ASSIGNMENT-3

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| AssignmentDate | 30September2022 |
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| MaximumMarks | 2Marks |

# DownloadtheDataset

Link:<https://drive.google.com/file/d/1zZ87e7GDpN90-Sa_AKbvMm3EEfQkEQ_R/view>

# Image AugmentationSolution:

pwd

fromtensorflow.keras.preprocessing.imageimport ImageDataGeneratortrain\_datagen=ImageDataGenerator(rescale=1./255,zoom\_range=0.2,horizontal\_flip=True,vertical\_flip=False)

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

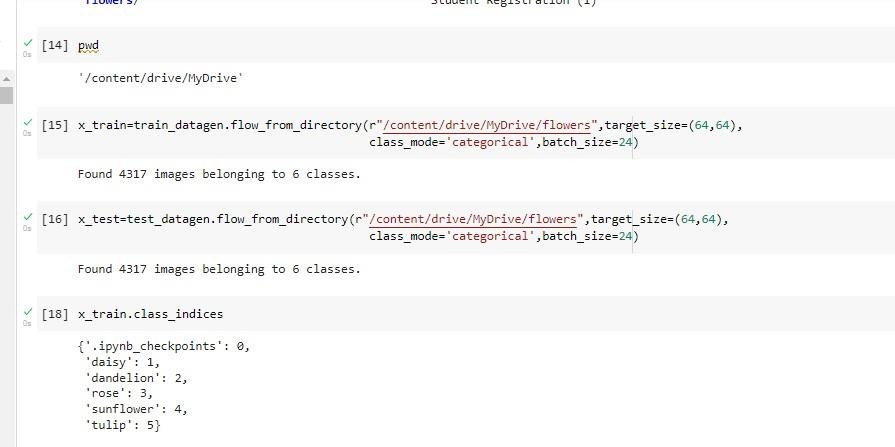
pwdx\_train=train\_datagen.flow\_from\_directory(r"/content/drive/MyDrive/flowers",target\_size=(64,64),

class\_mode='categorical',batch\_size=24)x\_test=test\_datagen.flow\_from\_directory(r"/content/drive/MyDrive/flowers",target\_size=(64,64),

class\_mode='categorical',batch\_size=24)

