Assignment -3
CONVOLUTIONAL NEURAL NETWORKS

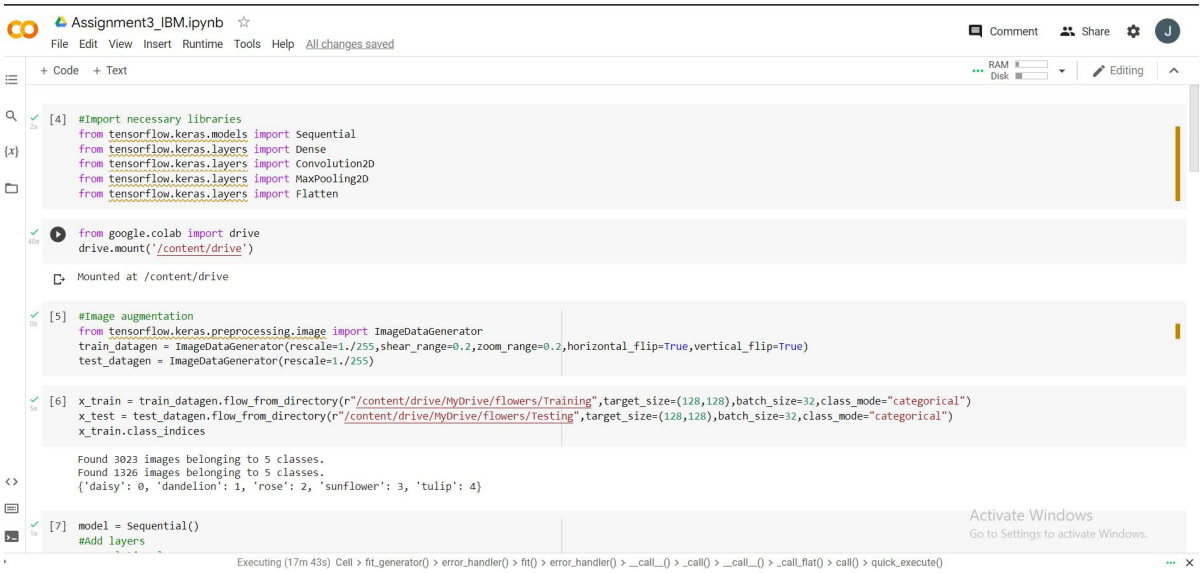
Assignment Date	5 October 2022
Student Name	D.RENUKA DEVI
Student Roll Number	9517201903122
Maximum Marks	2 Marks

```
#Import necessary libraries
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
from tensorflow.keras.layers import Convolution2D
from tensorflow.keras.layers import MaxPooling2D
from tensorflow.keras.layers import Flatten

from google.colab import drive
drive.mount('/content/drive')

#Image augmentation
from tensorflow.keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_ran
ge=0.2,horizontal_flip=True,vertical_flip=True)
test_datagen = ImageDataGenerator(rescale=1./255)


x_train = train_datagen.flow_from_directory(r"/content/drive/MyDrive/flowers/
Training",target_size=(128,128),batch_size=32,class_mode="categorical")
x_test = test_datagen.flow_from_directory(r"/content/drive/MyDrive/flowers/T
esting",target_size=(128,128),batch_size=32,class_mode="categorical")
x_train.class_indices
```



