ASSIGNMENT 3

```
from tensorflow.keras.models import Sequential

from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten,Dense

from tensorflow.keras.preprocessing.image import ImageDataGenerator as idm

import numpy as np

import warnings

#Supressing warnings

warnings.filterwarnings('ignore')

from google.colab import drive

drive.mount('/content/drive')
```

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).

```
# Creating augmentation on training variable

train_flowers=idm(rescale=1./255,zoom_range=0.2,horizontal_flip=True)


# Passing training data to train variable

Xtrain =
train_flowers.flow_from_directory('/content/drive/MyDrive/flower/Train',target_size=(76,76),class_mode='categorical',batch_size=100)
```

Found 3308 images belonging to 5 classes.

```
# Creating augmentation on testing variable

test_flowers=idm(rescale=1./255)


# Passing testing data to test variable
```

```
Xtest =
test_flowers.flow_from_directory('/content/drive/MyDrive/flower/Test',target_size=(76,76),class_mode='categorical',batch_size=100)

Found 573 images belonging to 5 classes.

Flower_model = Sequential()

Flower_model.add(Convolution2D(32,(3,3),activation='relu',input_shape=(76,76,3)))

Flower_model.add(MaxPooling2D(pool_size=(2,2)))

Flower_model.add(Flatten())

Flower_model.add(Dense(300,activation='relu'))

Flower_model.add(Dense(150,activation='relu'))

Flower_model.add(Dense(5,activation='softmax'))

Flower_model.compile(optimizer='adam',loss='categorical_crossentropy',metrics=['accuracy'])

Flower_model.fit_generator(Xtrain,steps_per_epoch= len (Xtrain),epochs= 8,validation_data=Xtest,validation_steps= len (Xtest))

Epoch 1/8

34/34 [==============================] - 38s 1s/step - loss: 1.7519 - accuracy: 0.3637 - val_loss: 1.3037 - val_accuracy: 0.4503

Epoch 2/8

34/34 [==============================] - 38s 1s/step - loss: 1.1124 - accuracy: 0.5611 - val_loss: 1.2834 - val_accuracy: 0.4695

Epoch 3/8

34/34 [==============================] - 38s 1s/step - loss: 1.0209 - accuracy: 0.6004 - val_loss: 1.1725 - val_accuracy: 0.5323

Epoch 4/8

34/34 [==============================] - 36s 1s/step - loss: 0.9363 - accuracy: 0.6463 - val_loss: 1.1455 - val_accuracy: 0.5445

Epoch 5/8

34/34 [==============================] - 36s 1s/step - loss: 0.8934 - accuracy: 0.6578 - val_loss: 1.1712 - val_accuracy: 0.5689
```

Epoch 6/8

34/34 [==============================] - 39s 1s/step - loss: 0.8147 - accuracy: 0.6914 - val_loss: 1.1752 - val_accuracy: 0.5480

Epoch 7/8

34/34 [==============================] - 37s 1s/step - loss: 0.7679 - accuracy: 0.7177 - val_loss: 1.2467 - val_accuracy: 0.5497

Epoch 8/8

34/34 [==============================] - 36s 1s/step - loss: 0.7265 - accuracy: 0.7352 - val_loss: 1.1668 - val_accuracy: 0.5881

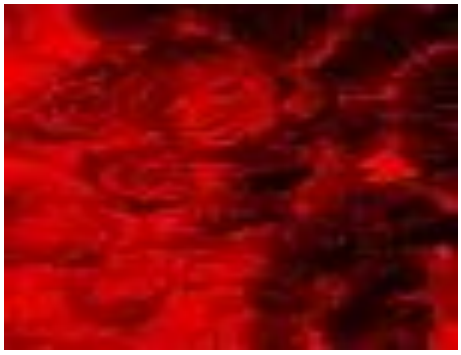
<keras.callbacks.History at 0x7fa56bef3590>

```
Flower_model.save('Flower.h5')
```

```
from tensorflow.keras.preprocessing import image
```

```
test_img=image.load_img('/content/drive/MyDrive/flower/Train/rose/110472418_87b6a3aa98_m.jpg', target_size=(76,76))
```

```
test_img
```



```
x=image.img_to_array(test_img)
```

```
x=np.expand_dims(x,axis=0)
```

```
predicted=np.argmax(Flower_model.predict(x))
```

```
Prediction_category=['daisy','dandelion','rose','sunflower','tulip']
```

```
Prediction_category[predicted]
```

'rose'

```
test_img1=image.load_img('/content/drive/MyDrive/flower/Vaidate/dandelion/29556932571_f124d8ac5d_n.jpg',target_size=(76,76))
```

```
test_img1
```

```
x=image.img_to_array(test_img1)
```

```
x=np.expand_dims(x,axis=0)
```

```
predicted=np.argmax(Flower_model.predict(x))
```

```
Prediction_category[predicted]
```

```
'dandelion'
```

```
test_img2=image.load_img('/content/drive/MyDrive/flower/Vaidate/tulip/17189526216_fa24dd541a_n.jpg',target_size=(76,76))
```

```
test_img2
```

```
x=image.img_to_array(test_img2)
```

```
x=np.expand_dims(x,axis=0)
```

```
predicted=np.argmax(Flower_model.predict(x))
```

```
Prediction_category[predicted]
```

[ ] 'tulip'