ASSIGNMENT 3, NAME: ROHITH N, ROLL NUMBER: 110819104029

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

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

```
ls
```

```
drive/  sample_data/
```

```
cd /content/drive/MyDrive/IBM
```

```
/content/drive/MyDrive/IBM
```

```
pwd
```

```
'/content/drive/MyDrive/IBM'
```

```
!unzip flowers.zip
```

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

Image Augmentation

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

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

```
x_train = train_datagen.flow_from_directory(r"/content/drive/MyDrive/IBM",target_size= (64,64),class_mode= "categorical",bat
```

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

```
x_test = test_datagen.flow_from_directory(r"/content/drive/MyDrive/IBM",target_size= (64,64),class_mode= "categorical",batch
```

```
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()
```



```
_________________________________________________________________
 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,validation_steps=len(x_test))
```

```
Epoch 1/10
1/1 [==============================] - 2s 2s/step - loss: 8.0817 - accuracy: 0.6000 - val_loss: 25.2579 - val_accuracy
Epoch 2/10
1/1 [==============================] - 1s 1s/step - loss: 25.0640 - accuracy: 0.0000e+00 - val_loss: 35.2658 - val_acc
Epoch 3/10
1/1 [==============================] - 1s 1s/step - loss: 34.5985 - accuracy: 1.0000 - val_loss: 24.9505 - val_accurac
```



```
curacy: 1.0000 - val_loss: 29.7311 - val_accurac
1/1 [==============================] - 1s 1s/step - loss: 28.1281 - accuracy: 0.0000e+00 - val_loss: 27.5265 - val_acc
Epoch 6/10
1/1 [==============================] - 1s 1s/step - loss: 26.7797 - accuracy: 0.0000e+00 - val_loss: 44.1465 - val_acc
Epoch 7/10
1/1 [==============================] - 1s 1s/step - loss: 42.5218 - accuracy: 0.0000e+00 - val_loss: 47.0791 - val_acc
Epoch 8/10
1/1 [==============================] - 1s 1s/step - loss: 46.9455 - accuracy: 0.0000e+00 - val_loss: 65.4216 - val_acc
```

```
Epoch 9/10
1/1 [==============================] - 1s 1s/step - loss: 62.5355 - accuracy: 1.0000 - val_loss: 88.2717 - val_accurac
Epoch 10/10
1/1 [==============================] - 1s 1s/step - loss: 87.1460 - accuracy: 1.0000 - val_loss: 86.5733 - val_accurac
<keras.callbacks.History at 0x7f2ebace5510>
```

```
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/Images/Flower 2.jpg")
```

```
img
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM/Images/Flower 4.jpg",target_size=(450,450))
```

```
img
```

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

```
x
```

```
array([[[26., 28., 23.],
        [27., 29., 24.],
        [27., 29., 24.],
        ...,
        [26., 32., 20.],
        [26., 32., 20.],
        [26., 32., 20.]],

       [[26., 28., 23.],
        [27., 29., 24.],
        [28., 30., 25.],
        ...,
        [27., 33., 23.],
        [27., 33., 23.],
        [27., 33., 23.]],

       [[27., 29., 24.],
        [28., 30., 25.],
        [28., 34., 24.],
        [28., 34., 24.],
        [28., 34., 24.]],

       ...,

       [[24., 30., 20.],
        [24., 30., 20.],
```

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```
               [24., 30., 20.],
               ...,
               [23., 24., 18.],
               [23., 24., 18.],
               [23., 24., 18.]],

              [[24., 30., 20.],
               [24., 30., 20.],
               [24., 30., 20.],
               ...,
               [23., 24., 16.],
               [23., 24., 16.],
               [23., 24., 16.]],

              [[22., 29., 21.],
               [29., 28., 23.],
               [22., 29., 21.],
               ...,
               [23., 24., 16.],
               [23., 24., 16.],
               [23., 24., 16.]]], dtype=float32)
```

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

```
x
```

```
     array([[[[26., 28., 23.],
              [27., 29., 24.],
              [27., 29., 24.],
              ...,
```



```
              [[26., 28., 23.],
               [27., 29., 24.],
               [28., 30., 25.],
               ...,
               [27., 33., 23.],
               [27., 33., 23.],
```

```
       [27., 33., 23.]],

      [[27., 29., 24.],
       [28., 30., 25.],
       [29., 31., 26.],
       ...,
       [28., 34., 24.],
       [28., 34., 24.],
       [28., 34., 24.]],

      ...,

      [[24., 30., 20.],
       [24., 30., 20.],
       [24., 30., 20.],
       ...,
       [23., 24., 18.],
       [23., 24., 18.],
       [23., 24., 18.]],

