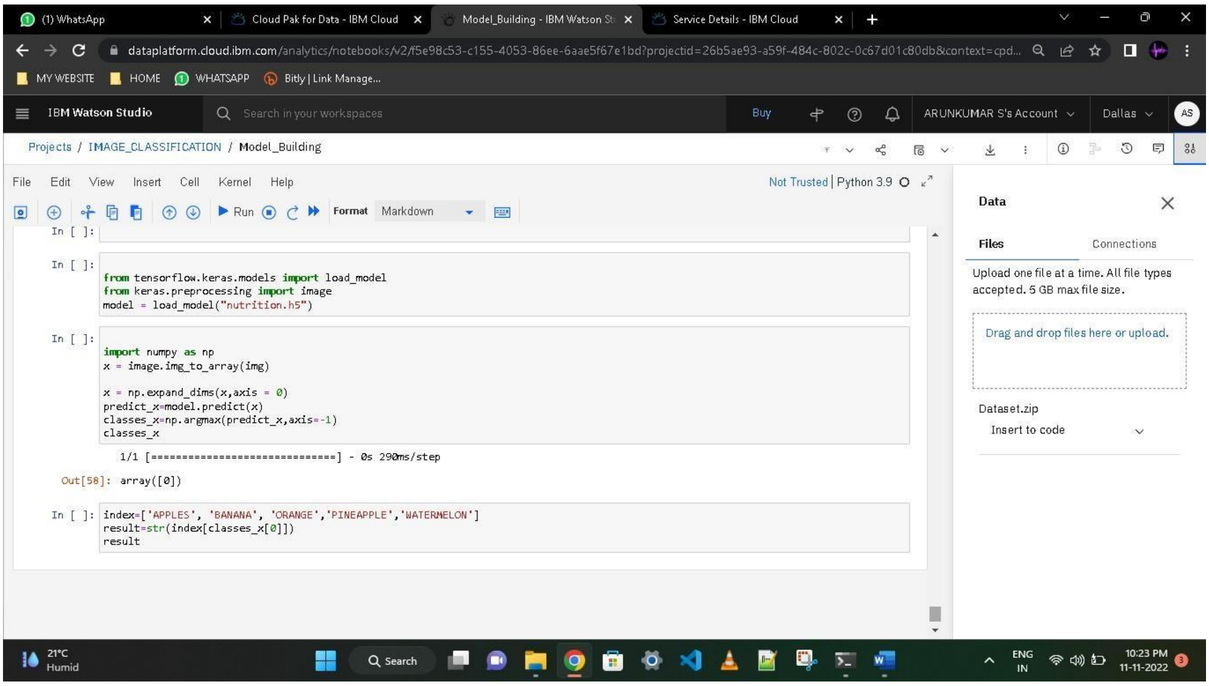
```
In [ ]: client.repository.download(model_id, 'my_model.tar.gz')

In [ ]: from keras.models import load_model
        from keras.preprocessing import image

In [ ]: model=load_model("nutrition.h5")

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:
        from tensorflow.keras.models import load_model
        from keras.preprocessing import image
        model = load_model("nutrition.h5")

In [ ]:
        import numpy as np
        x = image.img_to_array(img)
```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Connections
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Dataset.zip
Insert to code

```
In [ ]: from tensorflow.keras.models import load_model
        from keras.preprocessing import image
        model = load_model("nutrition.h5")
```

