```
!unzip "/content/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,vertical_flip=True)
test_datagen = ImageDataGenerator(rescale=1./255)
xtrain = train_datagen.flow_from_directory('/content/flowers',
                                           target_size=(64,64),
                                           class_mode='categorical',
                                           batch_size=24)
xtest = test_datagen.flow_from_directory('/content/flowers',
                                         target_size=(64,64),
                                         class_mode='categorical',
                                         batch_size=124)
```

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

```
from tensorflow.keras.models import Sequential
```

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

```
model = Sequential()
```

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

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

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

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

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

```
model.add(Dense(4,activation='softmax'))
```

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

```
len(xtrain)
```

```
     180
```

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

```
model.fit(xtrain,
```

```
steps_per_epoch=len(xtrain),
epochs=5,
validation_data=xtest,
validation_steps=len(xtest))
```

```
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1233, in
inner
      self.run()
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1147, in
run
      yielded = self.gen.send(value)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py", line
365, in process_one
      yield gen.maybe_future(dispatch(*args))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326, in
wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py", line
268, in dispatch_shell
      yield gen.maybe_future(handler(stream, idents, msg))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326, in
wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py", line
545, in execute_request
      user_expressions, allow_stdin,
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326, in
wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/ipkernel.py", line
306, in do_execute
      res = shell.run_cell(code, store_history=store_history, silent=silent)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/zmqshell.py", line
536, in run_cell
      return super(ZMQInteractiveShell, self).run_cell(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 2855, in run_cell
      raw_cell, store_history, silent, shell_futures)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 2881, in _run_cell
      return runner(coro)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/async_helpers.py",
line 68, in _pseudo_sync_runner
      coro.send(None)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 3058, in run_cell_async
      interactivity=interactivity, compiler=compiler, result=result)
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 3249, in run_ast_nodes
      if (await self.run_code(code, result,  async_=asy)):
    File "/usr/local/lib/python3.7/dist-
packages/IPython/core/interactiveshell.py", line 3326, in run_code
      exec(code_obj, self.user_global_ns, self.user_ns)
    File "<ipython-input-38-9a4ef8c8eb25>", line 5, in <module>
      validation_steps=len(xtest))
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py",
```

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

```
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py", line
```

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

```
model=load_model("/content/daisy.h5")
```

```
img = image.load_img('/content/flowers/daisy/100080576_f52e8ee070_n.jpg',target_size=(64,6
```

```
img
```

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

```
x
```

```
array([[[141., 141., 139.],
        [149., 149., 149.],
        [152., 152., 154.],
        ...,
        [162., 161., 166.],
        [154., 154., 152.],
        [153., 153., 153.]],

       [[136., 135., 131.],
        [146., 145., 143.],
        [169., 168., 174.],
        ...,
        [159., 158., 163.],
        [155., 155., 153.],
        [149., 149., 149.]],

       [[125., 125., 117.],
        [138., 140., 137.],
        [152., 152., 152.],
        ...,
        [156., 156., 156.],
        [157., 157., 155.],
        [143., 142., 140.]],

       ...,

       [[ 41.,  44.,  23.],
        [ 43.,  46.,  25.],
        [ 49.,  51.,  37.],
        ...,
        [128., 124., 121.],
        [125., 121., 118.],
        [125., 122., 117.]],

       [[ 43.,  46.,  25.],
        [ 43.,  46.,  25.],
        [ 54.,  55.,  37.],
        ...,
        [130., 126., 125.],
        [129., 125., 124.],
        [127., 123., 122.]],
```

```
            [[ 44.,  47.,  26.],
             [ 45.,  48.,  27.],
             [ 53.,  55.,  34.],
             ...,
             [137., 133., 132.],
             [133., 129., 128.],
             [130., 126., 125.]]], dtype=float32)
```

```
x.ndim
```

```
3
```

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

```
x.ndim
```

```
4
```

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

```
1/1 [==============================] - 0s 117ms/step
```

```
pred
```

```
array([[5.9124541e-16, 2.7260138e-33, 1.0000000e+00, 0.0000000e+00]],
      dtype=float32)
```

```
labels=["daisy","dandelion","rose","sunflower","tulip"]
```

```
np.argmax(pred)
```

```
2
```

```
labels[4]
```

```
'tulip'
```

```
labels[np.argmax(pred)]
```

```
'rose'
```