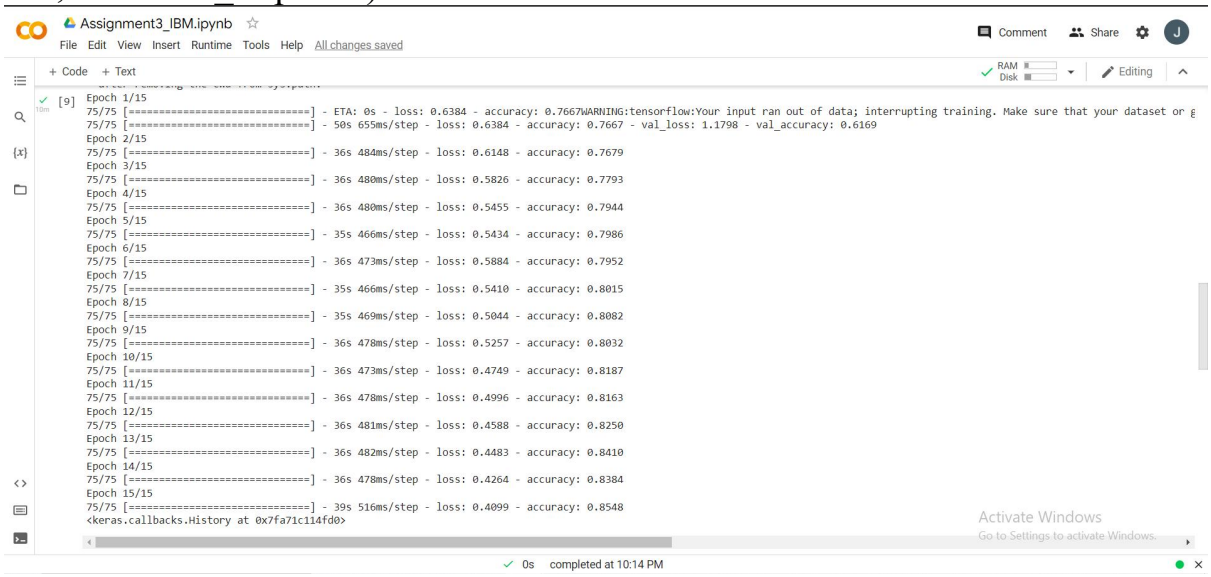

```
model = Sequential()
#Add layers
#Convolution layer
model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))
#Maxpooling layer
model.add(MaxPooling2D(pool_size=(2,2)))
#flatten layer
model.add(Flatten())
#hidden layer
model.add(Dense(units=300,kernel_initializer="random_uniform",activation="relu"))
model.add(Dense(units=200,kernel_initializer="random_uniform",activation="relu"))
model.add(Dense(units=5,kernel_initializer="random_uniform",activation="softmax"))
model.summary()
```

#compile the model

model.compile(loss="categorical_crossentropy",optimizer="adam",metrics=["accuracy"])

#Fit the model

model.fit_generator(x_train,steps_per_epoch=75,epochs=15,validation_data=x_test,validation_steps=80)

