ASSIGNMENT 3, NAME: SHYAM M V, ROLL NUMBER: 110819104303

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

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

```
ls
```

```
drive/  sample_data/
```

```
cd /content/drive/MyDrive/IBM_SHYAM/images/flowerss
```

```
[Errno 2] No such file or directory: '/content/drive/MyDrive/IBM_SHYAM/images/flower
/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,\
```

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

```
x_train = train_datagen.flow_from_directory(r"/content/drive/MyDrive/IBM_SHYAM/images/flow
```

```
Found 0 images belonging to 0 classes.
```

```
x_test = test_datagen.flow_from_directory(r"/content/drive/MyDrive/IBM_SHYAM/images/flower
```

```
Found 0 images belonging to 0 classes.
```

```
x_train.class_indices
```

```
{}
```

```
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)
```

```
0
```

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


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_SHYAM/images/flowers/rose.jpg")


img
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM_SHYAM/images/flowers/African-Daisy.jpg",


img
```

```
x = image.img_to_array(img)


x

     array([[[108., 163.,  46.],
             [ 93., 141.,  23.],
             [ 35.,  69.,   9.],
             ...,
             [130., 188., 138.],
             [ 56.,  93.,  39.],
             [ 52.,  90.,  41.]],

            [[ 23.,  41.,  15.],
             [ 15.,  41.,   0.],
             [ 30.,  63.,  10.],
             ...,
             [ 57., 113.,  52.],
             [101., 149.,  87.],
             [ 60.,  98.,  47.]],

            [[  2.,   0.,   3.],
             [  2.,   0.,   1.],
             [ 68., 103.,  23.],
             ...,
             [ 43.,  76.,  29.],
             [ 53.,  92.,  39.],
             [ 61., 100.,  45.]],
```

```
            ...,

            [[ 23.,  31.,  18.],
             [253., 189., 162.],
             [255., 172., 138.],
             ...,
             [ 38.,  65.,  22.],
             [ 58.,  97.,  53.],
             [ 15.,  52.,   0.]],

            [[ 47.,  45.,  24.],
             [124.,  59.,  41.],
             [254., 144., 129.],
             ...,
             [ 35.,  66.,  22.],
             [ 23.,  59.,  13.],
             [ 32.,  68.,  22.]],

            [[255., 168., 140.],
             [209.,  94.,  65.],
             [248., 166., 152.],
             ...,
             [ 19.,  44.,   5.],
             [ 14.,  39.,   0.],
             [ 20.,  48.,  10.]]], dtype=float32)
```

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

```
x
```

```
array([[[[108., 163.,  46.],
         [ 93., 141.,  23.],
         [ 35.,  69.,   9.],
         ...,
         [130., 188., 138.],
         [ 56.,  93.,  39.],
         [ 52.,  90.,  41.]],

        [[ 23.,  41.,  15.],
         [ 15.,  41.,   0.],
         [ 30.,  63.,  10.],
         ...,
         [ 57., 113.,  52.],
         [101., 149.,  87.],
         [ 60.,  98.,  47.]],

        [[  2.,   0.,   3.],
         [  2.,   0.,   1.],
         [ 68., 103.,  23.],
         ...,
         [ 43.,  76.,  29.],
         [ 53.,  92.,  39.],
         [ 61., 100.,  45.]],

        ...,

        [[ 23.,  31.,  18.],
```

```
                [253., 189., 162.],
                [255., 172., 138.],
                ...,
                [ 38.,  65.,  22.],
                [ 58.,  97.,  53.],
                [ 15.,  52.,   0.]],

               [[ 47.,  45.,  24.],
                [124.,  59.,  41.],
                [254., 144., 129.],
                ...,
                [ 35.,  66.,  22.],
                [ 23.,  59.,  13.],
                [ 32.,  68.,  22.]],

               [[255., 168., 140.],
                [209.,  94.,  65.],
                [248., 166., 152.],
                ...,
                [ 19.,  44.,   5.],
                [ 14.,  39.,   0.],
                [ 20.,  48.,  10.]]]], dtype=float32)
```

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

```
1/1 [==============================] - 0s 415ms/step
```

```
pred
```

```
array([[3.0482863e-05, 4.7011662e-13, 9.9996948e-01, 0.0000000e+00,
        1.1377370e-27]], dtype=float32)
```

```
x_test.class_indices
```

```
{}
```

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

```
img = image.load_img(r"/content/drive/MyDrive/IBM_SHYAM/images/flowers/American-Lotus.jpg'
```

```
img
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM_SHYAM/images/flowers/Achillea.jpg")
```

```
img
```

0s completed at 10:27 AM