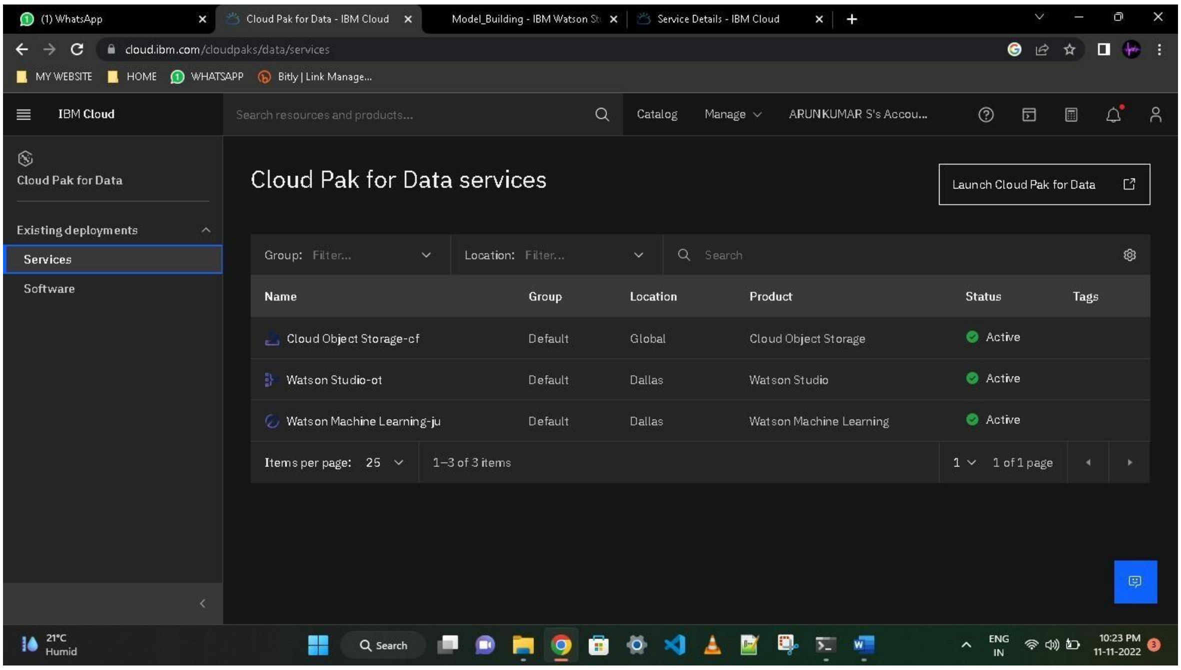
```
In [ ]: import numpy as np
        x = image.img_to_array(img)

        x = np.expand_dims(x,axis = 0)
        predict_x=model.predict(x)
        classes_x=np.argmax(predict_x,axis=-1)
        classes_x

        1/1 [==============================] - 0s 290ms/step

Out[58]: array([0])
```

