

```
seconds_in_a_day = 24 * 60 * 60
```

```
seconds_in_a_day
```

```
seconds_in_a_week = 7 * seconds_in_a_day
```

```
seconds_in_a_week
```

```
import numpy as np
```

```
from matplotlib import pyplot as plt
```

```
ys = 200 + np.random.randn(100)
```

```
x = [x for x in range(len(ys))]
```

```
plt.plot(x, ys, '-')
```

```
plt.fill_between(x, ys, 195, where=(ys > 195), facecolor='g', alpha=0.6)
```

```
plt.title("Sample Visualization")
```

```
plt.show()
```

```
from google.colab import drive
```

```
drive.mount('/content/drive')
```

```
cd/content/drive/MyDrive/Nutrition Image Analysis using CNN and Rapid API/Dataset/TRAIN_SET
```

```
ls/content/drive/MyDrive/Nutrition Image Analysis using CNN and Rapid  
API/Dataset/TEST_SET/APPLES/n07740461_10011.jpg
```

```
pwd/content/drive/MyDrive/Nutrition Image Analysis using CNN and Rapid  
API/Dataset/TEST_SET/APPLES/n07740461_10080.jpg
```

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

```
train_datagen=ImageDataGenerator(rescale=1./255, zoom_range=0.2, horizontal_flip=True, vertical_flip=False)
```

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

```
ls
```

```
pwd
```

```
x_train=train_datagen.flow_from_directory(r"/content/drive/.shortcut-targets-by-id/1zpnSFRUQNazuPj95mSAIz0dLj-Ekk8AG/Nutrition Image Analysis using CNN and Rapid API/Dataset/TRAIN_SET", target_size=(64,64), class_mode='categorical', batch_size=24)
```

```
x_test=test_datagen.flow_from_directory(r"/content/drive/.shortcut-targets-by-id/1zpnSFRUQNazuPj95mSAIz0dLj-Ekk8AG/Nutrition Image Analysis using CNN and Rapid API/Dataset/TEST_SET", target_size=(64,64), class_mode='categorical', batch_size=24)
```

```
x_train.class_indices
```

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

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

```
model=Sequential()
```

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

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

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

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

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

```
model.summary()
```

```
32*(3*3*3+1)
```

```
model.add(Dense(300,input_dim=4,activation='relu'))
```

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

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

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

```
len(x_train)
```

```
4118/24
```

```
len(x_test)
```

```
929/24
```

```
model.fit_generator(x_train,steps_per_epoch=len(x_train),validation_data=x_test,validation_steps=  
len(x_test),epochs=10)
```

```
ls
```

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

ls

```
import numpy as np
```

```
from tensorflow.keras.models import load_model
```

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

```
model=load_model('fruit.h5')
```

```
img=image.load_img(r"/content/drive/MyDrive/Nutrition Image Analysis using CNN and Rapid  
API/Dataset/TEST_SET/APPLES/n07740461_10211.jpg")
```

```
img
```

```
img=image.load_img(r"/content/drive/MyDrive/istockphoto-898671450-  
170667a.jpg",target_size=(64,64))
```

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

```
x
```

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

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

```
index=['APPLES', 'BANANA', 'ORANGE', 'PINEAPPLE', 'WATERMELON']
```

```
prediction
```

```
y=np.argmax(prediction)
```

```
index[y]
```