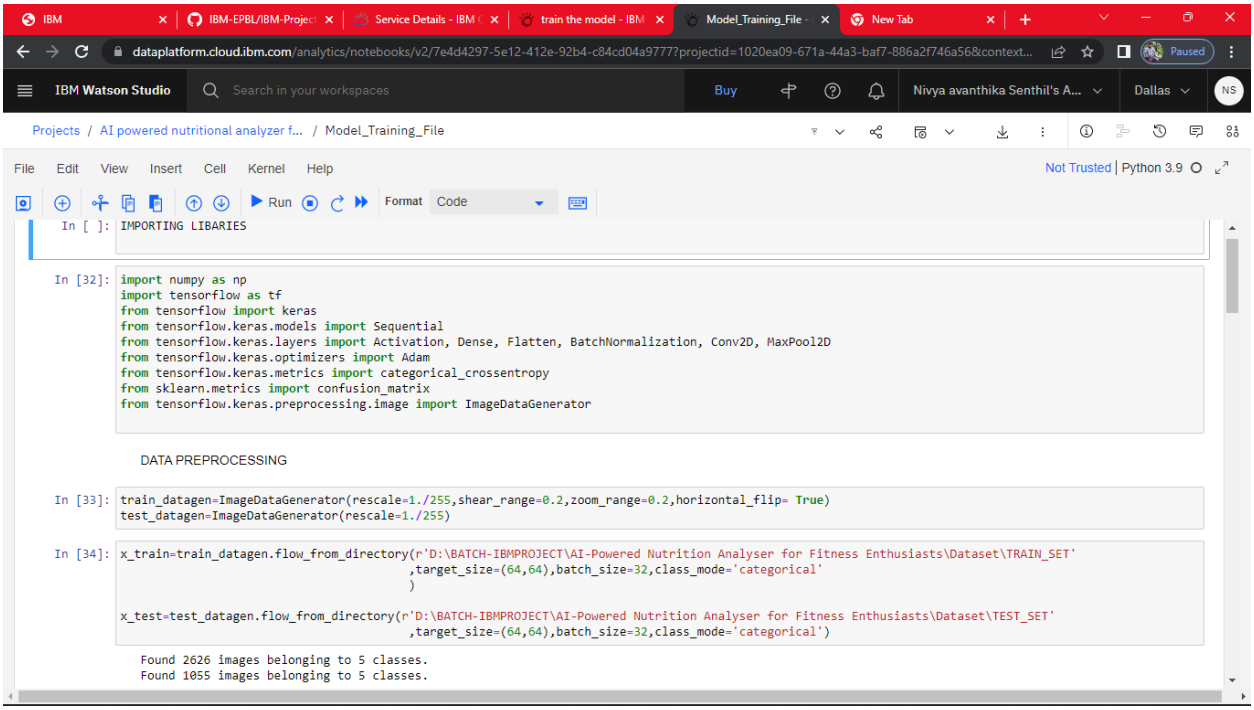
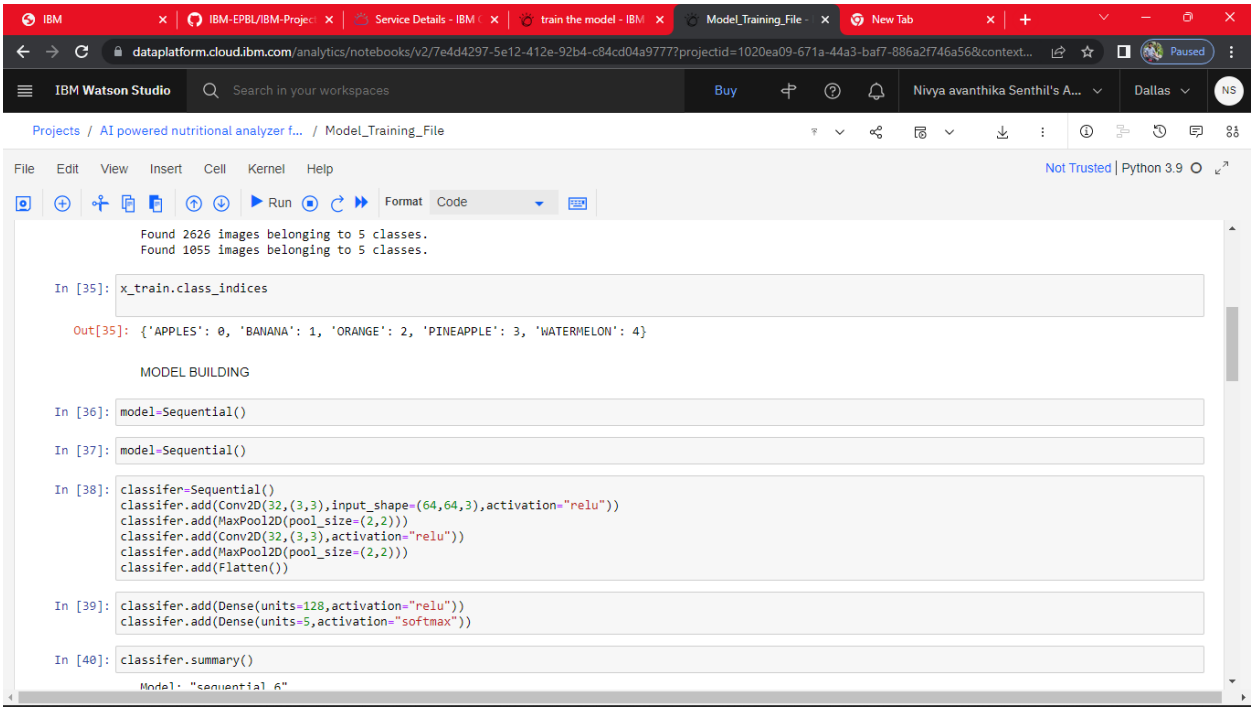
DATE	17 November 2022
TEAM ID	PNT2022TMID08799
PROJECT NAME	AI-POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS





```
Found 2626 images belonging to 5 classes.
Found 1055 images belonging to 5 classes.
```