x\_train.class\_indices



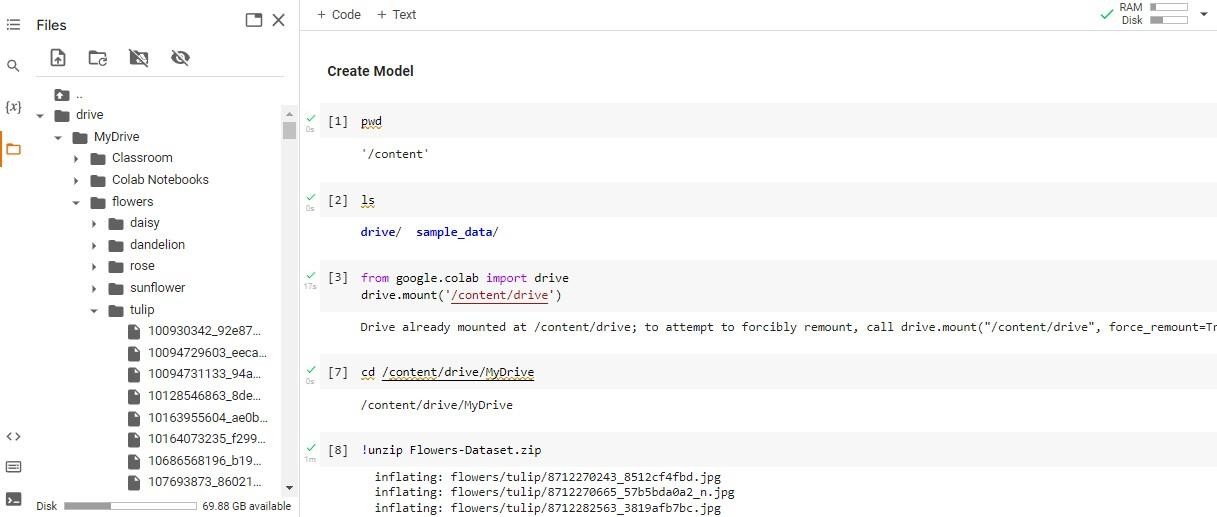


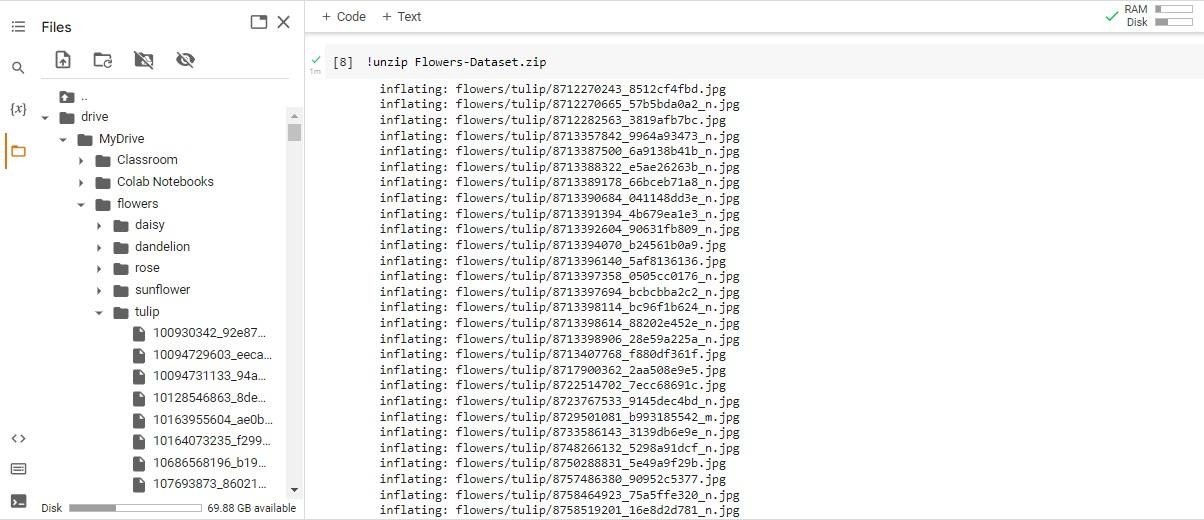
# Create ModelSolution:

pwdls

fromgoogle.colabimportdrivedrive.mount('/content/drive')cd/content/drive/MyDrive

!unzipFlowers-Dataset.zip





# AddLayers(Convolution,Maxpooling,Flatten,Dense-(HiddenLayers),Output)Solution:

fromtensorflow.keras.modelsimportSequential

from tensorflow.keras.layersimport Dense,Convolution2D,MaxPooling2D,Flattenmodel=Sequential()model.add(Convolution2D(32,(3,3),input\_shape=(64,64,3),activation='relu'))model.add(MaxPooling2D(pool\_size=(2,2)))

model.add(Flatten())model.summary()32\*(3\*3\*3+1)