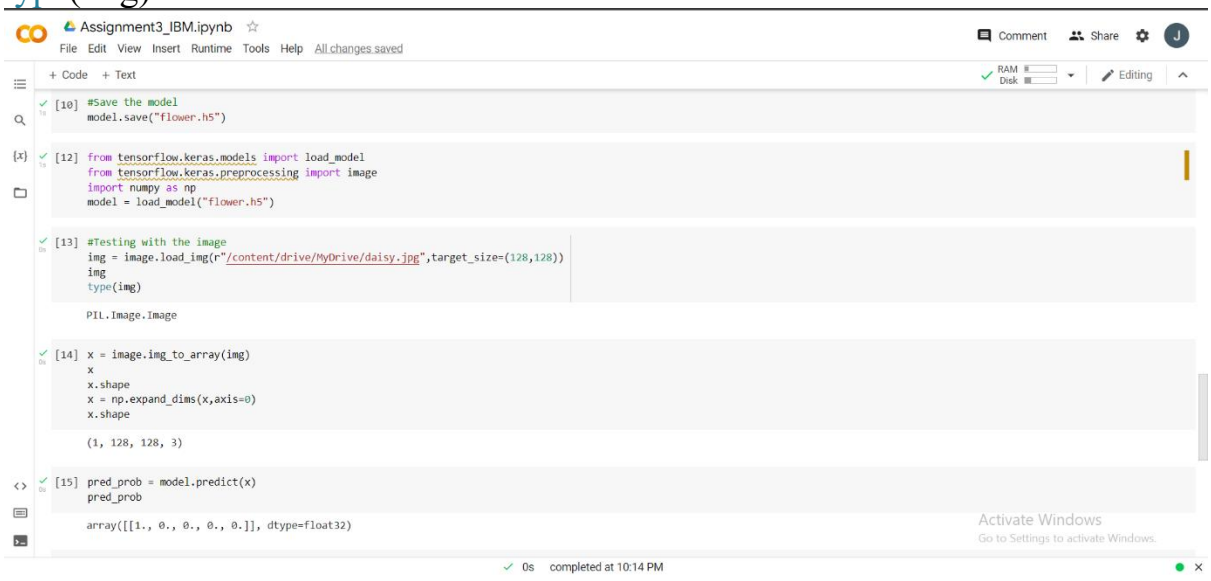


#Save the model

model.save("flower.h5")

```
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
import numpy as np
model = load_model("flower.h5")


#Testing with the image
img = image.load_img(r"/content/drive/MyDrive/daisy.jpg",target_size=(128,12
8))
img
type(img)
```

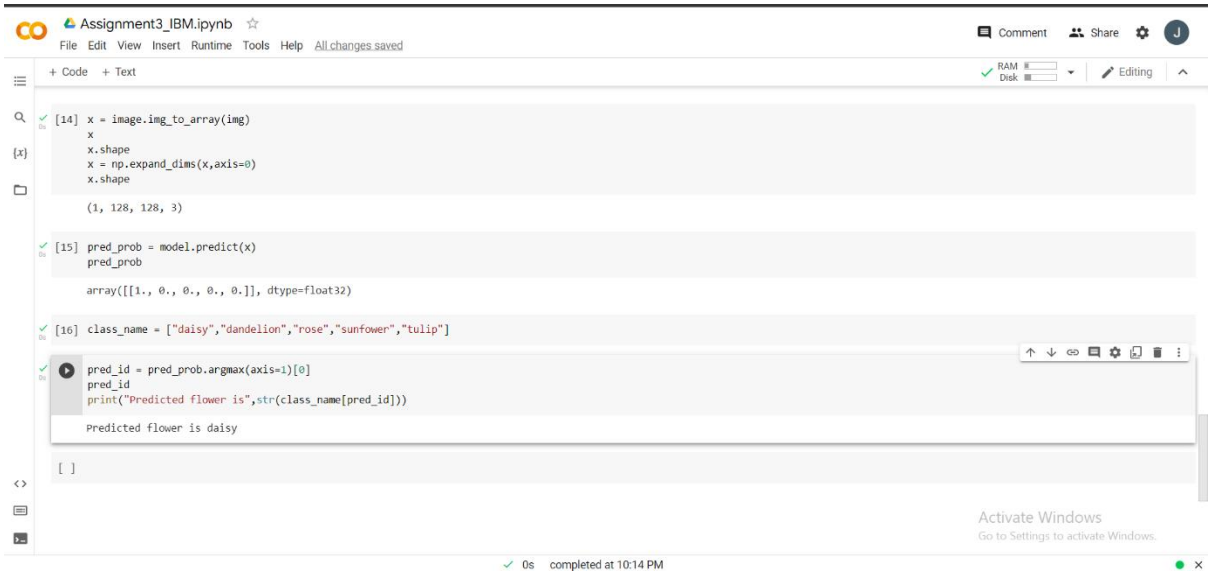



```
x = image.img_to_array(img)
x
x.shape
x = np.expand_dims(x,axis=0)
x.shape


pred_prob = model.predict(x)
pred_prob


class_name = ["daisy","dandelion","rose","sunfower","tulip"]


pred_id = pred_prob.argmax(axis=1)[0]
pred_id
print("Predicted flower is",str(class_name[pred_id]))
```


Assignment3_IBM.ipynb
File Edit View Insert Runtime Tools Help All changes saved
Comment
Share
+ Code + Text
RAM
Disk
Editing
[14] x = image.img_to_array(img)
x
x.shape
x = np.expand_dims(x,axis=0)
x.shape
(1, 128, 128, 3)
[15] pred_prob = model.predict(x)
pred_prob
array([[1., 0., 0., 0., 0.]], dtype=float32)
[16] class_name = ["daisy","dandelion","rose","sunfower","tulip"]
pred_id = pred_prob.argmax(axis=1)[0]
pred_id
print("Predicted flower is",str(class_name[pred_id]))
Predicted flower is daisy
[ ]
Activate Windows
Go to Settings to activate Windows.
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