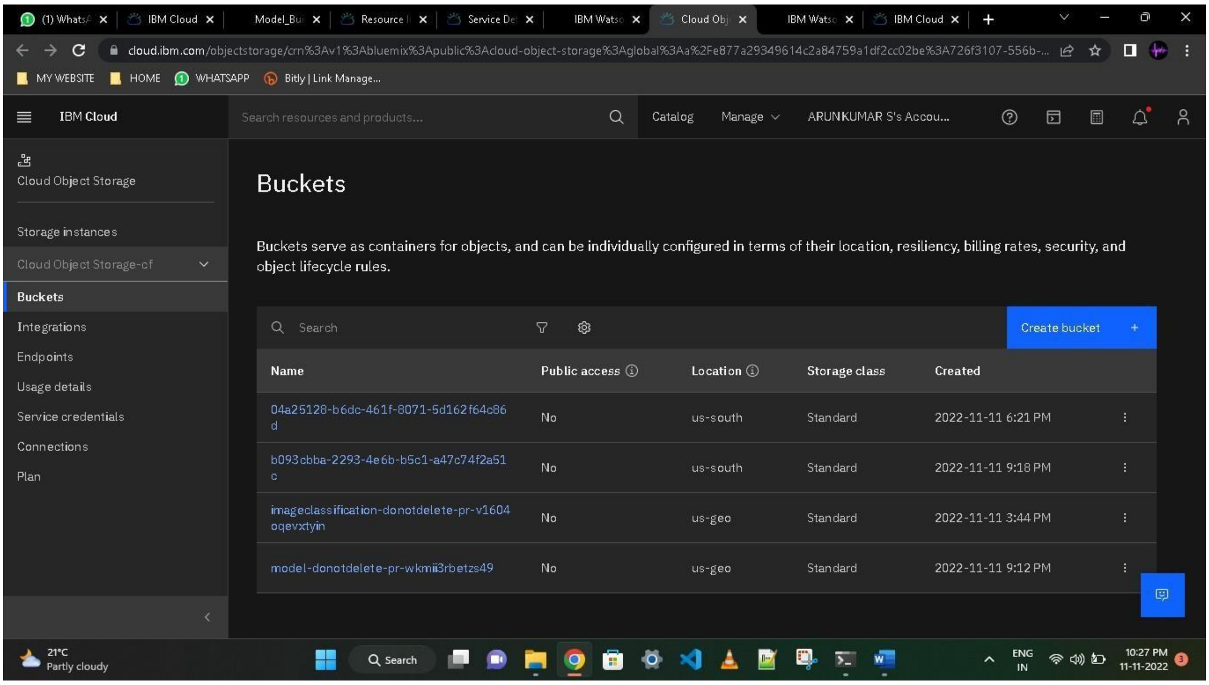
```
In [ ]: index=['APPLES', 'BANANA', 'ORANGE','PINEAPPLE','WATERMELON']
        result=str(index[classes_x[0]])
        result
```



Cloud Pak for Data services

Name	Group	Location	Product	Status	Tags
Cloud Object Storage-cf	Default	Global	Cloud Object Storage	Active	
Watson Studio-ot	Default	Dallas	Watson Studio	Active	
Watson Machine Learning-ju	Default	Dallas	Watson Machine Learning	Active	

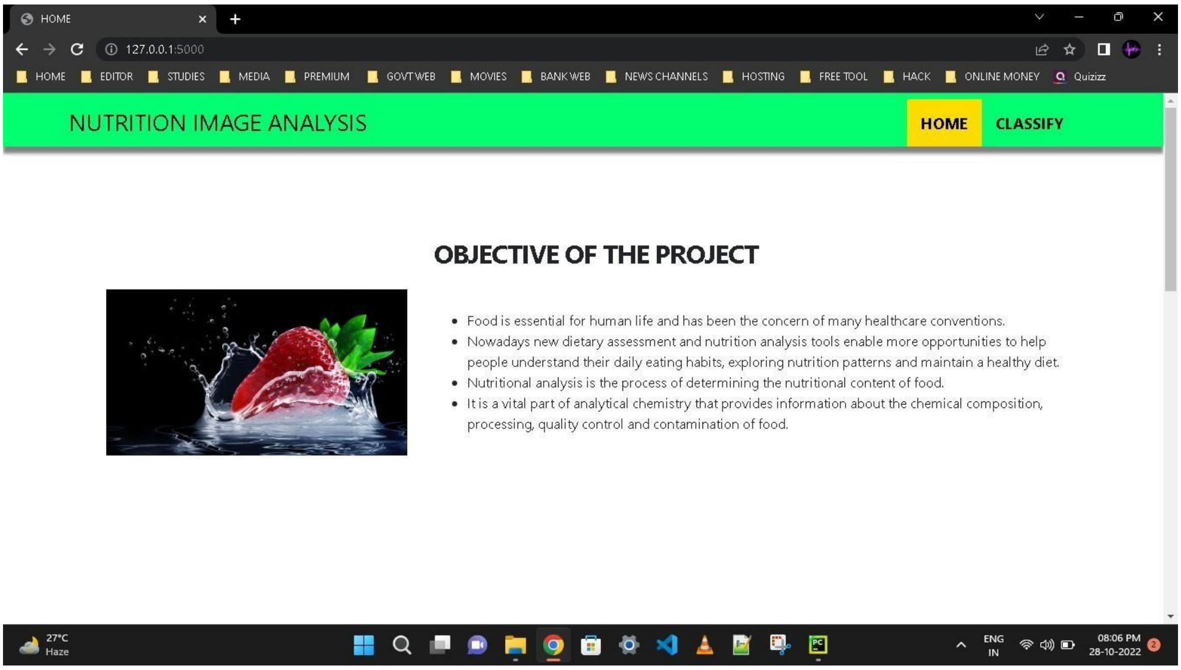
Items per page: 25 1–3 of 3 items 1 1 of 1 page