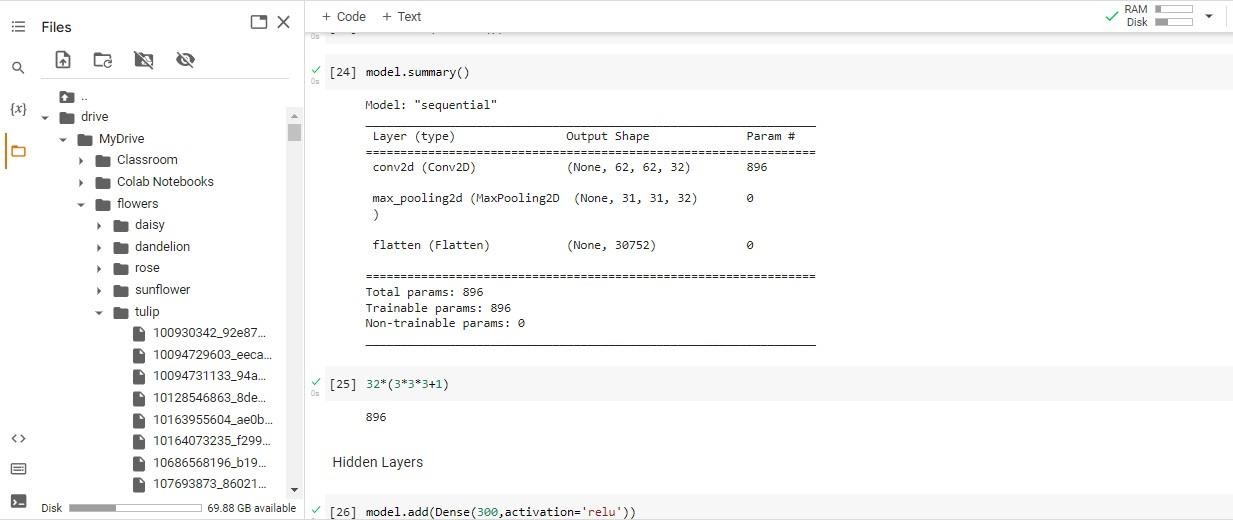
# Hiddenlayer

model.add(Dense(300,activation='relu'))model.add(Dense(150,activation='relu'))

# Outputlayer

model.add(Dense(4,activation='softmax'))