      [[24., 30., 20.],
       [24., 30., 20.],
       [24., 30., 20.],
       ...,
       [23., 24., 16.],
       [23., 24., 16.],
       [23., 24., 16.]],

      [[22., 29., 21.],
       [29., 28., 23.],
       [22., 29., 21.],
       ...,
```

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```
pred = (r"/content/drive/MyDrive/IBM")
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM/Images/Flower 1.jpg")
```

```
x_test.class_indices
```

```
{'Images': 0}
```

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

```
img = image.load_img(r"/content/drive/MyDrive/IBM/Images/Flower 4.jpg",target_size=(500,500))
```

```
img
```

```
img = image.load_img(r"/content/drive/MyDrive/IBM/Images/Flower 1.jpg")
```

```
img
```

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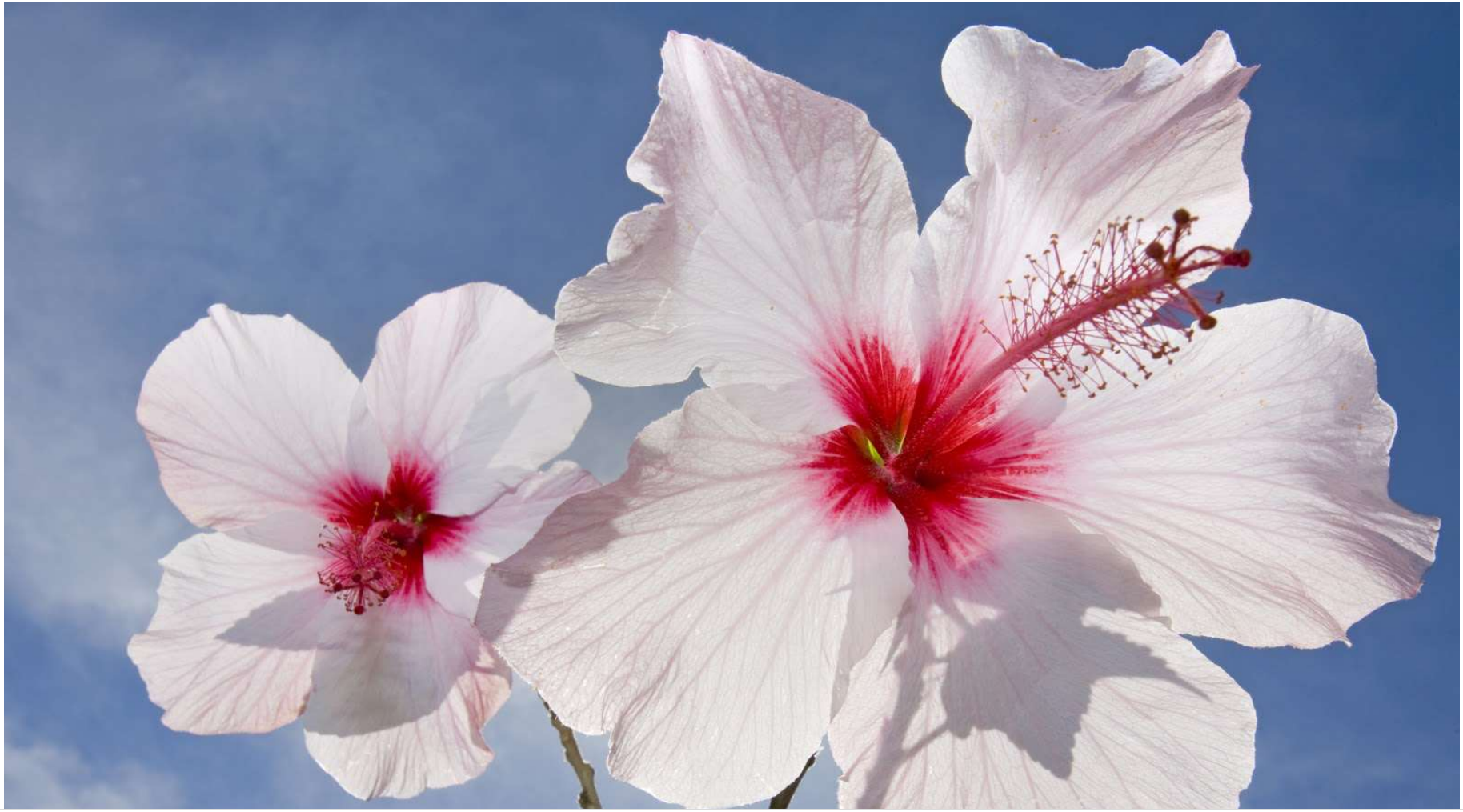

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