Buckets

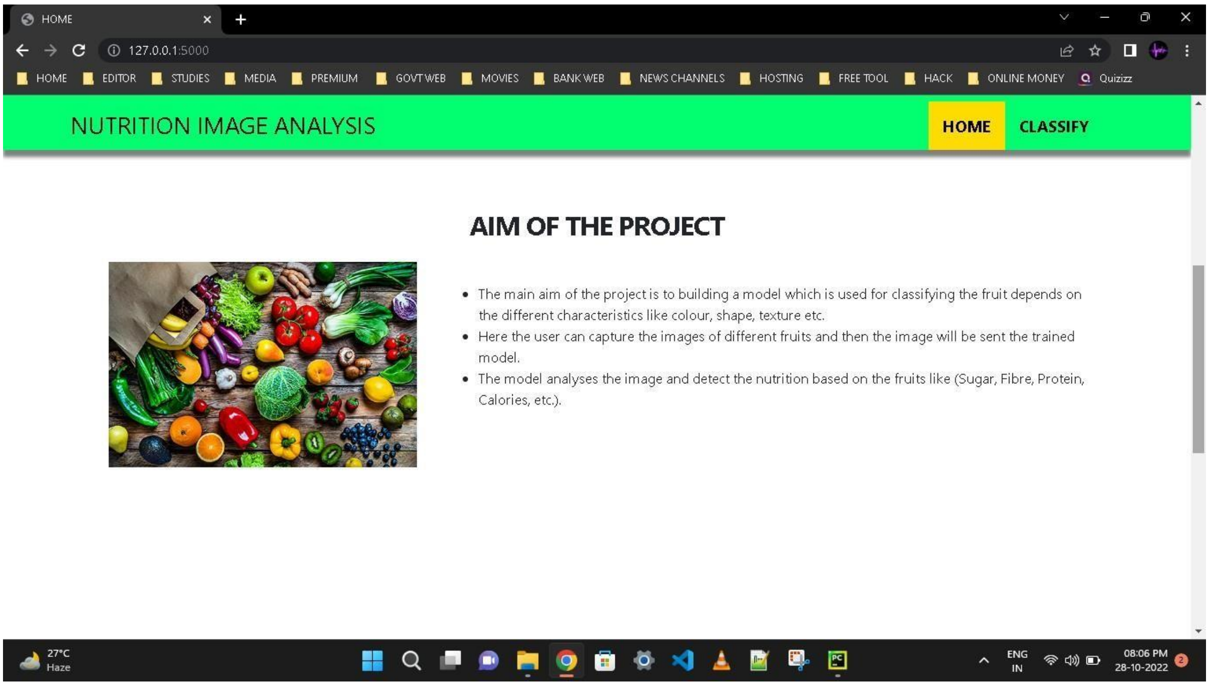
Buckets serve as containers for objects, and can be individually configured in terms of their location, resiliency, billing rates, security, and object lifecycle rules.