In [35]:
```
x_train.class_indices
```

Out[35]:
```
{'APPLES': 0, 'BANANA': 1, 'ORANGE': 2, 'PINEAPPLE': 3, 'WATERMELON': 4}
```

MODEL BUILDING

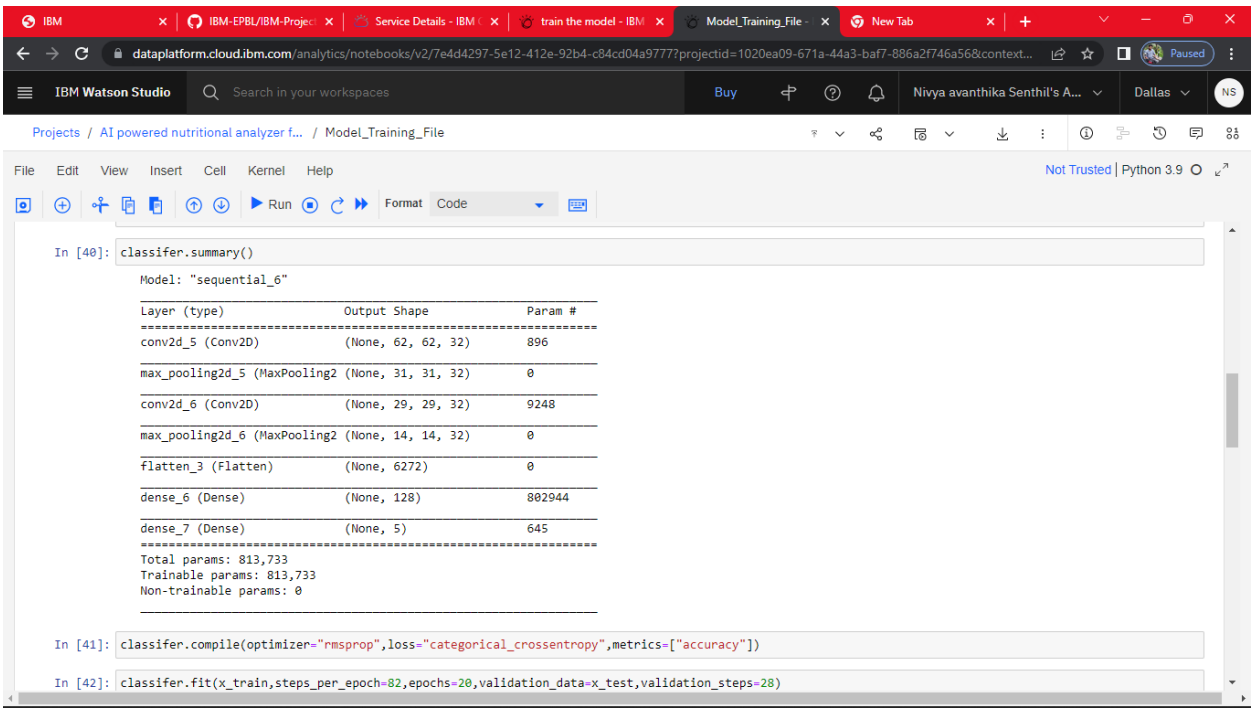
In [36]:
```
model=Sequential()
```

In [37]:
```
model=Sequential()
```

In [38]:
```
classifer=Sequential()
classifer.add(Conv2D(32,(3,3),input_shape=(64,64,3),activation="relu"))
classifer.add(MaxPool2D(pool_size=(2,2)))
classifer.add(Conv2D(32,(3,3),activation="relu"))
classifer.add(MaxPool2D(pool_size=(2,2)))
classifer.add(Flatten())
```

In [39]:
```
classifer.add(Dense(units=128,activation="relu"))
classifer.add(Dense(units=5,activation="softmax"))
```

