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    "from keras.preprocessing.image import ImageDataGenerator\n",

"train_datagen=ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_flip=True)\n",
    "test_datagen=ImageDataGenerator(rescale=1)"
   ]
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      "Found 5384 images belonging to 6 classes.\n",
      "Found 1686 images belonging to 6 classes.\n"
     ]
    }
   ],
   "source": [
```

```
   "x_train=train_datagen.flow_from_directory(r'C:\\Users\\uma25\\project\\Dataset Plant Disease\\fruit-dataset\\fruit-dataset\\train',target_size=(128,128),batch_size=2,class_mode='categorical')\n",

   "x_test=test_datagen.flow_from_directory(r'C:\\Users\\uma25\\project\\Dataset Plant Disease\\fruit-dataset\\fruit-dataset\\test',target_size=(128,128),batch_size=2,class_mode='categorical')"

  ]

 },

 {

  "cell_type": "code",

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  "outputs": [],

  "source": [

   "from keras.models import Sequential\n",

   "from keras.layers import Dense\n",

   "from keras.layers import Convolution2D\n",

   "from keras.layers import MaxPooling2D\n",

   "from keras.layers import Flatten"

  ]

 },

 {

  "cell_type": "code",

  "execution_count": 4,

  "id": "c9f97db4",

  "metadata": {},

  "outputs": [],

  "source": [

   "model=Sequential()"

  ]

 },
```

```
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  "model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))"
 ]
},
{
 "cell_type": "code",
 "execution_count": 6,
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 "source": [
  "model.add(MaxPooling2D(pool_size=(2,2)))"
 ]
},
{
 "cell_type": "code",
 "execution_count": 7,
 "id": "e34afddf",
 "metadata": {},
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 "source": [
  "model.add(Flatten())"
 ]
},
{
```

```
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  "model.add(Dense(units=40,kernel_initializer='uniform',activation='relu'))\n",
  "model.add(Dense(units=70,kernel_initializer='random_uniform',activation='relu'))\n",
  "model.add(Dense(units=6,kernel_initializer='random_uniform',activation='softmax'))"
 ]
},
{
 "cell_type": "code",
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 "id": "9aed627b",
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  "model.compile(loss='categorical_crossentropy',optimizer=\"adam\",metrics=[\"accuracy\"])"
 ]
},
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 "id": "c99d2ba8",
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   "output_type": "stream",
   "text": [
```

```
    "Epoch 1/3\n",
    "168/168 [==============================] - 45s 229ms/step - loss: 1.4802 - accuracy: 0.4315 - val_loss: 119.8421 - val_accuracy: 0.5577\n",
    "Epoch 2/3\n",
    "168/168 [==============================] - 38s 223ms/step - loss: 1.0562 - accuracy: 0.5982 - val_loss: 107.7073 - val_accuracy: 0.5288\n",
    "Epoch 3/3\n",
    "168/168 [==============================] - 36s 216ms/step - loss: 0.8406 - accuracy: 0.6905 - val_loss: 97.8494 - val_accuracy: 0.8173\n"
   ]
  },
  {
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     "<keras.callbacks.History at 0x1e34c9b7310>"
    ]
   },
   "execution_count": 10,
   "metadata": {},
   "output_type": "execute_result"
  }
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  "model.fit(x_train,steps_per_epoch=168,epochs=3,validation_data=x_test,validation_steps=52)"
 ]
},
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```
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  "model.save(r'C:\\Users\\uma25\\project\\flask\\uploads\\fruit.h5')"
 ]
},
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 "execution_count": 12,
 "id": "e8fcccb8",
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   "output_type": "stream",
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    "_________________________\n",
    " Layer (type)              Output Shape            Param #   \n",
    "=================================================================\n",
    " conv2d (Conv2D)           (None, 126, 126, 32)     896       \n",
    "                                                   \n",
    " max_pooling2d (MaxPooling2D  (None, 63, 63, 32)      0         \n",
    " )                                                   \n",
    "                                                   \n",
    " flatten (Flatten)         (None, 127008)           0         \n",
    "                                                   \n",
    " dense (Dense)             (None, 40)               5080360   \n",
    "                                                   \n",
    " dense_1 (Dense)           (None, 70)               2870      \n",
    "                                                   \n",
    " dense_2 (Dense)           (None, 6)                426       \n",
    "                                                   \n",
```

```
    "=================================================================\n",
    "Total params: 5,084,552\n",
    "Trainable params: 5,084,552\n",
    "Non-trainable params: 0\n",
    "_________________________\n"
   ]
  }
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  "language": "python",
  "name": "python3"
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   "version": 3
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  "mimetype": "text/x-python",
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  "version": "3.9.12"
 }
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