Name	Public access	Location	Storage class	Created
04a25128-b6dc-461f-8071-5d162f64c86d	No	us-south	Standard	2022-11-11 6:21 PM
b093cbba-2293-4e6b-b5c1-a47c74f2a51c	No	us-south	Standard	2022-11-11 9:18 PM
imageclassification-donotdelete-pr-v1604oqevxtyin	No	us-geo	Standard	2022-11-11 3:44 PM
model-donotdelete-pr-wkmii3rbetzs49	No	us-geo	Standard	2022-11-11 9:12 PM



OBJECTIVE OF THE PROJECT

- Food is essential for human life and has been the concern of many healthcare conventions.
- Nowadays new dietary assessment and nutrition analysis tools enable more opportunities to help people understand their daily eating habits, exploring nutrition patterns and maintain a healthy diet.
- Nutritional analysis is the process of determining the nutritional content of food.
- It is a vital part of analytical chemistry that provides information about the chemical composition, processing, quality control and contamination of food.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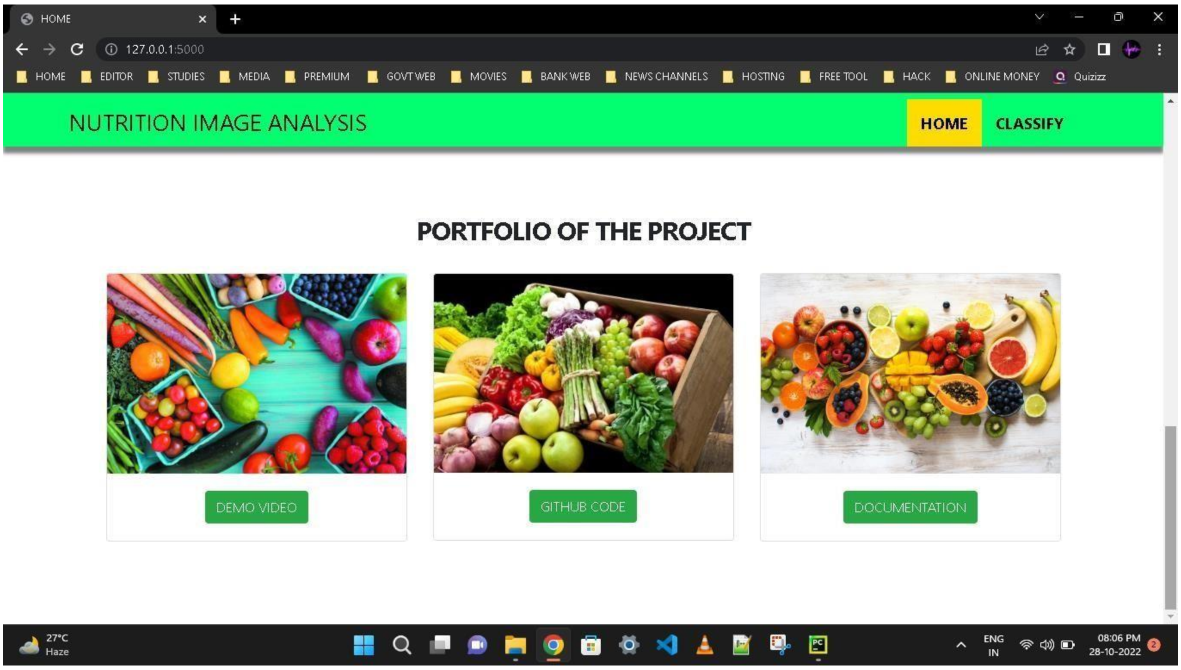
HOME EDITOR STUDIES MEDIA PREMIUM GOVT WEB MOVIES BANK WEB NEWS CHANNELS HOSTING FREE TOOL HACK ONLINE MONEY Quizizz
HOME
CLASSIFY
27°C Haze
ENG IN
08:06 PM 28-10-2022