In [40]:
```
classifer.summary()
```

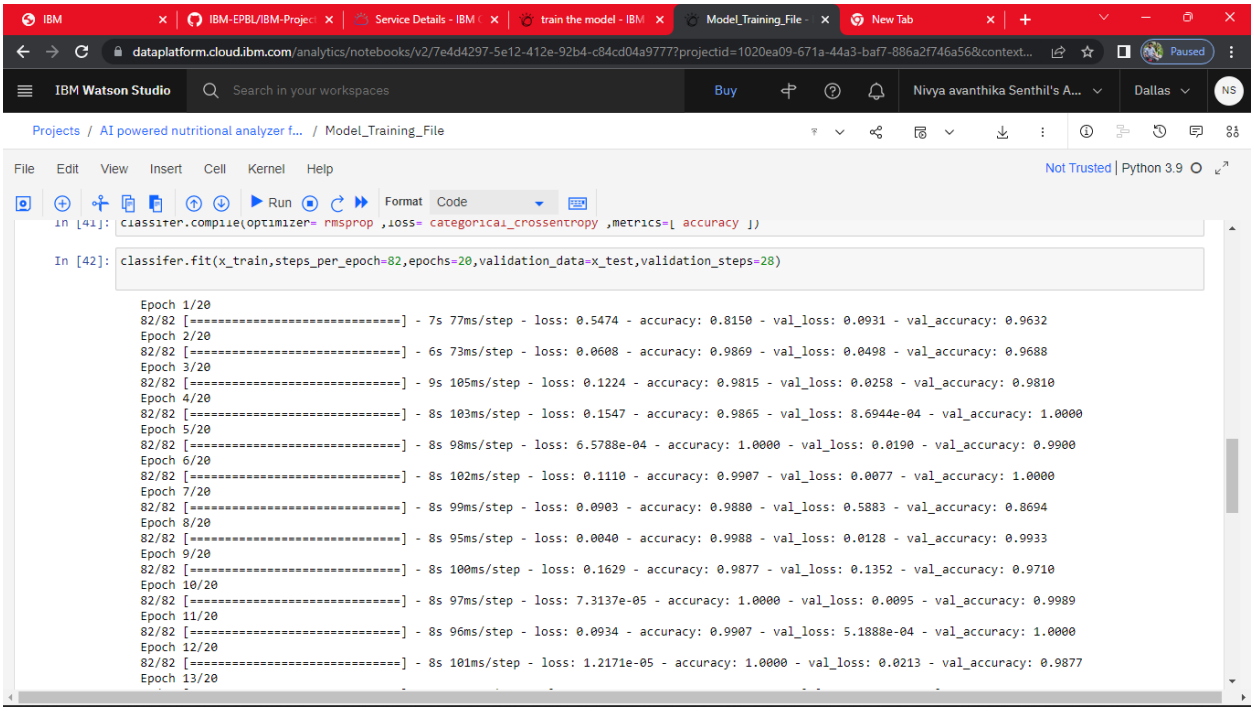


In [40]:
```
classifer.summary()
```

```
Model: "sequential_6"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
conv2d_5 (Conv2D)            (None, 62, 62, 32)        896
_________________________________________________________________
max_pooling2d_5 (MaxPooling2 (None, 31, 31, 32)        0
_________________________________________________________________
conv2d_6 (Conv2D)            (None, 29, 29, 32)        9248
_________________________________________________________________
max_pooling2d_6 (MaxPooling2 (None, 14, 14, 32)        0
_________________________________________________________________
flatten_3 (Flatten)          (None, 6272)              0
_________________________________________________________________
dense_6 (Dense)              (None, 128)               802944
_________________________________________________________________
dense_7 (Dense)              (None, 5)                 645
=================================================================
Total params: 813,733
Trainable params: 813,733
Non-trainable params: 0
_________________________________________________________________
```

In [41]:
```
classifer.compile(optimizer="rmsprop",loss="categorical_crossentropy",metrics=["accuracy"])
```