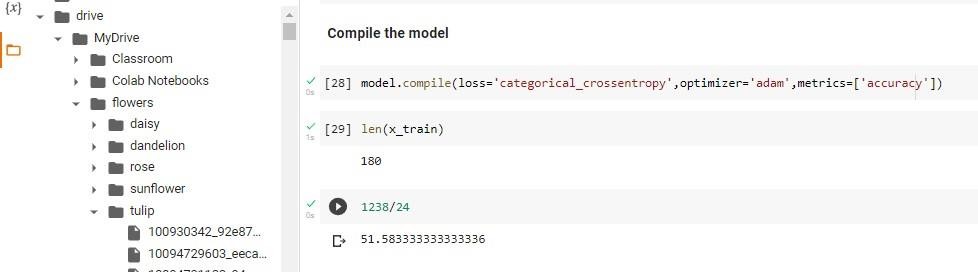




# Compile The ModelSolution:

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

1238/24

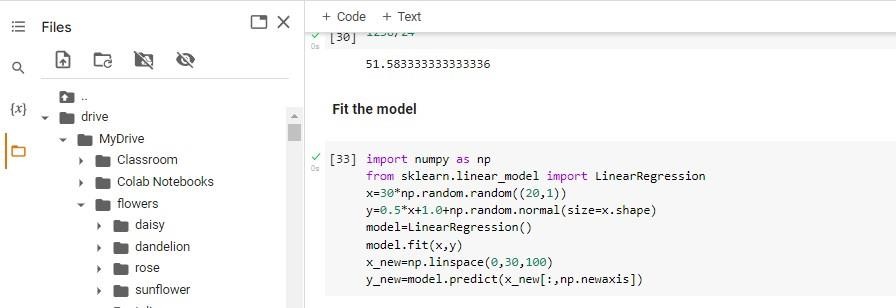


# FitTheModelSolution:

importnumpyasnp

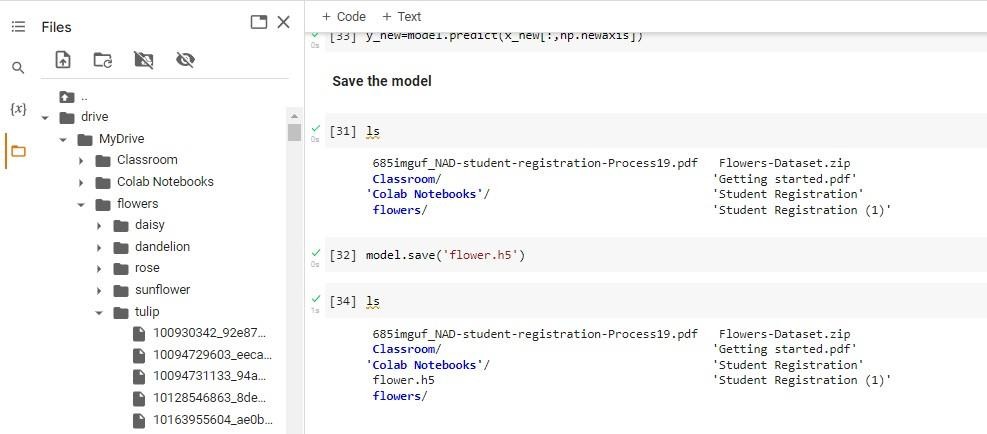
fromsklearn.linear\_modelimportLinearRegressionx=30\*np.random.random((20,1))y=0.5\*x+1.0+np.random.normal(size=x.shape)model=LinearRegression()

model.fit(x,y)x\_new=np.linspace(0,30,100)y\_new=model.predict(x\_new[:,np.newaxis])



# Save The ModelSolution:

Lsmodel.save('flower.h5')ls



# Test The ModelSolution:

importnumpyasnp

fromtensorflow.keras.modelsimport load\_modelfromtensorflow.keras.preprocessingimportimage#loadthemodel

model=load\_model('flower.h5')img=image.load\_img(r"/content/drive/MyDrive/flowers/rose/10503217854\_e66a804309.jpg")imgimg=image.load\_img(r"/content/drive/MyDrive/flowers/rose/10503217854\_e66a804309.jpg",target\_size=(64,64))

imgx=image.img\_to\_array(img)xx=np.expand\_dims(x,axis=0)x

y=np.argmax(model.predict(x),axis=1)y

x\_train.class\_indicesindex=['daisy','dandelion','rose','sunflower','tulip']index[y[0]]

img=image.load\_img(r"/content/drive/MyDrive/flowers/daisy/100080576\_f52e8ee070\_n.jpg",target\_size=(64,64))

x=image.img\_to\_array(img)x=np.expand\_dims(x,axis=0)y=np.argmax(model.predict(x),axis=1)

index=['daisy','dandelion','rose','sunflower','tulip']index[y[0]]

img=image.load\_img(r"/content/drive/MyDrive/flowers/dandelion/10043234166\_e6dd915111\_n

.jpg",target\_size=(64,64))

x=image.img\_to\_array(img)x=np.expand\_dims(x,axis=0)y=np.argmax(model.predict(x),axis=1)

index=['daisy','dandelion','rose','sunflower','tulip']index[y[0]]

img=image.load\_img(r"/content/drive/MyDrive/flowers/rose/10090824183\_d02c613f10\_m.jpg"

,target\_size=(64,64))x=image.img\_to\_array(img)x=np.expand\_dims(x,axis=0)y=np.argmax(model.predict(x),axis=1)

index=['daisy','dandelion','rose','sunflower','tulip']index[y[0]]

img=image.load\_img(r"/content/drive/MyDrive/flowers/sunflower/1008566138\_6927679c8a.jpg",target\_size=(64,64))

x=image.img\_to\_array(img)x=np.expand\_dims(x,axis=0)y=np.argmax(model.predict(x),axis=1)

index=['daisy','dandelion','rose','sunflower','tulip']index[y[0]]

img=image.load\_img(r"/content/drive/MyDrive/flowers/tulip/100930342\_92e8746431\_n.jpg",target\_size=(64,64))

x=image.img\_to\_array(img)x=np.expand\_dims(x,axis=0)y=np.argmax(model.predict(x),axis=1)

index=['daisy','dandelion','rose','sunflower','tulip']index[y[0]]