NUTRITION IMAGE ANALYSIS

AIM OF THE PROJECT

- The main aim of the project is to building a model which is used for classifying the fruit depends on the different characteristics like colour, shape, texture etc.
- Here the user can capture the images of different fruits and then the image will be sent the trained model.
- The model analyses the image and detect the nutrition based on the fruits like (Sugar, Fibre, Protein, Calories, etc.).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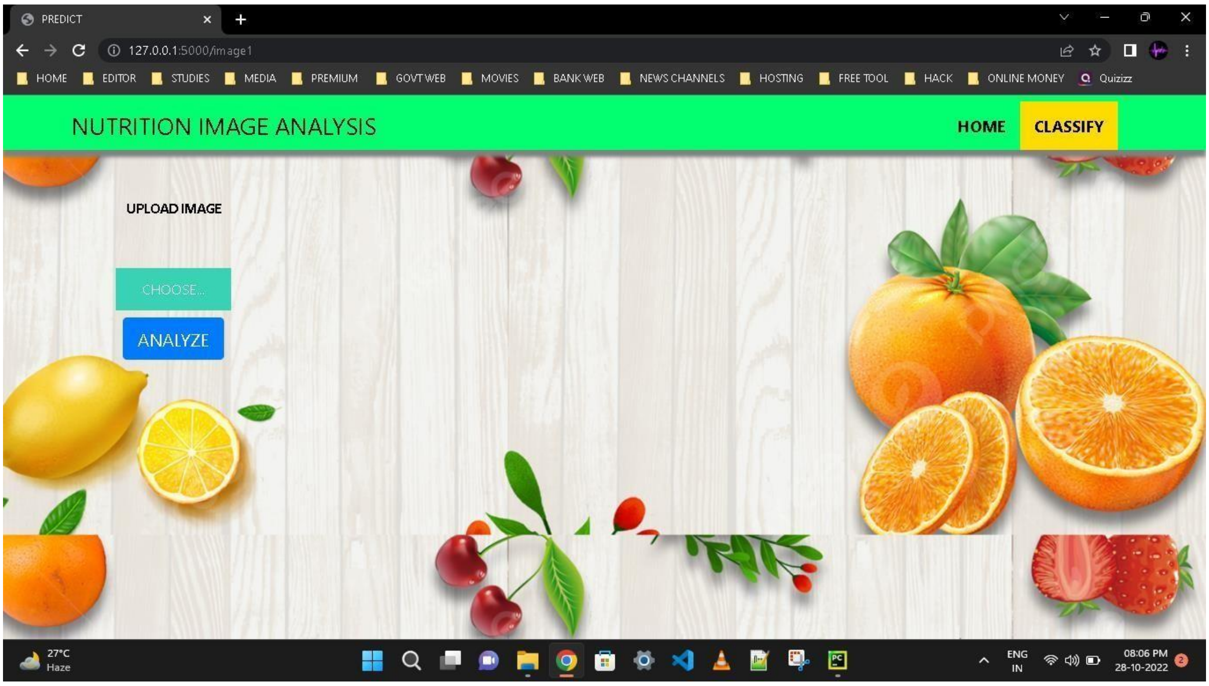
GITHUB CODE
DOCUMENTATION
27°C Haze
ENG IN
08:06 PM 28-10-2022

