Assignment No. 6 Code:

```python
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"""

import tensorflow as tf
import numpy as np
import cv2
import PIL.Image as Image
import os
import matplotlib.pyplot as plt
import tensorflow_hub as hub
import pathlib

Image_Shape = (224,224)

URL_dataset =
"https://storage.googleapis.com/download.tensorflow.org/example_images/flower_
photos.tgz"

data_dir = tf.keras.utils.get_file(origin=URL_dataset,
                                   fname='flower_photos',
                                   untar=True)
data_dir = pathlib.Path(data_dir)

# Total images
image_count = len(list(data_dir.glob('*/*.jpg')))
print(image_count)

"""### Making the different classes"""

flowers_images_dict = {
    "daisy" : list(data_dir.glob('daisy/*')),
    "dandelion" : list(data_dir.glob('dandelion/*')),
    "roses" : list(data_dir.glob('roses/*')),
    "sunflowers" : list(data_dir.glob('sunflowers/*')),
    "tulips" : list(data_dir.glob('tulips/*'))
}

flowers_labels_dict= {
    "daisy" : 0,
    "dandelion" : 1,
     "roses" : 2,
    "sunflowers" : 3,
    "tulips" : 4
}
```

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"""### Reshaping Images"""

X, Y = [],[]

for flower_name, images in flowers_images_dict.items():
  for image in images:
    img = cv2.imread(str(image))
    resized_img = cv2.resize(img, Image_Shape)
    X.append(resized_img)
    Y.append(flowers_labels_dict[flower_name])

X = np.array(X)
y = np.array(Y)

from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, random_state=0)

X_train_scaled = X_train / 255
X_test_scaled = X_test / 255

"""### Pretrained Model"""

tf_model = "https://tfhub.dev/google/tf2-preview/mobilenet_v2/feature_vector/4"

classifier = tf.keras.Sequential([
    hub.KerasLayer(tf_model,input_shape=(224,224,3), trainable=False),
    tf.keras.layers.Dense(len(flowers_labels_dict), activation="softmax")
])
classifier.summary()

classifier.compile(
    optimizer='adam',
    loss=tf.keras.losses.SparseCategoricalCrossentropy(from_logits=True),
    metrics=["accuracy"]
)

classifier.fit(X_train_scaled, y_train,epochs=5)

classifier.evaluate(X_test_scaled, y_test)

"""### Prediction"""

from PIL import Image
img = Image.open("360_F_105573812_cvD4P5jo6tMPhZULX324qUYFbNpXlisD.jpg")
img
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img = tf.keras.preprocessing.image.img_to_array(img.resize(Image_Shape))
img = np.array([img])

res = classifier.predict(img)

print("The prediction is :
{}".format(list(flowers_labels_dict.keys())[np.argmax(res)]))
```