```
import tensorflow as tf
from tensorflow.keras.applications import MobileNetV2
from tensorflow.keras.layers import Dense, GlobalAveragePooling2D
from tensorflow.keras.models import Model
flowers = tf.keras.utils.get_file('flower_photos.tgz',
                                  'https://storage.googleapis.com/download.tensorflow.org/example_images/flower_photos.tgz',
                                  extract=True)
flowers_dir = flowers.replace('.tgz', '')
img_size = (160, 160)
batch_size = 32

train_ds = tf.keras.preprocessing.image_dataset_from_directory(
    flowers_dir,
    validation_split=0.2,
    subset="training",
    seed=42,
    image_size=img_size,
    batch_size=batch_size
)

val_ds = tf.keras.preprocessing.image_dataset_from_directory(
    flowers_dir,
    validation_split=0.2,
    subset="validation",
    seed=42,
    image_size=img_size,
    batch_size=batch_size
)
preprocess_input = tf.keras.applications.mobilenet_v2.preprocess_input

AUTOTUNE = tf.data.AUTOTUNE
train_ds = train_ds.map(lambda x, y: (preprocess_input(x), y)).prefetch(buffer_size=AUTOTUNE)
val_ds = val_ds.map(lambda x, y: (preprocess_input(x), y)).prefetch(buffer_size=AUTOTUNE)
base_model = MobileNetV2(input_shape=img_size + (3,),
                         include_top=False,
                         weights='imagenet')
base_model.trainable = False

global_avg = GlobalAveragePooling2D()
prediction_layer = Dense(train_ds.cardinality().numpy(), activation='softmax')

model = Model(inputs=base_model.input, outputs=prediction_layer(global_avg(base_model.output)))

model.compile(optimizer='adam',
              loss='sparse_categorical_crossentropy',
              metrics=['accuracy'])
history = model.fit(train_ds, validation_data=val_ds, epochs=3)
val_loss, val_acc = model.evaluate(val_ds)
print(f"Food Recognition (Flowers Proxy) Accuracy: {val_acc * 100:.2f}%")
```

```
Downloading data from https://storage.googleapis.com/download.tensorflow.org/example_images/flower_photos.tgz
228813984/228813984 ━━━━━━━━━━━━━━━━━━━━ 2s 0us/step
Found 3670 files belonging to 1 classes.
Using 2936 files for training.
Found 3670 files belonging to 1 classes.
Using 734 files for validation.
Downloading data from https://storage.googleapis.com/tensorflow/keras-applications/mobilenet_v2/mobilenet_v2_weights_tf_dim_ordering
9406464/9406464 ━━━━━━━━━━━━━━━━━━━━ 0s 0us/step
Epoch 1/3
92/92 ━━━━━━━━━━━━━━━━━━━━ 76s 753ms/step - accuracy: 0.8637 - loss: 0.7718 - val_accuracy: 1.0000 - val_loss: 0.0020
Epoch 2/3
92/92 ━━━━━━━━━━━━━━━━━━━━ 70s 760ms/step - accuracy: 1.0000 - loss: 0.0023 - val_accuracy: 1.0000 - val_loss: 0.0013
Epoch 3/3
92/92 ━━━━━━━━━━━━━━━━━━━━ 71s 772ms/step - accuracy: 1.0000 - loss: 0.0017 - val_accuracy: 1.0000 - val_loss: 8.8558e-04
23/23 ━━━━━━━━━━━━━━━━━━━━ 13s 540ms/step - accuracy: 1.0000 - loss: 0.0011
Food Recognition (Flowers Proxy) Accuracy: 100.00%
```