Assignment -3

Build CNN Model for Classification of Flowers

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| Assignment Date : | 05-11-2022 |
| Team ID : | PNT2022TMID09649 |
| Project : | Fertilizer Recommendation System for Disease Prediction |

**Question-1:**

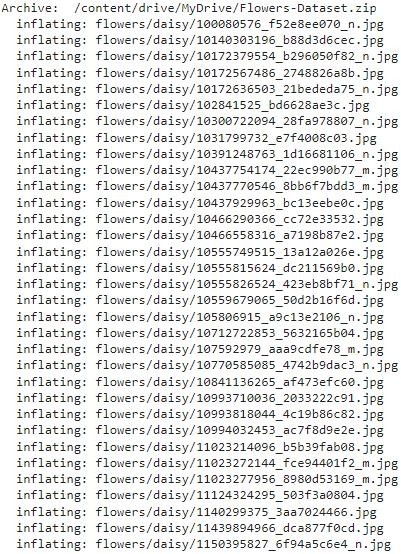
**Download the Dataset:Dataset Solution:**

from google.colab import drive

drive.mount('/content/drive')



!unzip /content/drive/MyDrive/Flowers-Dataset.zip



**Question-2:**

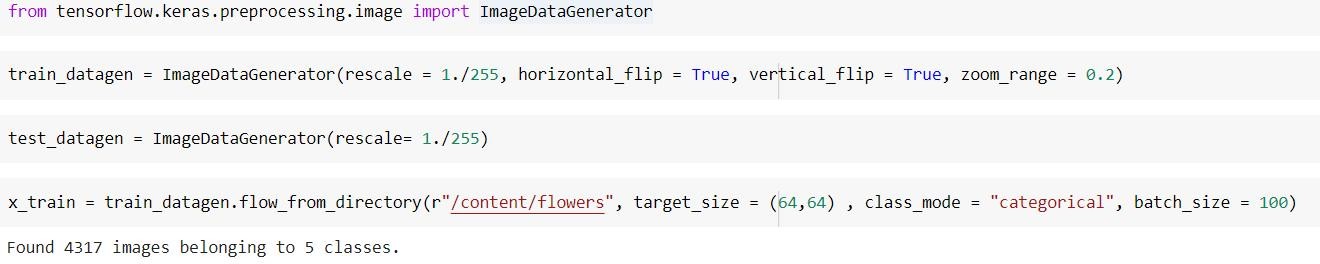
**Image Agumentation Solution:**

from tensorflow.keras.preprocessing.image import ImageDataGenerator

train\_datagen = ImageDataGenerator(rescale = 1./255, horizontal\_flip = True, vertical\_fli p = True, zoom\_range = 0.2)

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

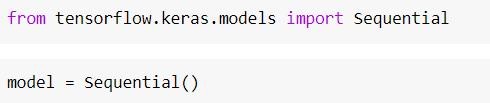
x\_train = train\_datagen.flow\_from\_directory(r"/content/flowers", target\_size = (64,64) , class\_mode = "categorical", batch\_size = 100)



**Question-3:**

**Create Model Solution:**

from tensorflow.keras.models import Sequential model = Sequential()



**Question-4:**

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

**Solution:**

from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten,Dense 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(150, activation = "relu")) #mulitple dense layers model.add(Dense(5, activation = "softmax")) #output layer

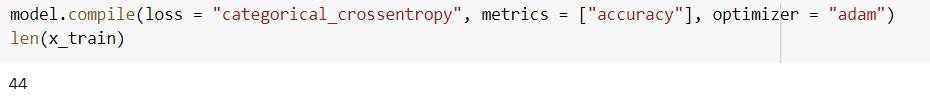


**Question-5:**

**Compile the Model Solution:**

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

len(x\_train)