In [42]:
```
classifer.fit(x_train,steps_per_epoch=82,epochs=20,validation_data=x_test,validation_steps=28)
```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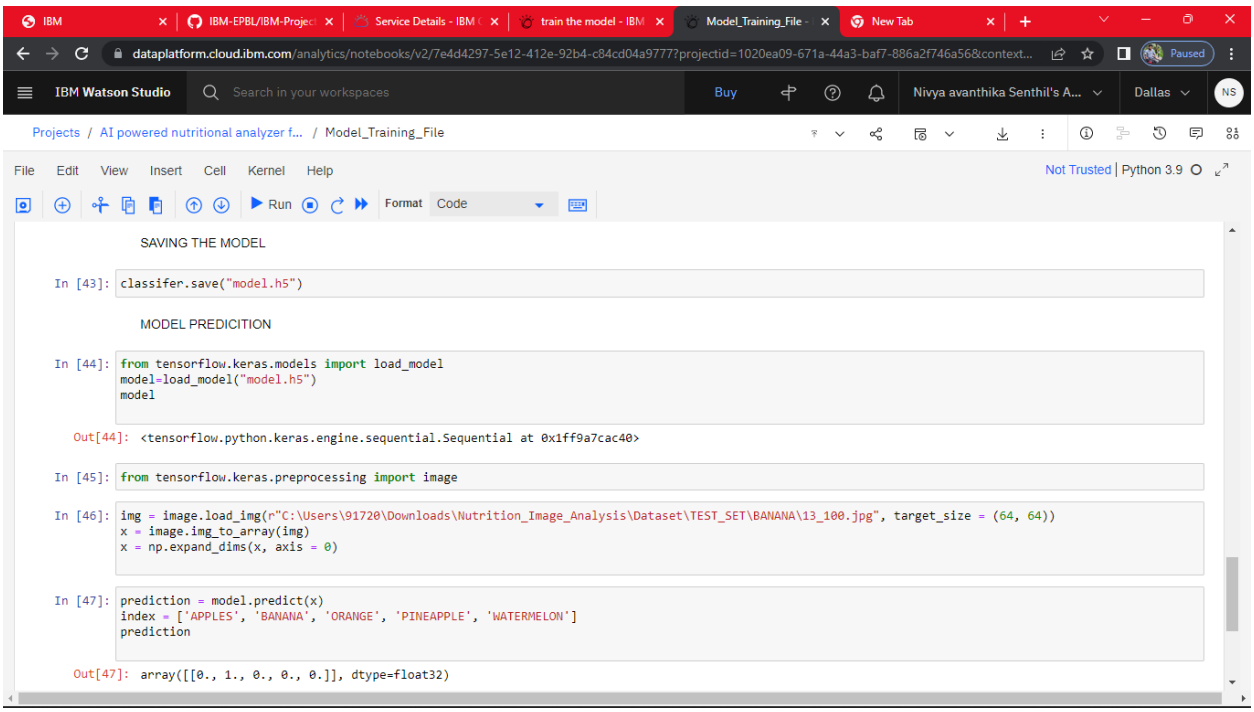
In [41]: classifer.compile(optimizer= rmsprop ,loss= categorical_crossentropy ,metrics=[accuracy])
In [42]: classifer.fit(x_train,steps_per_epoch=82,epochs=20,validation_data=x_test,validation_steps=28)
Epoch 1/20
82/82 [==========] - 7s 77ms/step - loss: 0.5474 - accuracy: 0.8150 - val_loss: 0.0931 - val_accuracy: 0.9632
Epoch 2/20
82/82 [==========] - 6s 73ms/step - loss: 0.0608 - accuracy: 0.9869 - val_loss: 0.0498 - val_accuracy: 0.9688
Epoch 3/20
82/82 [==========] - 9s 105ms/step - loss: 0.1224 - accuracy: 0.9815 - val_loss: 0.0258 - val_accuracy: 0.9810
Epoch 4/20
82/82 [==========] - 8s 103ms/step - loss: 0.1547 - accuracy: 0.9865 - val_loss: 8.6944e-04 - val_accuracy: 1.0000
Epoch 5/20
82/82 [==========] - 8s 98ms/step - loss: 6.5788e-04 - accuracy: 1.0000 - val_loss: 0.0190 - val_accuracy: 0.9900
Epoch 6/20
