UNZIP FILE

```
ls
```

```
drive/  sample_data/
```

```
cd /content/drive/MyDrive/Data
```

```
/content/drive/MyDrive/Data
```

```
ls
```

```
Flowers-Dataset.zip
```

```
pwd
```

```
'/content/drive/MyDrive/Data'
```

```
!unzip Flowers-Dataset.zip
```

```
Archive:  Flowers-Dataset.zip
  inflating: flowers/daisy/100080576_f52e8ee070_n.jpg
  inflating: flowers/daisy/10140303196_b88d3d6cec.jpg
  inflating: flowers/daisy/10172379554_b296050f82_n.jpg
  inflating: flowers/daisy/10172567486_2748826a8b.jpg
  inflating: flowers/daisy/10172636503_21bededa75_n.jpg
  inflating: flowers/daisy/102841525_bd6628ae3c.jpg
  inflating: flowers/daisy/10300722094_28fa978807_n.jpg
  inflating: flowers/daisy/1031799732_e7f4008c03.jpg
  inflating: flowers/daisy/10391248763_1d16681106_n.jpg
  inflating: flowers/daisy/10437754174_22ec990b77_m.jpg
  inflating: flowers/daisy/10437770546_8bb6f7bdd3_m.jpg
  inflating: flowers/daisy/10437929963_bc13eebe0c.jpg
  inflating: flowers/daisy/10466290366_cc72e33532.jpg
  inflating: flowers/daisy/10466558316_a7198b87e2.jpg
  inflating: flowers/daisy/10555749515_13a12a026e.jpg
  inflating: flowers/daisy/10555815624_dc211569b0.jpg
  inflating: flowers/daisy/10555826524_423eb8bf71_n.jpg
  inflating: flowers/daisy/10559679065_50d2b16f6d.jpg
  inflating: flowers/daisy/105806915_a9c13e2106_n.jpg
  inflating: flowers/daisy/10712722853_5632165b04.jpg
  inflating: flowers/daisy/107592979_aaa9cdfe78_m.jpg
  inflating: flowers/daisy/10770585085_4742b9dac3_n.jpg
  inflating: flowers/daisy/10841136265_af473efc60.jpg
  inflating: flowers/daisy/10993710036_2033222c91.jpg
  inflating: flowers/daisy/10993818044_4c19b86c82.jpg
  inflating: flowers/daisy/10994032453_ac7f8d9e2e.jpg
  inflating: flowers/daisy/11023214096_b5b39fab08.jpg
```

```
  inflating: flowers/daisy/11023272144_fce94401f2_m.jpg
  inflating: flowers/daisy/11023277956_8980d53169_m.jpg
  inflating: flowers/daisy/11124324295_503f3a0804.jpg
  inflating: flowers/daisy/1140299375_3aa7024466.jpg
  inflating: flowers/daisy/11439894966_dca877f0cd.jpg
  inflating: flowers/daisy/1150395827_6f94a5c6e4_n.jpg
  inflating: flowers/daisy/11642632_1e7627a2cc.jpg
  inflating: flowers/daisy/11834945233_a53b7a92ac_m.jpg
  inflating: flowers/daisy/11870378973_2ec1919f12.jpg
  inflating: flowers/daisy/11891885265_ccefec7284_n.jpg
  inflating: flowers/daisy/12193032636_b50ae7db35_n.jpg
  inflating: flowers/daisy/12348343085_d4c396e5b5_m.jpg
  inflating: flowers/daisy/12585131704_0f64b17059_m.jpg
  inflating: flowers/daisy/12601254324_3cb62c254a_m.jpg
  inflating: flowers/daisy/1265350143_6e2b276ec9.jpg
  inflating: flowers/daisy/12701063955_4840594ea6_n.jpg
  inflating: flowers/daisy/1285423653_18926dc2c8_n.jpg
  inflating: flowers/daisy/1286274236_1d7ac84efb_n.jpg
  inflating: flowers/daisy/12891819633_e4c82b51e8.jpg
  inflating: flowers/daisy/1299501272_59d9da5510_n.jpg
  inflating: flowers/daisy/1306119996_ab8ae14d72_n.jpg
  inflating: flowers/daisy/1314069875_da8dc023c6_m.jpg
  inflating: flowers/daisy/1342002397_9503c97b49.jpg
  inflating: flowers/daisy/134409839_71069a95d1_m.jpg
  inflating: flowers/daisy/1344985627_c3115e2d71_n.jpg
  inflating: flowers/daisy/13491959645_2cd9df44d6_n.jpg
  inflating: flowers/daisy/1354396826_2868631432_m.jpg
  inflating: flowers/daisy/1355787476_32e9f2a30b.jpg
  inflating: flowers/daisy/13583238844_573df2de8e_m.jpg
  inflating: flowers/daisy/1374193928_a52320eafa.jpg
```

