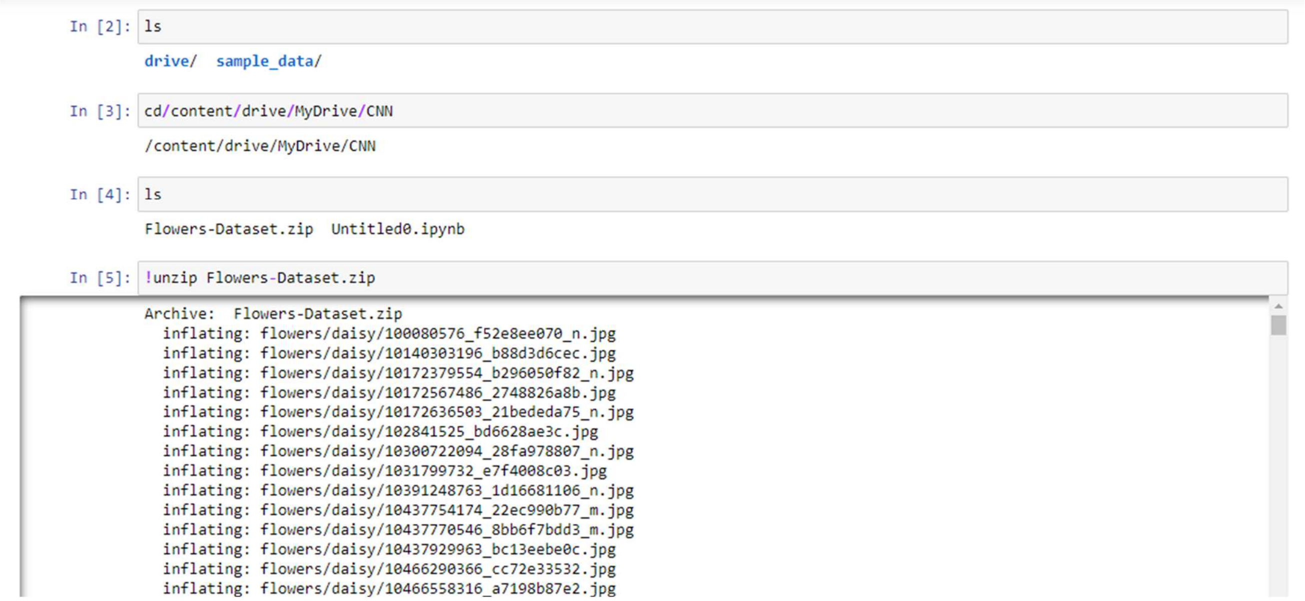
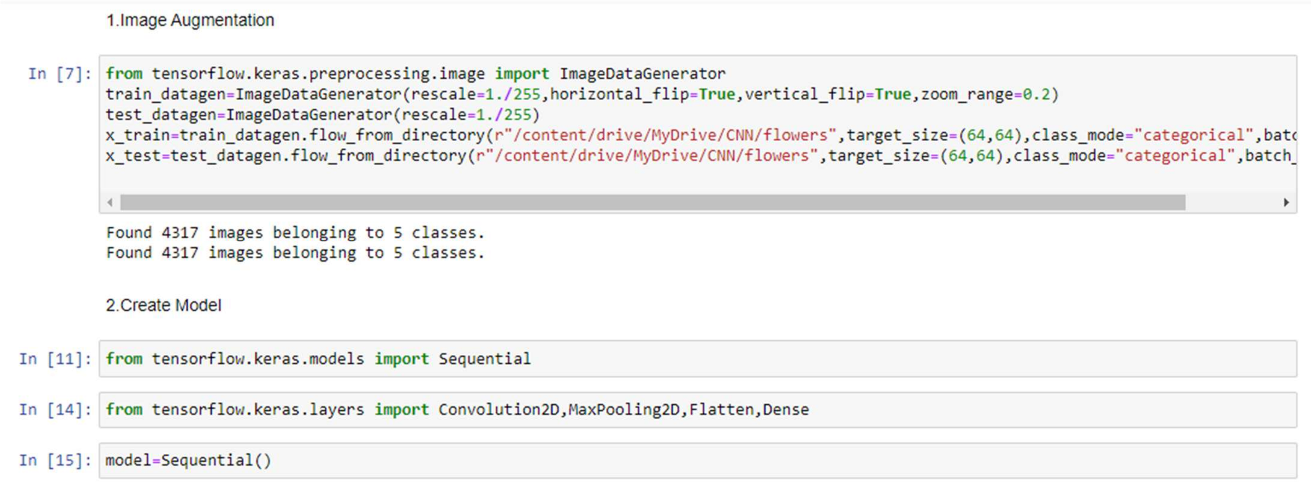
Assignment -3