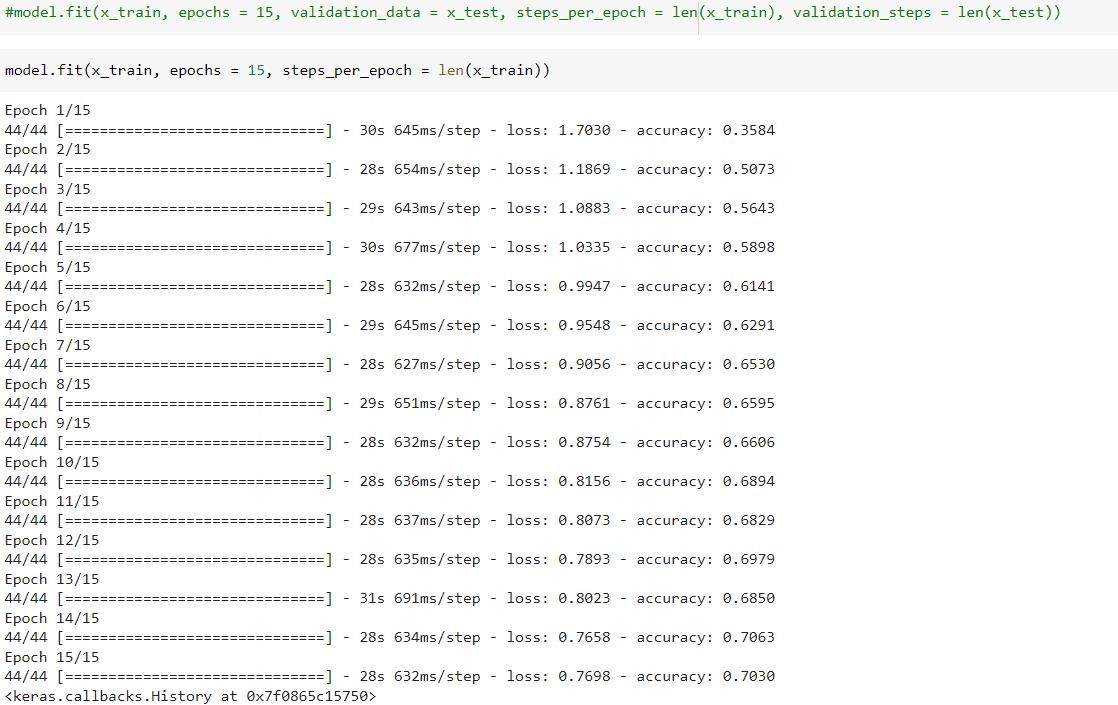


**Question-6:**

**Fit The Model Solution:**

#model.fit(x\_train, epochs = 15, validation\_data = x\_test, steps\_per\_epoch = len(x\_train), validation\_steps = len(x\_test))

model.fit(x\_train, epochs = 15, steps\_per\_epoch = len(x\_train))



**Question-7:**

**Save The Model Solution:**

model.save("flowers.h5")



**Question-8:**

**Test The Model Solution:**

import numpy as np

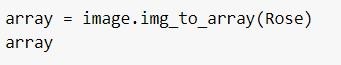
from tensorflow.keras.preprocessing import image

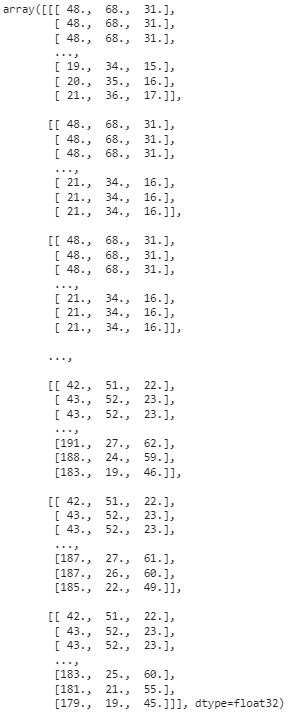
Rose = image.load\_img('/content/flowers/rose/1562198683\_8cd8cb5876\_n.jpg',target\_si ze=(200,210))

Rose



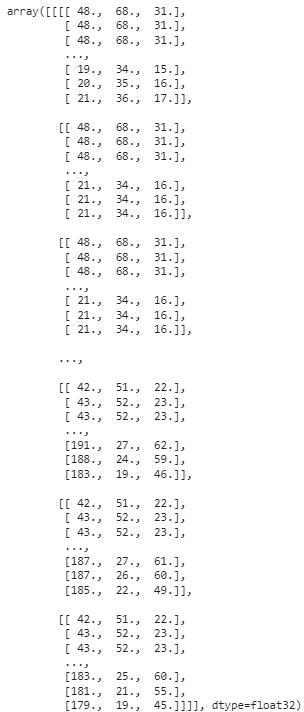
array = image.img\_to\_array(Rose) array



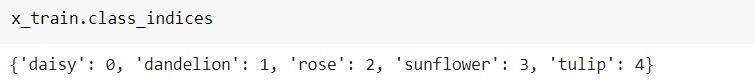


array = np.expand\_dims(array,axis=0) array





x\_train.class\_indices



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