82/82 [==========] - 8s 102ms/step - loss: 0.1110 - accuracy: 0.9907 - val_loss: 0.0077 - val_accuracy: 1.0000
Epoch 7/20
82/82 [==========] - 8s 99ms/step - loss: 0.0903 - accuracy: 0.9880 - val_loss: 0.5883 - val_accuracy: 0.8694
Epoch 8/20
82/82 [==========] - 8s 95ms/step - loss: 0.0040 - accuracy: 0.9988 - val_loss: 0.0128 - val_accuracy: 0.9933
Epoch 9/20
82/82 [==========] - 8s 100ms/step - loss: 0.1629 - accuracy: 0.9877 - val_loss: 0.1352 - val_accuracy: 0.9710
Epoch 10/20
82/82 [==========] - 8s 97ms/step - loss: 7.3137e-05 - accuracy: 1.0000 - val_loss: 0.0095 - val_accuracy: 0.9989
Epoch 11/20
82/82 [==========] - 8s 96ms/step - loss: 0.0934 - accuracy: 0.9907 - val_loss: 5.1888e-04 - val_accuracy: 1.0000
Epoch 12/20
82/82 [==========] - 8s 101ms/step - loss: 1.2171e-05 - accuracy: 1.0000 - val_loss: 0.0213 - val_accuracy: 0.9877
Epoch 13/20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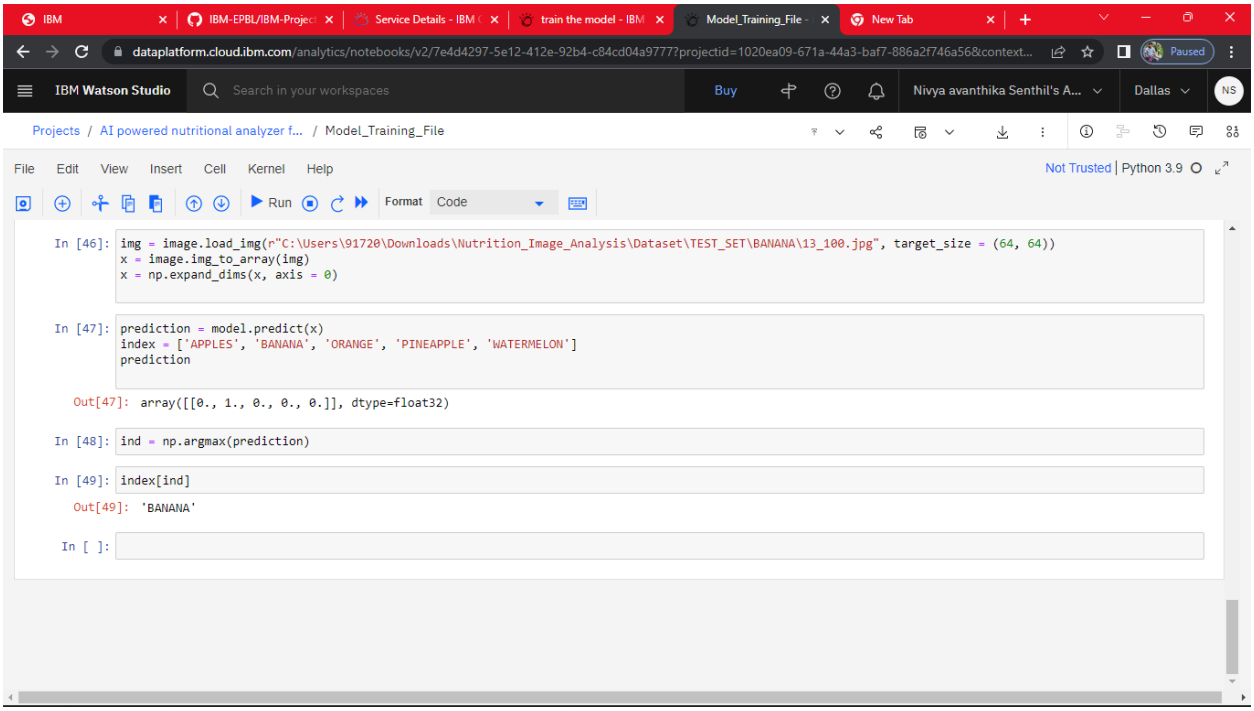
Format Code
SAVING THE MODEL
In [43]: classifer.save("model.h5")
MODEL PREDICITION
In [44]: from tensorflow.keras.models import load_model