IMAGE AUGMENTATION

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

```
train_data = ImageDataGenerator(rescale=1./255,zoom_range=0.2,horizontal_flip=True,vertical_f
```

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

```
x_train = train_data.flow_from_directory('/content/drive/MyDrive/Data/flowers', target_size=(
```

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

```
x_test = test_data.flow_from_directory('/content/drive/MyDrive/Data/flowers', target_size=(64
```

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

CREATING CNN MODEL

```
import warnings
warnings.filterwarnings("ignore")
```

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

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

```
model = Sequential()
```

ADDING LAYERS

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

COMPILING THE MODEL

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

```
len(x_train)
```

```
108
```

FIT THE MODEL

```
model.fit(x_train, epochs=5, validation_data=x_test, steps_per_epoch=len(x_train), validation
```

```
Epoch 1/5
```

```
108/108 [==============================] - 63s 575ms/step - loss: 1.2799 - accuracy: 0.4
Epoch 2/5
108/108 [==============================] - 63s 580ms/step - loss: 1.0585 - accuracy: 0.5
Epoch 3/5
108/108 [==============================] - 62s 576ms/step - loss: 0.9697 - accuracy: 0.6
Epoch 4/5
108/108 [==============================] - 61s 570ms/step - loss: 0.9123 - accuracy: 0.6
Epoch 5/5
108/108 [==============================] - 61s 569ms/step - loss: 0.9080 - accuracy: 0.6
<keras.callbacks.History at 0x7fb0675e2610>
```

SAVE THE MODEL

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

TESTING THE MODEL

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

model=load_model("/content/drive/MyDrive/Data/flower.h5")

img=image.load_img("/content/drive/MyDrive/Data/flowers/daisy/10172567486_2748826a8b.jpg",tar

img
```

```
img = image.load_img('/content/drive/MyDrive/Data/flowers/rose/11233672494_d8bf0a3dbf_n.jpg',
x = image.img_to_array(img)
x = np.expand_dims(x,axis=0)
pred = np.argmax(model.predict(x))
op = ['daisy','dandelion','rose','sunflower','tulip']
op[pred]
```

```
'rose'
```

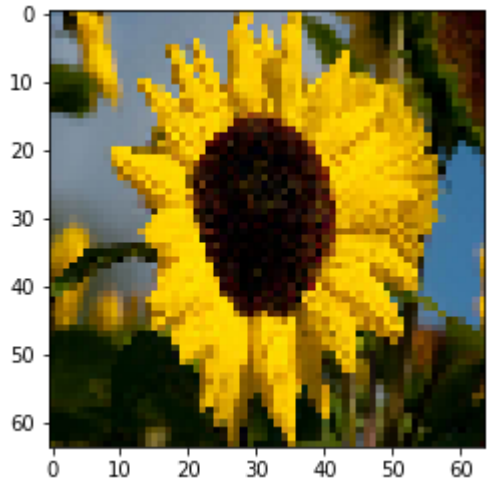
```
classes=['daisy','dandelion','rose','sunflower','tulip']
```

```
def testing(img):
  img=image.load_img(img,target_size=(64,64))
  x=image.img_to_array(img)
  x=np.expand_dims(x,axis=0)
  pred=np.argmax(model.predict(x))
  return print("Predicted class as:",classes[pred])

def img_show(img):
  img1=image.load_img(img,target_size=(64,64))
  plt.imshow(img1)


#test1
img_show('/content/drive/MyDrive/Data/flowers/sunflower/12471791574_bb1be83df4.jpg')
testing('/content/drive/MyDrive/Data/flowers/sunflower/12471791574_bb1be83df4.jpg')
```

```
Predicted class as: sunflower
```




```
#test2
img_show('/content/drive/MyDrive/Data/flowers/tulip/12025042086_78bafc0eb6_n.jpg')
testing('/content/drive/MyDrive/Data/flowers/tulip/12025042086_78bafc0eb6_n.jpg')
```

```
Predicted class as: tulip
```