Assignment -3

Build CNN Model for Classification Of Flowers

# Question-1:

Download the dataset

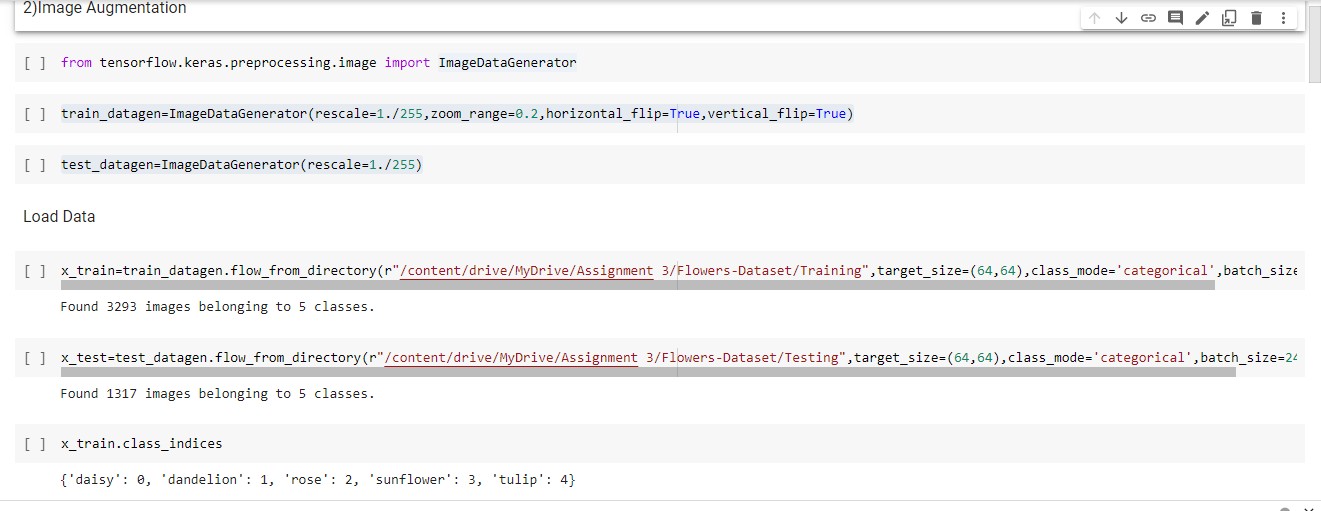
# Question-2:

Image Augmentation

# Solution

from tensorflow.keras.preprocessing.image import ImageDataGenerator train\_datagen=ImageDataGenerator(rescale=1./255,zoom\_range=0.2,horizontal\_flip=True,vertical\_flip=Tr ue)

test\_datagen=ImageDataGenerator(rescale=1./255)



# Question-3:

Create model

# Solution

from tensorflow.keras.models import Sequential

from tensorflow.keras.layers import Dense,Convolution2D,MaxPooling2D,Flatten model=Sequential()



# Question-4:

Add Layers (Convolution,MaxPooling,Flatten,Dense-(Hidden Layers),Output)

# Solution a)Convolution Layer

model.add(Convolution2D(32,(3,3),kernel\_initializer="random\_uniform",activation="relu",strides=(1

,1),input\_shape=(64,64,3)))

# MaxPooling Layer

model.add(MaxPooling2D(pool\_size=(2,2)))

