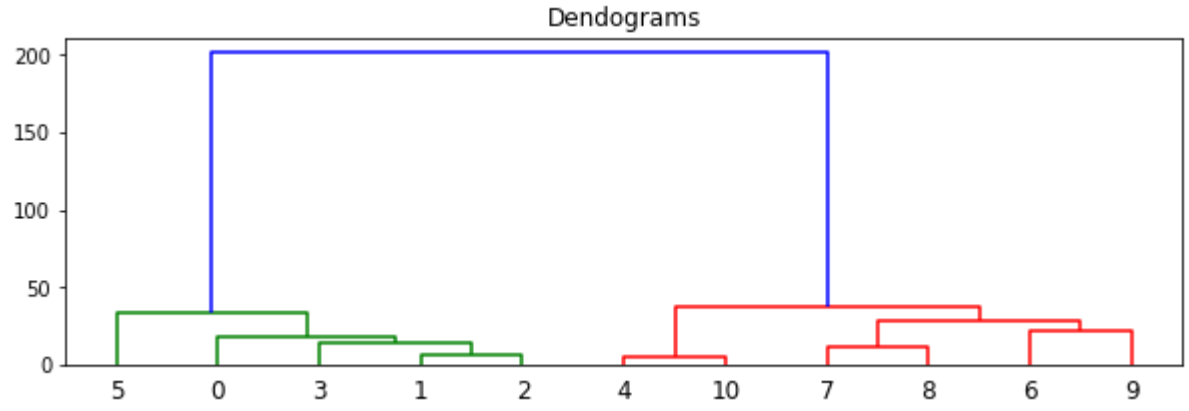
Chapter 12: Demo Hierarchy Clustering

In [ ]:
```
import matplotlib.pyplot as plt
import pandas as pd
%matplotlib inline
import numpy as np
```

In [ ]:
```
X = np.array([[5,3],
    [10,15],
    [15,12],
    [24,10],
    [85, 90],
    [30,30],
    [85,70],
    [71,80],
    [60,78],
    [70,55],
    [80,91],])
```

In [ ]:
```
import scipy.cluster.hierarchy as shc
plt.figure(figsize=(10, 3))
plt.title("Dendograms")
dend = shc.dendrogram(shc.linkage(X, method='ward'))
```



In [ ]:
```
# cluster = 2
from sklearn.cluster import AgglomerativeClustering
cluster = AgglomerativeClustering(n_clusters=2, affinity='euclidean')
cluster.fit(X) # Fit the hierarchical clustering on the data
```

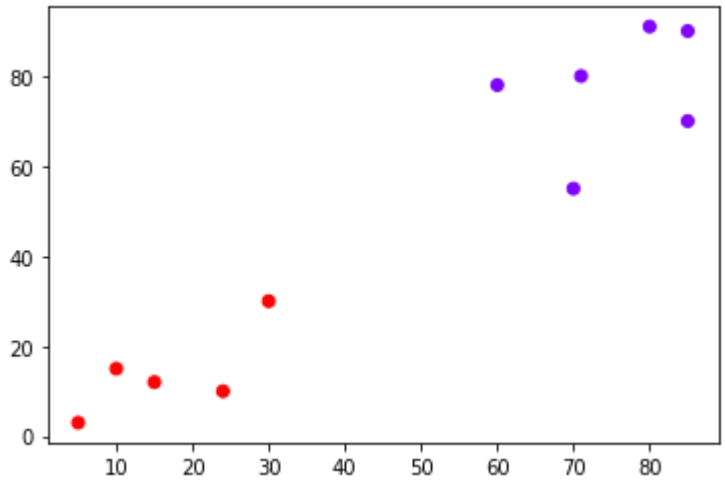
Out[4]:
```
AgglomerativeClustering(affinity='euclidean', compute_full_tree='auto',
                        connectivity=None, distance_threshold=None,
                        linkage='ward', memory=None, n_clusters=2)
```

In [ ]:
```
print(cluster.labels_)
```

```
[1 1 1 1 0 1 0 0 0 0 0]
```

In [ ]:
```
X_test = np.array([[65,75], [75,85]])
plt.scatter(X[:,0],X[:,1], c=cluster.labels_, cmap='rainbow')
```

Out[6]: <matplotlib.collections.PathCollection at 0x7f56484832b0>



In [ ]:
```
cluster.fit_predict(X)
```

Out[7]: array([1, 1, 1, 1, 0, 1, 0, 0, 0, 0, 0])

In [ ]:
```
X_test = np.array([[65,75], [35,40]])
cluster.fit_predict(X_test)
```

Out[8]: array([1, 0])

In [ ]: