ASSIGNMENT -III

BUILD CNN MODEL for CLASSIFICATION of FLOWERS

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# Maximum Marks 2 Marks

## Question-1:

Download the dataset

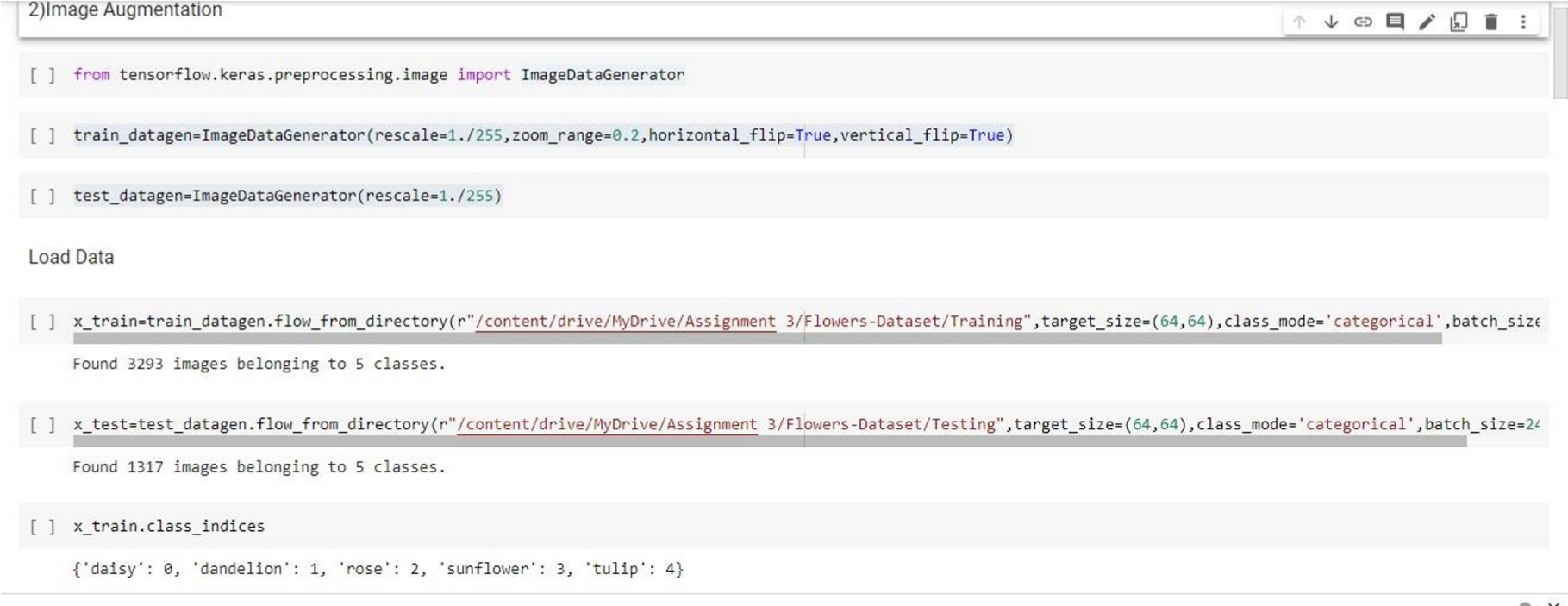
## Question-2:

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=T r 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

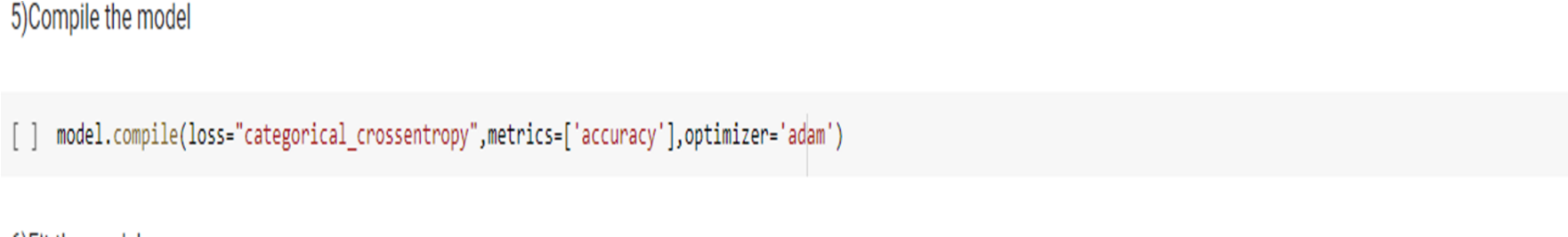
model.add(Dense(5,activation="softmax"))

## Question-5:

Compile The Model

## Solution

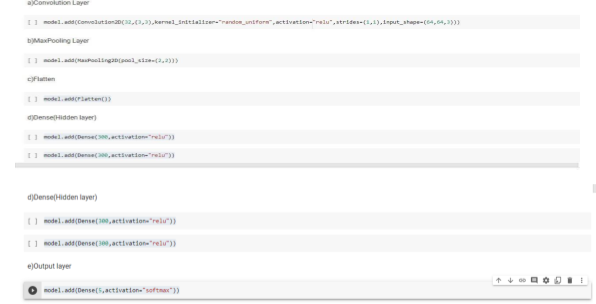
model.compile(loss="categorical\_crossentropy",metrics=['accuracy'],optimizer='adam')

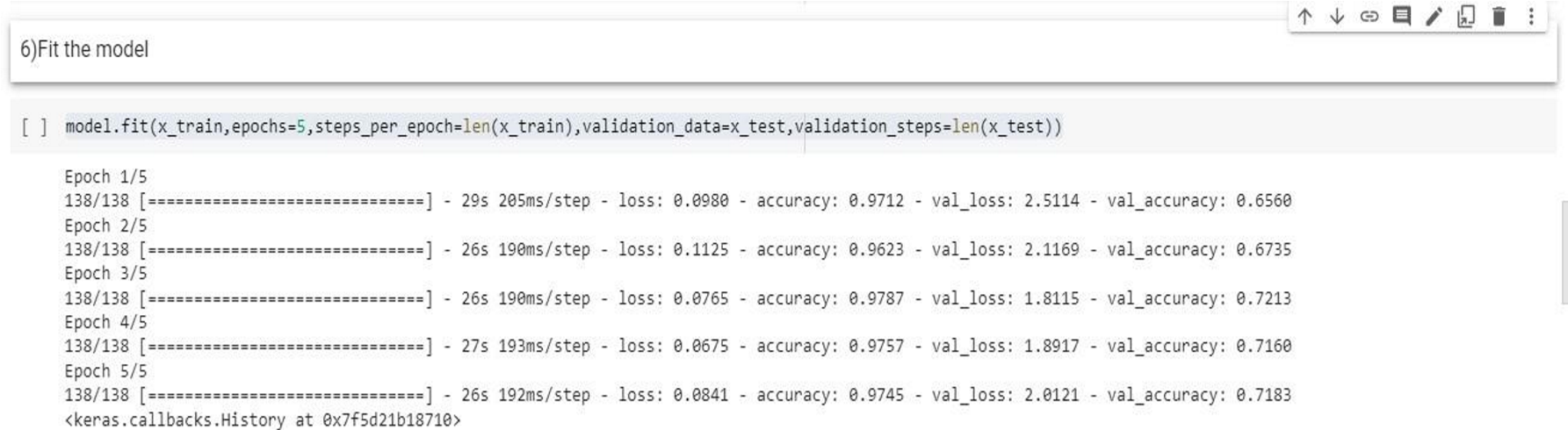


## Question-6:

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)]



