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

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

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

```
  inflating: flowers/tulip/8712270243_8512cf4fbd.jpg
  inflating: flowers/tulip/8712270665_57b5bda0a2_n.jpg
  inflating: flowers/tulip/8712282563_3819afb7bc.jpg
  inflating: flowers/tulip/8713357842_9964a93473_n.jpg
  inflating: flowers/tulip/8713387500_6a9138b41b_n.jpg
  inflating: flowers/tulip/8713388322_e5ae26263b_n.jpg
  inflating: flowers/tulip/8713389178_66bceb71a8_n.jpg
  inflating: flowers/tulip/8713390684_041148dd3e_n.jpg
  inflating: flowers/tulip/8713391394_4b679ea1e3_n.jpg
  inflating: flowers/tulip/8713392604_90631fb809_n.jpg
  inflating: flowers/tulip/8713394070_b24561b0a9.jpg
  inflating: flowers/tulip/8713396140_5af8136136.jpg
  inflating: flowers/tulip/8713397358_0505cc0176_n.jpg
  inflating: flowers/tulip/8713397694_bcbcbba2c2_n.jpg
  inflating: flowers/tulip/8713398114_bc96f1b624_n.jpg
  inflating: flowers/tulip/8713398614_88202e452e_n.jpg
  inflating: flowers/tulip/8713398906_28e59a225a_n.jpg
  inflating: flowers/tulip/8713407768_f880df361f.jpg
  inflating: flowers/tulip/8717900362_2aa508e9e5.jpg
  inflating: flowers/tulip/8722514702_7ecc68691c.jpg
  inflating: flowers/tulip/8723767533_9145dec4bd_n.jpg
  inflating: flowers/tulip/8729501081_b993185542_m.jpg
  inflating: flowers/tulip/8733586143_3139db6e9e_n.jpg
  inflating: flowers/tulip/8748266132_5298a91dcf_n.jpg
  inflating: flowers/tulip/8750288831_5e49a9f29b.jpg
  inflating: flowers/tulip/8757486380_90952c5377.jpg
  inflating: flowers/tulip/8758464923_75a5ffe320_n.jpg
  inflating: flowers/tulip/8758519201_16e8d2d781_n.jpg
  inflating: flowers/tulip/8759594528_2534c0ec65_n.jpg
  inflating: flowers/tulip/8759597778_7fca5d434b_n.jpg
  inflating: flowers/tulip/8759601388_36e2a50d98_n.jpg
  inflating: flowers/tulip/8759606166_8e475013fa_n.jpg
  inflating: flowers/tulip/8759618746_f5e39fdbf8_n.jpg
  inflating: flowers/tulip/8762189906_8223cef62f.jpg
  inflating: flowers/tulip/8762193202_0fbf2f6a81.jpg
  inflating: flowers/tulip/8768645961_8f1e097170_n.jpg
  inflating: flowers/tulip/8817622133_a42bb90e38_n.jpg
  inflating: flowers/tulip/8838347159_746d14e6c1_m.jpg
  inflating: flowers/tulip/8838354855_c474fc66a3_m.jpg
  inflating: flowers/tulip/8838914676_8ef4db7f50_n.jpg
  inflating: flowers/tulip/8838975946_f54194894e_m.jpg
  inflating: flowers/tulip/8838983024_5c1a767878_n.jpg
  inflating: flowers/tulip/8892851067_79242a7362_n.jpg
  inflating: flowers/tulip/8904780994_8867d64155_n.jpg
  inflating: flowers/tulip/8908062479_449200a1b4.jpg
  inflating: flowers/tulip/8908097235_c3e746d36e_n.jpg
  inflating: flowers/tulip/9019694597_2d3bbedb17.jpg
  inflating: flowers/tulip/9030467406_05e93ff171_n.jpg
  inflating: flowers/tulip/9048307967_40a164a459_m.jpg
  inflating: flowers/tulip/924782410_94ed7913ca_m.jpg
  inflating: flowers/tulip/9378657435_89fabf13c9_n.jpg
```

```
  inflating: flowers/tulip/9444202147_405290415b_n.jpg
  inflating: flowers/tulip/9446982168_06c4d71da3_n.jpg
  inflating: flowers/tulip/9831362123_5aac525a99_n.jpg
  inflating: flowers/tulip/9870557734_88eb3b9e3b_n.jpg
  inflating: flowers/tulip/9947374414_fdf1d0861c_n.jpg
  inflating: flowers/tulip/9947385346_3a8cacea02_n.jpg
  inflating: flowers/tulip/9976515506_d496c5e72c.jpg
```