Build CNN Model for Classification Of Flowers

Assignment Date	06 October 2022
Student Name	PRIYADHARSHINI D
Student Roll Number	820419106041
Maximum Marks	2 Marks



```
In [2]: ls

drive/  sample_data/

In [3]: cd/content/drive/MyDrive/CNN

/content/drive/MyDrive/CNN

In [4]: ls

Flowers-Dataset.zip  Untitled0.ipynb

In [5]: !unzip Flowers-Dataset.zip

Archive:  Flowers-Dataset.zip
  inflating: flowers/daisy/100080576_f52e8ee070_n.jpg
  inflating: flowers/daisy/10140303196_b88d3d6cec.jpg
  inflating: flowers/daisy/10172379554_b296050f82_n.jpg
  inflating: flowers/daisy/10172567486_2748826a8b.jpg
  inflating: flowers/daisy/10172636503_21bededa75_n.jpg
  inflating: flowers/daisy/102841525_bd6628ae3c.jpg
  inflating: flowers/daisy/10300722094_28fa978807_n.jpg
  inflating: flowers/daisy/1031799732_e7f4008c03.jpg
  inflating: flowers/daisy/10391248763_1d16681106_n.jpg
  inflating: flowers/daisy/10437754174_22ec990b77_m.jpg
  inflating: flowers/daisy/10437770546_8bb6f7bdd3_m.jpg
  inflating: flowers/daisy/10437929963_bc13eebe0c.jpg
  inflating: flowers/daisy/10466290366_cc72e33532.jpg
  inflating: flowers/daisy/10466558316_a7198b87e2.jpg
```

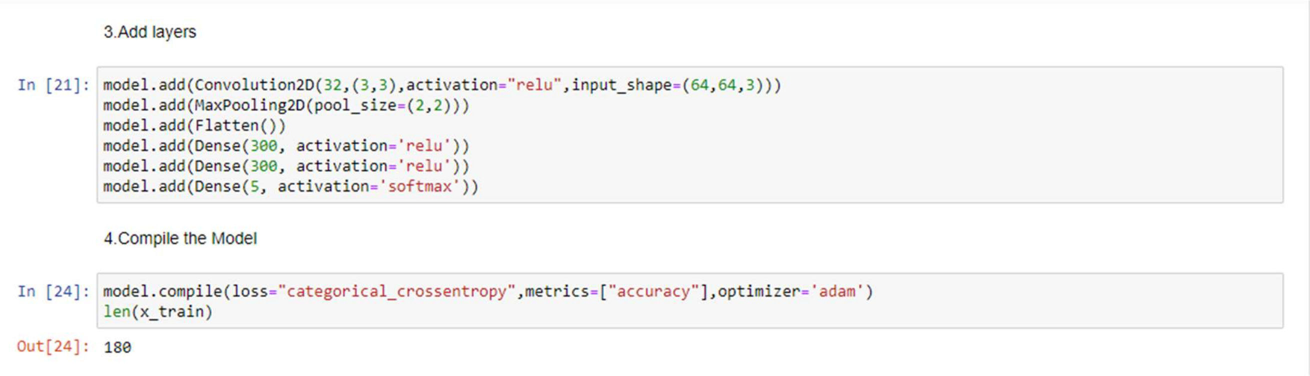


1.Image Augmentation

```
In [7]: from tensorflow.keras.preprocessing.image import ImageDataGenerator
        train_datagen=ImageDataGenerator(rescale=1./255,horizontal_flip=True,vertical_flip=True,zoom_range=0.2)
        test_datagen=ImageDataGenerator(rescale=1./255)
        x_train=train_datagen.flow_from_directory(r"/content/drive/MyDrive/CNN/flowers",target_size=(64,64),class_mode="categorical",batc
        x_test=test_datagen.flow_from_directory(r"/content/drive/MyDrive/CNN/flowers",target_size=(64,64),class_mode="categorical",batch_

Found 4317 images belonging to 5 classes.
Found 4317 images belonging to 5 classes.
```

2.Create Model

```
In [11]: from tensorflow.keras.models import Sequential

In [14]: from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten,Dense

In [15]: model=Sequential()
```