model=load_model("model.h5")
model
Out[44]: <tensorflow.python.keras.engine.sequential.Sequential at 0x1ff9a7cac40>
In [45]: from tensorflow.keras.preprocessing import image
In [46]: img = image.load_img(r"C:\Users\91720\Downloads\Nutrition_Image_Analysis\Dataset\TEST_SET\BANANA\13_100.jpg", target_size = (64, 64))
x = image.img_to_array(img)
x = np.expand_dims(x, axis = 0)
In [47]: prediction = model.predict(x)
index = ['APPLES', 'BANANA', 'ORANGE', 'PINEAPPLE', 'WATERMELON']
prediction
Out[47]: array([[0., 1., 0., 0., 0.]], dtype=float32)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In [46]:
img = image.load_img(r"C:\Users\91720\Downloads\Nutrition_Image_Analysis\Dataset\TEST_SET\BANANA\13_100.jpg", target_size = (64, 64))
x = image.img_to_array(img)
x = np.expand_dims(x, axis = 0)
In [47]:
prediction = model.predict(x)
index = ['APPLES', 'BANANA', 'ORANGE', 'PINEAPPLE', 'WATERMELON']
prediction
Out[47]: array([[0., 1., 0., 0., 0.]], dtype=float32)
In [48]:
ind = np.argmax(prediction)
In [49]:
index[ind]
Out[49]: 'BANANA'
In [ ]: