```python
#!/usr/bin/env python

# A structured array is just a data type for numpy.

import numpy as np

# From http://docs.scipy.org/doc/numpy/user/basics.rec.html

x = np.zeros((2,),dtype=('i4,f4,a10'))
x[:] = [(1,2.,'Hello'),(2,3.,"World")]
print x

# demo indexing by field and by row
```

```python
#!/usr/bin/env python
import numpy as np
from matplotlib.mlab import csv2rec

# Matplotlib has a nice module for loading CSV files as structured
# arrays.

# Load iris data. See
# http://en.wikipedia.org/wiki/Iris_flower_data_set

arr=csv2rec('iris.csv')

print arr.dtype
print


for row in arr[:5]:
    print row
print


print np.unique(arr['species'])
print
```
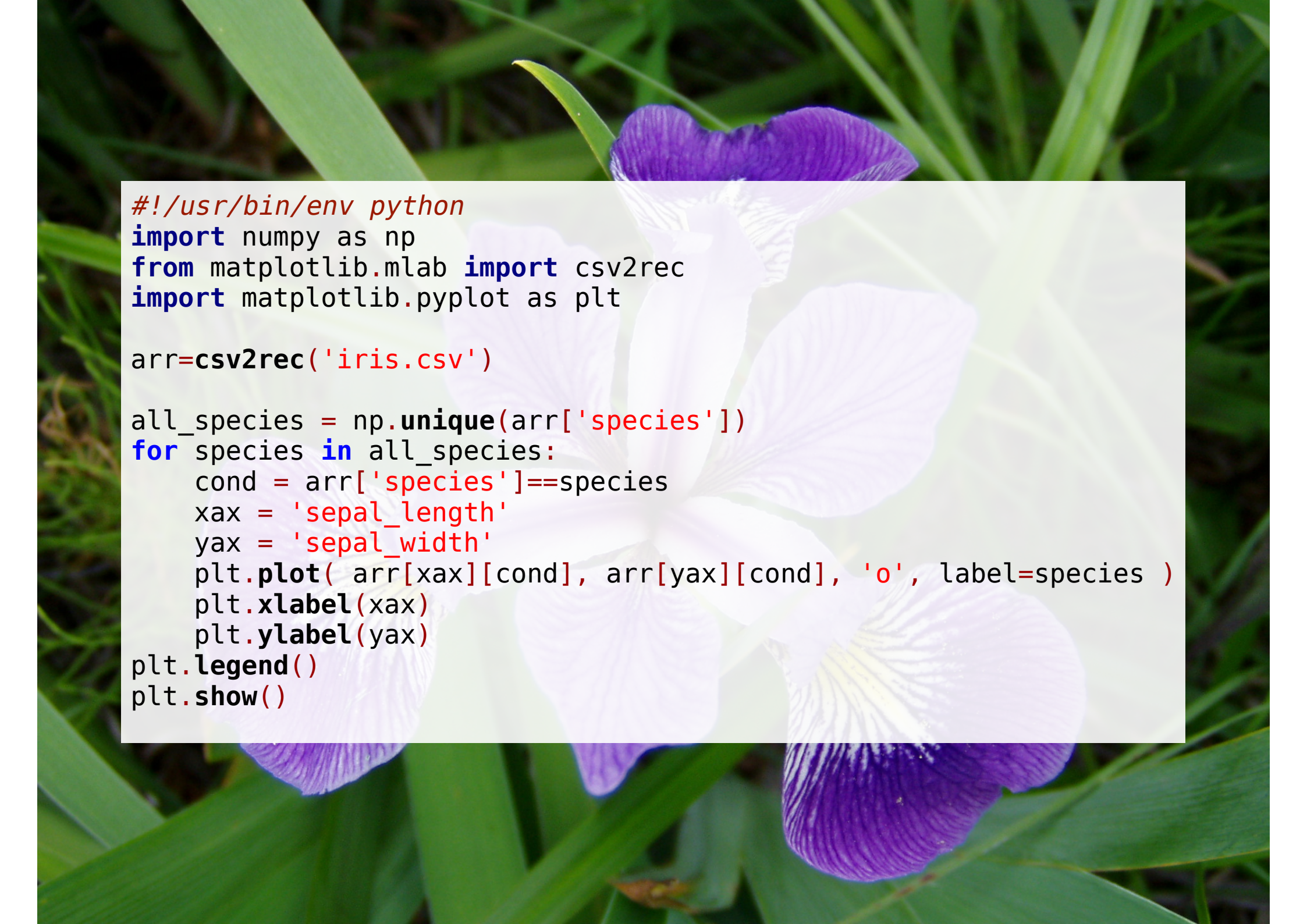
```python
#!/usr/bin/env python
import numpy as np
from matplotlib.mlab import csv2rec
import matplotlib.pyplot as plt

arr=csv2rec('iris.csv')

all_species = np.unique(arr['species'])
for species in all_species:
    cond = arr['species']==species
    xax = 'sepal_length'
    yax = 'sepal_width'
    plt.plot( arr[xax][cond], arr[yax][cond], 'o', label=species )
    plt.xlabel(xax)
    plt.ylabel(yax)
plt.legend()
plt.show()
```

```python
#!/usr/bin/env python
import numpy as np
from matplotlib.mlab import csv2rec
import h5py

# read a .csv file
arr=csv2rec('iris.csv')

# write it as an .h5 file
with h5py.File('iris.h5','w') as f:
    f.create_dataset( 'iris', data=arr )

# read the new .h5 file
with h5py.File('iris.h5','r') as f2:
    arr2 = f2['iris'][:]

print 'arr'
print arr[:5]
print

print 'arr2'
print arr2[:5]
print
```

```python
#!/usr/bin/env python
import h5py
import pandas

# read the .h5 file
with h5py.File('iris.h5','r') as f2:
    arr = f2['iris'][:]


df = pandas.DataFrame(arr)
print df.groupby('species').mean()
```