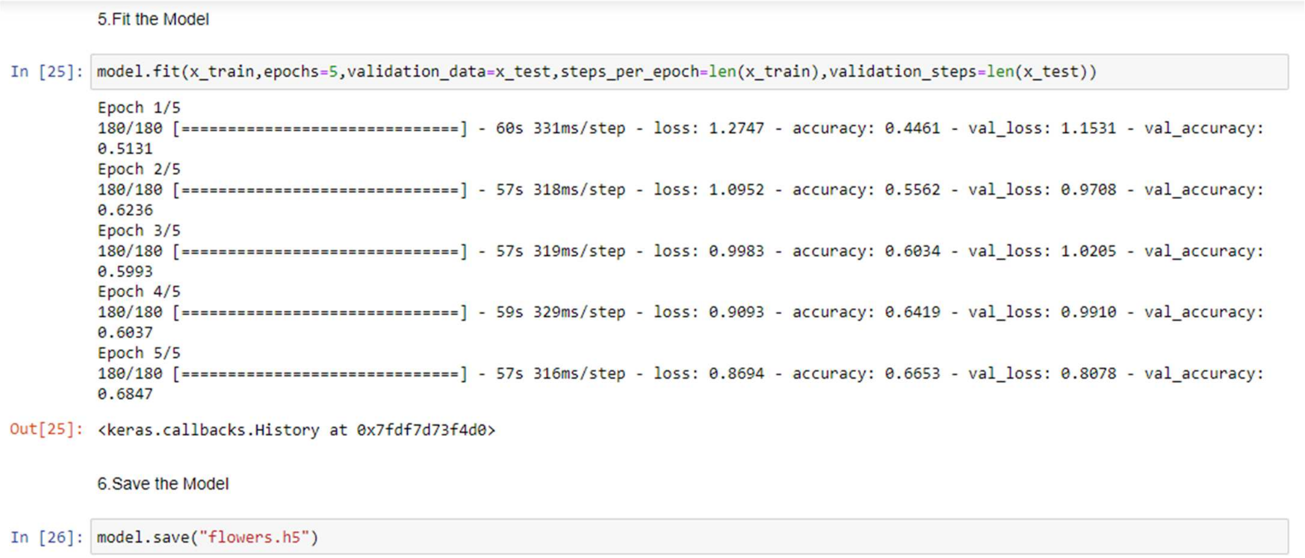


3.Add layers

```
In [21]: model.add(Convolution2D(32,(3,3),activation="relu",input_shape=(64,64,3)))
         model.add(MaxPooling2D(pool_size=(2,2)))
         model.add(Flatten())
         model.add(Dense(300, activation='relu'))
         model.add(Dense(300, activation='relu'))
         model.add(Dense(5, activation='softmax'))
```

4.Compile the Model

```
In [24]: model.compile(loss="categorical_crossentropy",metrics=["accuracy"],optimizer='adam')
         len(x_train)

Out[24]: 180
```

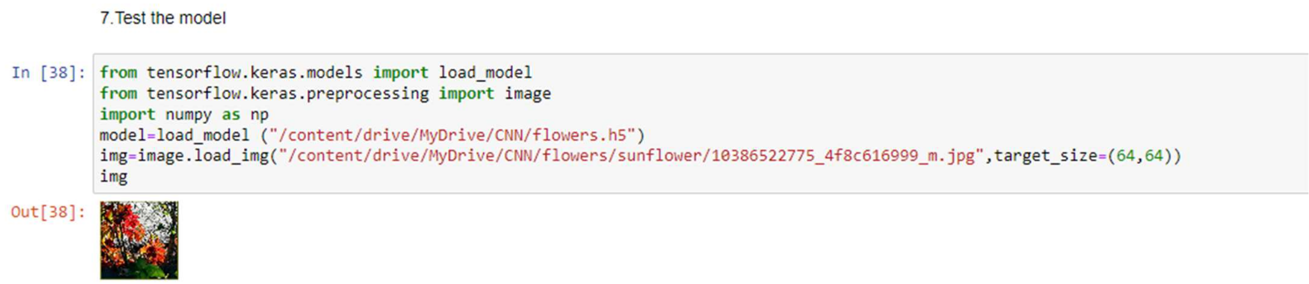


5.Fit the Model

```
In [25]: model.fit(x_train,epochs=5,validation_data=x_test,steps_per_epoch=len(x_train),validation_steps=len(x_test))

         Epoch 1/5
         180/180 [==============================] - 60s 331ms/step - loss: 1.2747 - accuracy: 0.4461 - val_loss: 1.1531 - val_accuracy:
         0.5131
         Epoch 2/5
         180/180 [==============================] - 57s 318ms/step - loss: 1.0952 - accuracy: 0.5562 - val_loss: 0.9708 - val_accuracy:
         0.6236
         Epoch 3/5
         180/180 [==============================] - 57s 319ms/step - loss: 0.9983 - accuracy: 0.6034 - val_loss: 1.0205 - val_accuracy:
         0.5993
         Epoch 4/5
         180/180 [==============================] - 59s 329ms/step - loss: 0.9093 - accuracy: 0.6419 - val_loss: 0.9910 - val_accuracy:
         0.6037
         Epoch 5/5
         180/180 [==============================] - 57s 316ms/step - loss: 0.8694 - accuracy: 0.6653 - val_loss: 0.8078 - val_accuracy:
         0.6847

Out[25]: <keras.callbacks.History at 0x7fdf7d73f4d0>
```

6.Save the Model

```
In [26]: model.save("flowers.h5")
```



7.Test the model

```
In [38]: from tensorflow.keras.models import load_model
         from tensorflow.keras.preprocessing import image
         import numpy as np
         model=load_model ("/content/drive/MyDrive/CNN/flowers.h5")
         img=image.load_img("/content/drive/MyDrive/CNN/flowers/sunflower/10386522775_4f8c616999_m.jpg",target_size=(64,64))
         img

Out[38]:
```