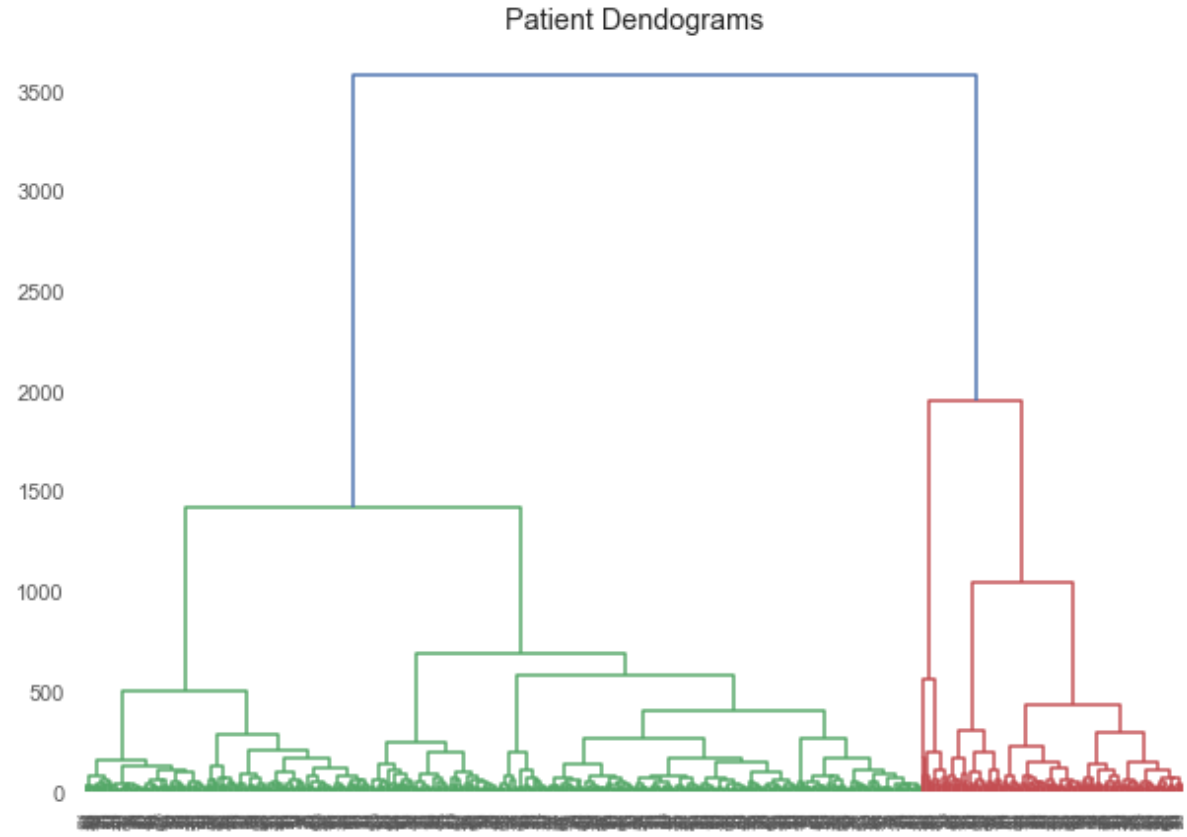
In [20]:

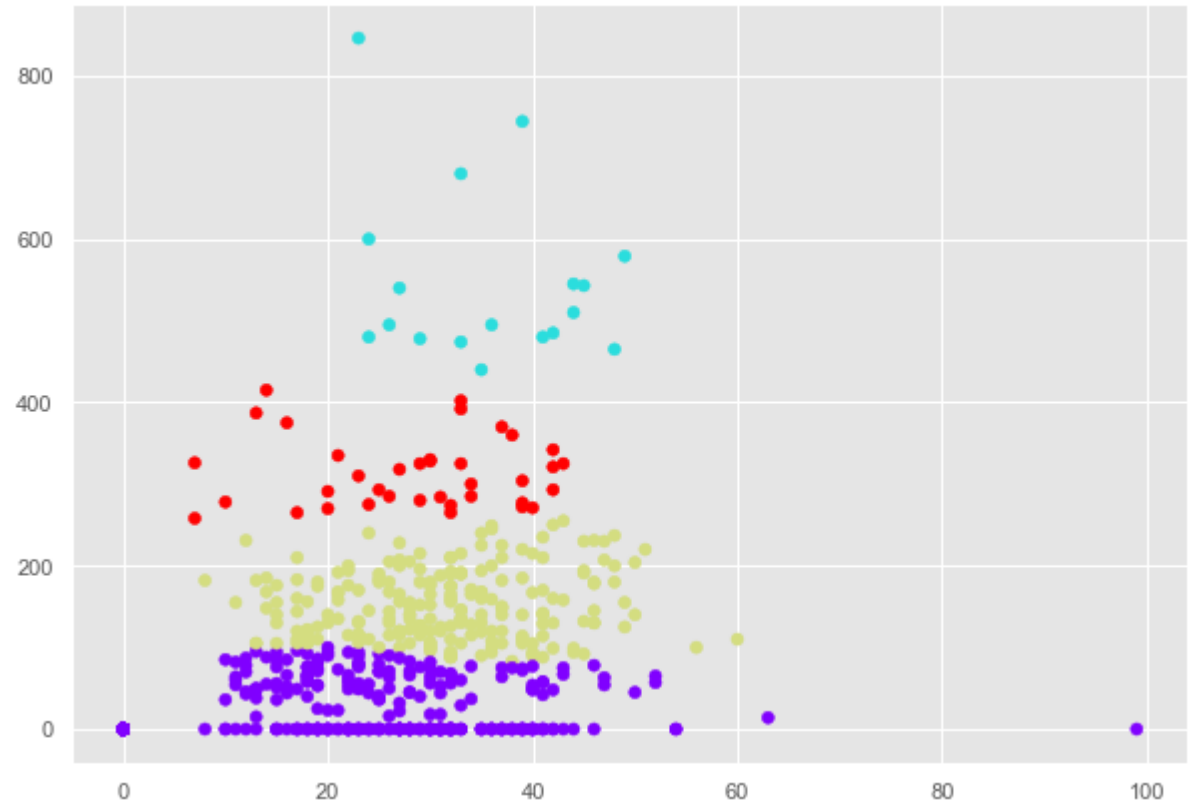
```
import matplotlib.pyplot as plt
import pandas as pd

import numpy as np
from pandas import read_csv
#path = r"C:\pima-indians-diabetes.csv"
path=r"C:\myprogram\python\machine_learning\data\pima-indians-diabetes.csv"
headernames = ['preg', 'plas', 'pres', 'skin', 'test', 'mass', 'pedi', 'age', 'class']
data = read_csv(path, names = headernames)
array = data.values
X = array[:,0:8]
Y = array[:,8]
print(data.shape)
#(768, 9)
print(data.head())

patient_data = data.iloc[:, 3:5].values
import scipy.cluster.hierarchy as shc
plt.figure(figsize = (10, 7))
plt.title("Patient Dendograms")
dend = shc.dendrogram(shc.linkage(data, method = 'ward'))

from sklearn.cluster import AgglomerativeClustering
cluster = AgglomerativeClustering(n_clusters = 4, affinity = 'euclidean', linkage = 'ward'
)
cluster.fit_predict(patient_data)
plt.figure(figsize = (10, 7))
plt.scatter(patient_data[:,0], patient_data[:,1], c = cluster.labels_, cmap = 'rainbow')
```

```
(768, 9)
   preg  plas  pres  skin  test  mass   pedi  age  class
0     6   148    72    35     0  33.6  0.627   50      1
1     1    85    66    29     0  26.6  0.351   31      0
2     8   183    64     0     0  23.3  0.672   32      1
3     1    89    66    23    94  28.1  0.167   21      0
4     0   137    40    35   168  43.1  2.288   33      1
```

Out[20]:

```
<matplotlib.collections.PathCollection at 0x18474c992c8>
```






In [ ]:

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