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

```
train_datagen=ImageDataGenerator(rescale=1./255, zoom_range=0.2,horizontal_flip=True,verti
```

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

```
x_train=train_datagen.flow_from_directory(r"/content/flowers",target_size=(64,64),class_mo
```

```
Found 4317 images belonging to 5 classes.
```

```
x_test=test_datagen.flow_from_directory(r"/content/flowers",target_size=(64,64),class_mode
```

```
Found 4317 images belonging to 5 classes.
```

```
x_train.class_indices
```

```
{'daisy': 0, 'dandelion': 1, 'rose': 2, 'sunflower': 3, 'tulip': 4}
```

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

```
model=Sequential()
```

```
model.add(Convolution2D(32,(3,3),input_shape=(64,64,3),activation='relu'))
```

```
model.add(MaxPooling2D(pool_size=(2,2)))
```

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

```
model.summary()
```

```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d (Conv2D)             (None, 62, 62, 32)        896

 max_pooling2d (MaxPooling2D  (None, 31, 31, 32)       0
 )

 flatten (Flatten)           (None, 30752)             0

=================================================================
Total params: 896
Trainable params: 896
```

```
Non-trainable params: 0
_________________________________________________________________
```

```
model.add(Dense(300,activation='relu'))
model.add(Dense(150,activation='relu'))
```

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

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

len(x_train)
```

```
180
```

```
model.fit_generator(x_train,steps_per_epoch=len(x_train), validation_data=x_test, validati
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1: UserWarning: `Model.
  """Entry point for launching an IPython kernel.
Epoch 1/10
180/180 [==============================] - 61s 335ms/step - loss: 1.2065 - accuracy:
Epoch 2/10
180/180 [==============================] - 58s 325ms/step - loss: 1.0009 - accuracy:
Epoch 3/10
180/180 [==============================] - 57s 318ms/step - loss: 0.9339 - accuracy:
Epoch 4/10
180/180 [==============================] - 56s 311ms/step - loss: 0.8666 - accuracy:
Epoch 5/10
180/180 [==============================] - 57s 315ms/step - loss: 0.8003 - accuracy:
Epoch 6/10
180/180 [==============================] - 54s 302ms/step - loss: 0.7630 - accuracy:
Epoch 7/10
180/180 [==============================] - 57s 314ms/step - loss: 0.6854 - accuracy:
Epoch 8/10
180/180 [==============================] - 54s 303ms/step - loss: 0.6404 - accuracy:
Epoch 9/10
180/180 [==============================] - 56s 309ms/step - loss: 0.6093 - accuracy:
Epoch 10/10
180/180 [==============================] - 56s 311ms/step - loss: 0.5598 - accuracy:
<keras.callbacks.History at 0x7f4f4ab22850>
```

```
model.save('Flowers_classification_model1.h5')
```

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

# Load the model
model=load_model('Flowers_classification_model1.h5')

img=image.load_img(r"/content/100080576_f52e8ee070_n.jpg",target_size=(64,64))
x=image.img_to_array(img)
```

```
x=np.expand_dims(x,axis=0)
y=np.argmax(model.predict(x),axis=1)
# x_train.class_indices
index=['daisy','dandelion','rose','sunflower','tulip']
index[y[0]]
```

```
1/1 [==============================] - 0s 106ms/step
'sunflower'
```