NUTRITION IMAGE ANALYSIS

PORTFOLIO OF THE PROJECT


PREDICT
127.0.0.1:5000/image1
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CLASSIFY
UPLOAD IMAGE
CHOOSE...
ANALYZE
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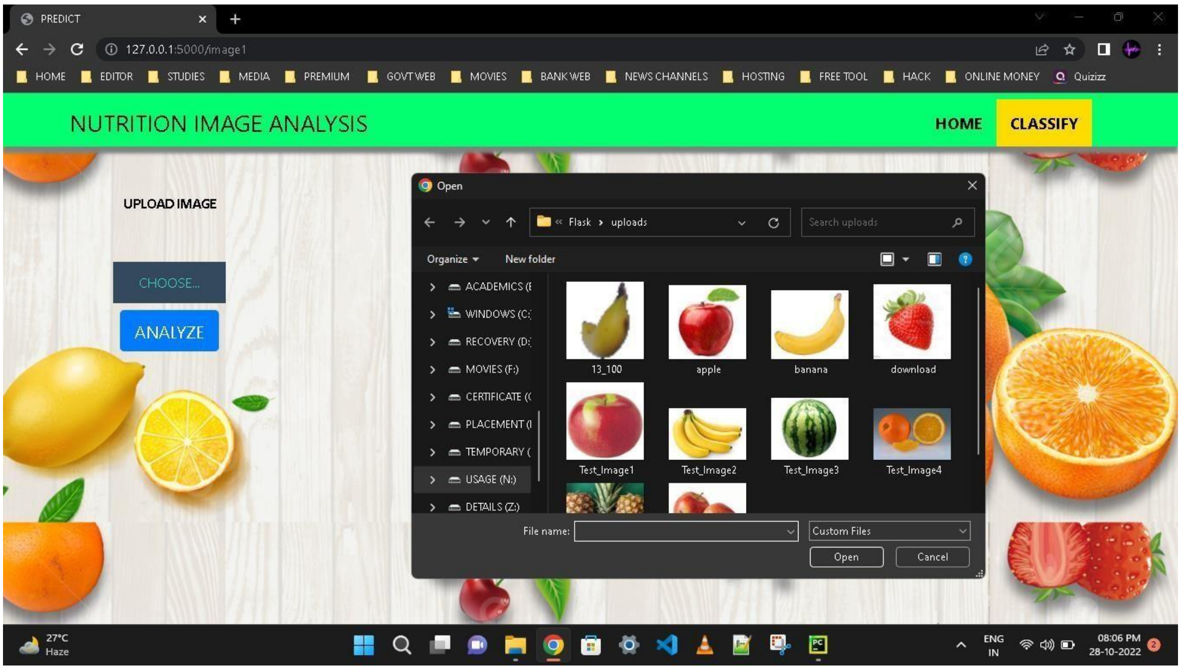
PREDICT
127.0.0.1:5000/image1
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« Flask › uploads
Search uploads
Organize
New folder
ACADEMICS (
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RECOVERY (D:
MOVIES (F:)
CERTIFICATE (
PLACEMENT (
TEMPORARY (
USAGE (N:)
DETAILS (Z:)
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banana
download
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Test_Image2
Test_Image3
Test_Image4
File name:
Custom Files
Open
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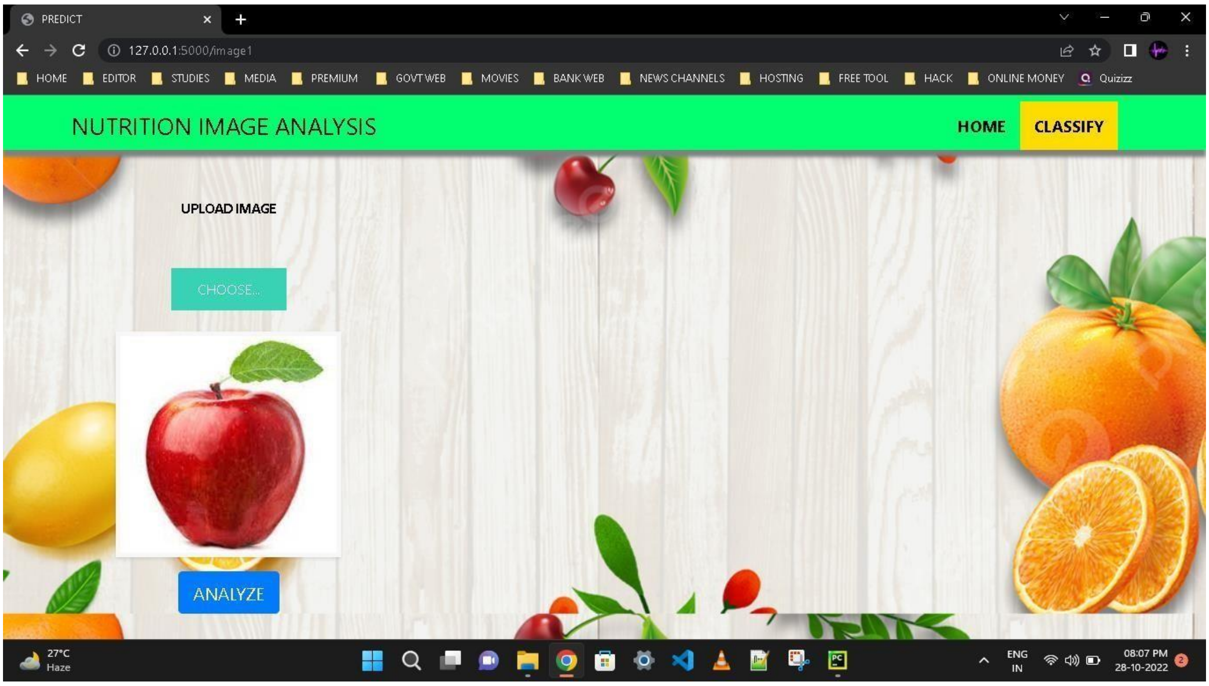
08:06 PM 28-10-2022



