```
from google.colab import drive
drive.mount('/content/drive')
```

```
     Mounted at /content/drive
```

```
ls
```

```
     drive/  sample_data/
```

```
cd /content/drive/MyDrive/IBM_NalaiyaThiran/images
```

```
     [Errno 2] No such file or directory: '/content/drive/MyDrive/IBM_NalaiyaThiran/image
     /content
```

```
pwd
```

```
     '/content'
```

```
!unzip flowers.zip
```

```
     unzip:  cannot find or open flowers.zip, flowers.zip.zip or flowers.zip.ZIP.
```

## Image Augmentation

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

```
train_datagen = ImageDataGenerator(rescale = 1./255,zoom_range= 0.3,horizontal_flip=True,v
```

```
test_datagen = ImageDataGenerator(rescale = 1./255)
```

```
x_train = train_datagen.flow_from_directory(r"/content/drive/MyDrive/IBM PROJECT",target_s
```

```
     Found 5 images belonging to 1 classes.
```

```
x_test = test_datagen.flow_from_directory(r"/content/drive/MyDrive/IBM PROJECT",target_siz
```

```
     Found 5 images belonging to 1 classes.
```

```
x_train.class_indices
```

```
     {'images': 0}
```

```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense,Convolution2D,MaxPooling2D,Flatten
```

```
model = Sequential()
```

```
model.add(Convolution2D(32,(3,3),activation="relu",strides=(1, 1),input_shape =(64,64,3)))
```

```
model.add(MaxPooling2D(strides=(1, 1)))
```

```
model.add(Flatten())
```

```
model.summary()
```

```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #   
=================================================================
 conv2d (Conv2D)             (None, 62, 62, 32)        896       
                                                                 
 max_pooling2d (MaxPooling2D  (None, 61, 61, 32)       0         
 )                                                               
                                                                 
 flatten (Flatten)           (None, 119072)            0         
                                                                 
=================================================================
Total params: 896
Trainable params: 896
Non-trainable params: 0
_________________________________________________________________
```

```
model.add(Dense(300,activation="relu"))
model.add(Dense(300,activation="relu"))
```

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

```
model.compile(loss = "categorical_crossentropy",optimizer="adam",metrics=["accuracy"])
```

```
len(x_train)
```

```
1
```

```
model.fit(x_train,epochs = 10,steps_per_epoch=len(x_train),validation_data=x_test,validati
```

```
Epoch 1/10
1/1 [==============================] - 1s 1s/step - loss: 8.0622 - accuracy: 0.0000e
Epoch 2/10
1/1 [==============================] - 0s 311ms/step - loss: 24.3013 - accuracy: 0.0
Epoch 3/10
1/1 [==============================] - 0s 311ms/step - loss: 25.5824 - accuracy: 1.0
Epoch 4/10
1/1 [==============================] - 0s 308ms/step - loss: 33.6482 - accuracy: 0.0
Epoch 5/10
```

```
1/1 [==============================] - 0s 295ms/step - loss: 23.5914 - accuracy: 0.0
Epoch 6/10
1/1 [==============================] - 0s 312ms/step - loss: 33.6657 - accuracy: 0.0
Epoch 7/10
1/1 [==============================] - 0s 321ms/step - loss: 43.1822 - accuracy: 0.0
Epoch 8/10
1/1 [==============================] - 0s 308ms/step - loss: 41.9719 - accuracy: 1.0
Epoch 9/10
1/1 [==============================] - 0s 314ms/step - loss: 37.5854 - accuracy: 0.8
Epoch 10/10
1/1 [==============================] - 0s 307ms/step - loss: 34.0344 - accuracy: 0.0
<keras.callbacks.History at 0x7f3e280bcdd0>
```

```
model.save("flower.h5")
```

```
import numpy as np
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
```

```
model = load_model("flower.h5")
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM PROJECT/images/f5.jpg")
```

```
img
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM PROJECT/images/f5.jpg",target_size=(64,6
img
```

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

```
x
```

```
array([[[  6.,  57., 114.],
        [ 13.,  97., 161.],
        [ 14., 113., 180.],
        ...,
        [  7.,  47., 106.],
        [  9.,  57., 121.],
        [  7.,  60., 126.]],

       [[ 11.,  52., 104.],
        [ 12.,  90., 156.],
        [ 16., 115., 182.],
        ...,
        [  5.,  62., 129.],
        [  9.,  66., 135.],
        [  9.,  72., 143.]],

       [[  4.,  65., 128.],
        [ 12., 100., 172.],
        [ 17., 126., 195.],
        ...,
        [ 10.,  73., 144.],
        [ 10.,  79., 154.],
        [  6.,  84., 156.]],

       ...,

       [[  7.,  57., 120.],
        [  8.,  54., 113.],
        [  6.,  46.,  97.],
        ...,
        [ 12.,  63., 154.],
        [ 40., 142., 224.],
        [ 38., 131., 211.]],

       [[  7.,  55., 117.],
        [  6.,  51., 108.],
        [  7.,  45.,  92.],
        ...,
        [ 10.,  24.,  69.],
        [ 31., 116., 207.],
        [ 33., 122., 204.]],

       [[  6.,  55., 114.],
        [  7.,  48., 104.],
        [  8.,  45.,  90.],
        ...,
        [  1.,   7.,  29.],
        [ 21.,  83., 170.],
        [ 36., 126., 204.]]], dtype=float32)
```

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

```
x
```

```
array([[[[  6.,  57., 114.],
         [ 13.,  97., 161.],
         [ 14., 113., 180.],
         ...,
         [  7.,  47., 106.],
         [  9.,  57., 121.],
         [  7.,  60., 126.]],

        [[ 11.,  52., 104.],
         [ 12.,  90., 156.],
         [ 16., 115., 182.],
         ...,
         [  5.,  62., 129.],
         [  9.,  66., 135.],
         [  9.,  72., 143.]],

        [[  4.,  65., 128.],
         [ 12., 100., 172.],
         [ 17., 126., 195.],
         ...,
         [ 10.,  73., 144.],
         [ 10.,  79., 154.],
         [  6.,  84., 156.]],

        ...,

        [[  7.,  57., 120.],
         [  8.,  54., 113.],
         [  6.,  46.,  97.],
         ...,
         [ 12.,  63., 154.],
         [ 40., 142., 224.],
         [ 38., 131., 211.]],

        [[  7.,  55., 117.],
         [  6.,  51., 108.],
         [  7.,  45.,  92.],
         ...,
         [ 10.,  24.,  69.],
         [ 31., 116., 207.],
         [ 33., 122., 204.]],

        [[  6.,  55., 114.],
         [  7.,  48., 104.],
         [  8.,  45.,  90.],
         ...,
         [  1.,   7.,  29.],
         [ 21.,  83., 170.],
         [ 36., 126., 204.]]]], dtype=float32)
```

```
pred = model.predict(x)
```

```
1/1 [==============================] - 0s 105ms/step
```

```
pred
```

```
array([[0.0000000e+00, 1.0000000e+00, 0.0000000e+00, 6.6936675e-21,
        0.0000000e+00]], dtype=float32)
```

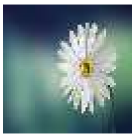
```
x_test.class_indices
```

```
{'images': 0}
```

```
index = ["","images"]
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM PROJECT/images/f4.jpg",target_size=(64,6
```

```
img
```



```
img = image.load_img(r"/content/drive/MyDrive/IBM PROJECT/images/f4.jpg")
```

```
img
```

✓ 0s completed at 12:44 PM ● ×