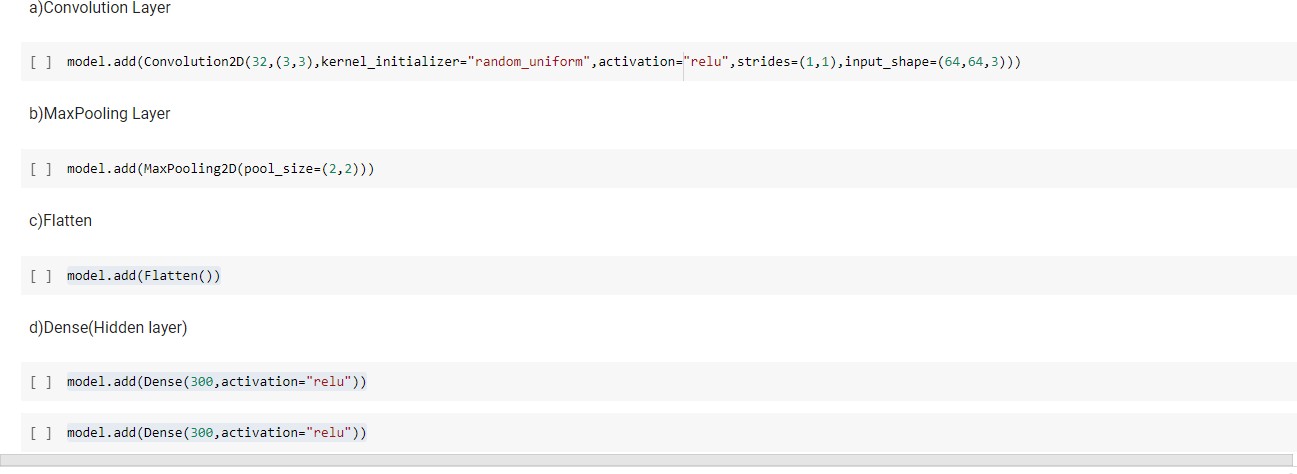
# Flatten Layer

model.add(Flatten())

1. **Dense(Hidden layer)** model.add(Dense(300,activation="relu")) model.add(Dense(300,activation="relu"))

# Output layer

model.add(Dense(5,activation="softmax"))

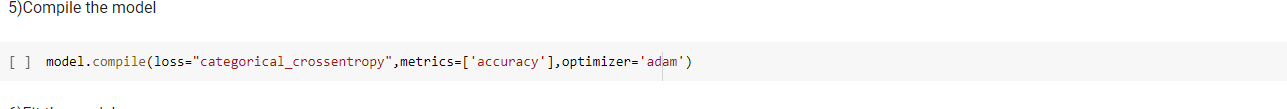


# Question-5:

Compile The Model

# Solution

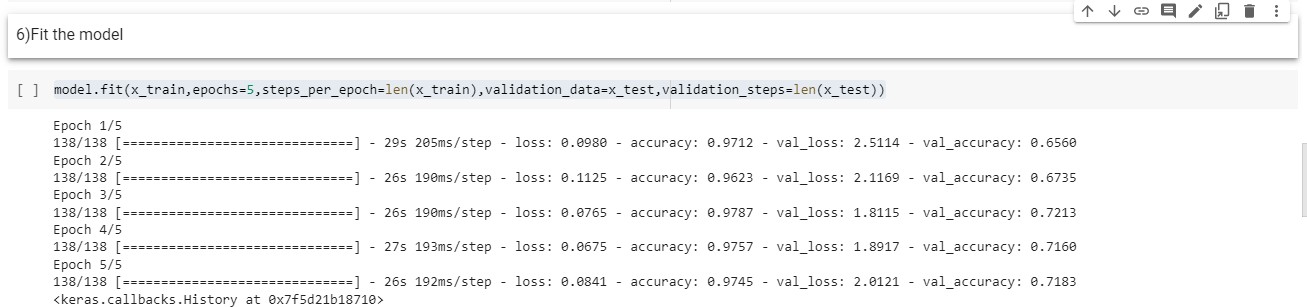
model.compile(loss="categorical\_crossentropy",metrics=['accuracy'],optimizer='adam')



# Question-6:

Fit The Model

**Solution** model.fit(x\_train,epochs=5,steps\_per\_epoch=len(x\_train),validation\_data=x\_test,validation\_steps=l en(x\_test))



# Question-7:

Save The Model

# Solution

model.save("Flowers.h5")



# Question-8:

Test The Model

# Solution

import numpy as np

from tensorflow.keras.models import load\_model from tensorflow.keras.preprocessing import image model=load\_model("Flowers.h5")

img=image.load\_img(r"/content/drive/MyDrive/Assignment 3/Flowers- Dataset/Testing/daisy/14333681205\_a07c9f1752\_m.jpg",target\_size=(64,64)) x=image.img\_to\_array(img)

x=np.expand\_dims(x,axis=0) pred=model.predict(x)

pred index=['daisy','dandelion','rose','sunflower','tulip'] index[np.argmax(pred)]