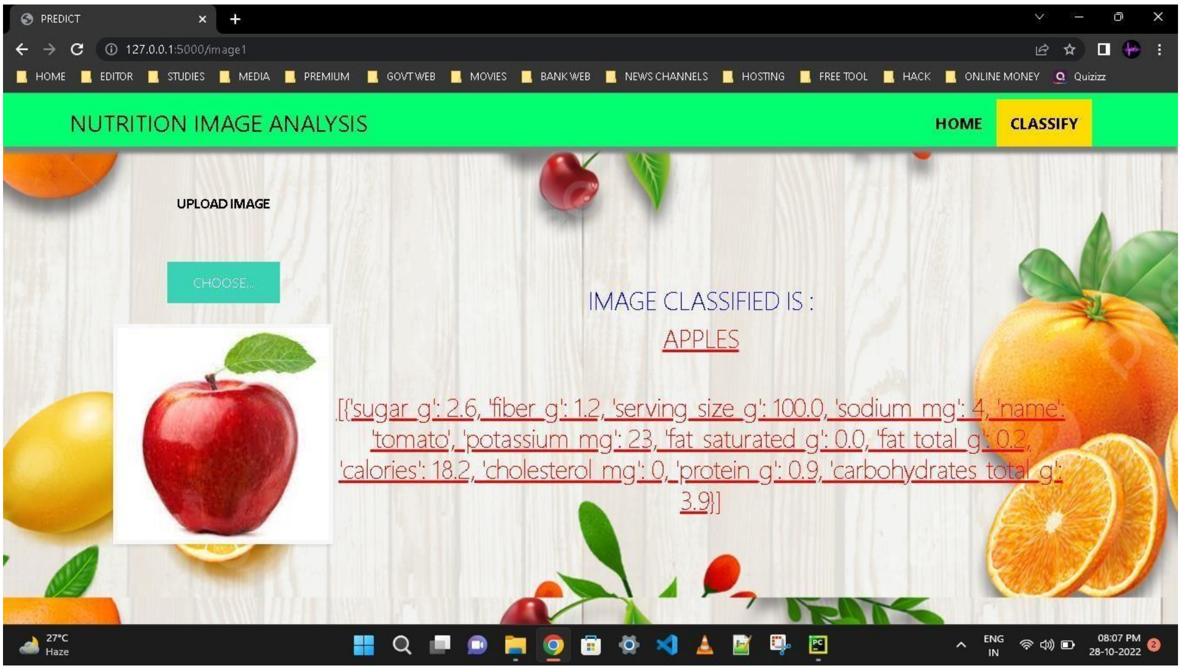


IMAGE CLASSIFIED IS :

APPLES

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