In [2]:
```
Unsupervised learning means that there is no outcome to be predicted, and the algor
 steps are repeated till the within cluster variation cannot be reduced any furthe
```

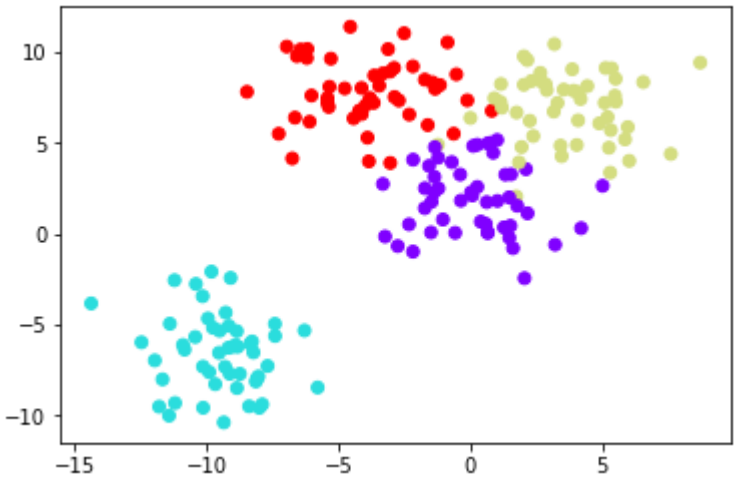
In [3]:
```
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
```

In [4]:
```
from sklearn.datasets import make_blobs
```

In [11]:
```
# Create Data
data = make_blobs(n_samples=200, n_features=2,
                            centers=4, cluster_std=1.8,random_state=101)
```

In [12]:
```
plt.scatter(data[0][:,0],data[0][:,1],c=data[1],cmap='rainbow')
```

Out[12]:
```
<matplotlib.collections.PathCollection at 0x53899b0>
```



In [13]:
```
from sklearn.cluster import KMeans
```

In [25]:
```
kmeans = KMeans(n_clusters=8)
```

In [26]:
```
kmeans.fit(data[0])
```

Out[26]:
```
KMeans(algorithm='auto', copy_x=True, init='k-means++', max_iter=300,
    n_clusters=8, n_init=10, n_jobs=1, precompute_distances='auto',
    random_state=None, tol=0.0001, verbose=0)
```

In [27]:
```
kmeans.cluster_centers_
```

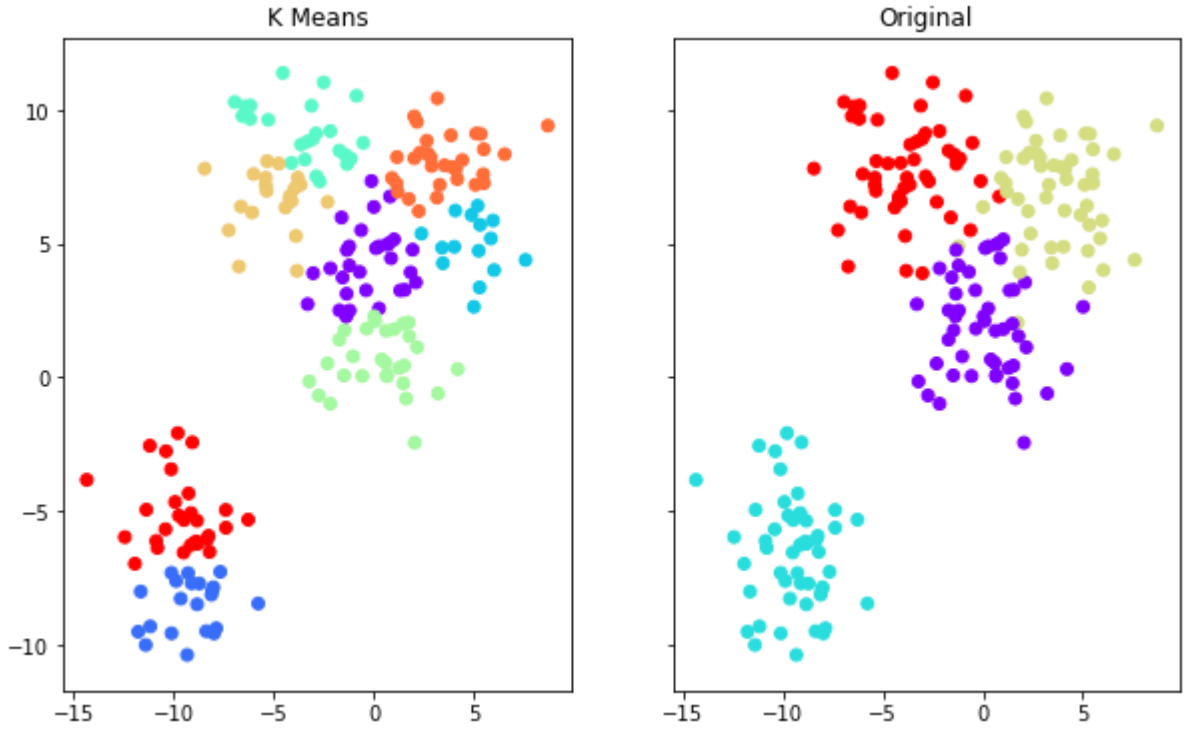
Out[27]:
```
array([[-0.30792087,  4.29010771],
       [-9.18960987, -8.53584776],
       [ 4.92722854,  4.93970692],
       [-3.45247208,  9.18545568],
       [ 0.33250207,  0.6136543 ],
       [-5.03749051,  6.64015043],
       [ 3.52552445,  8.10725589],
       [-9.67203831, -5.13061964]])
```

In [28]:
```
kmeans.labels_
```

Out[28]:
```
array([3, 2, 0, 6, 6, 7, 6, 4, 6, 0, 3, 0, 6, 2, 3, 4, 2, 4, 7, 3, 7, 4,
       0, 1, 5, 1, 1, 4, 6, 2, 3, 1, 2, 4, 0, 5, 7, 7, 1, 4, 7, 3, 3, 3,
       0, 0, 3, 0, 1, 0, 4, 5, 2, 4, 7, 0, 0, 4, 5, 6, 1, 6, 7, 3, 6, 4,
       7, 2, 6, 7, 6, 0, 7, 0, 7, 2, 6, 4, 3, 0, 0, 7, 6, 7, 4, 4, 4, 5,
       0, 7, 1, 7, 7, 0, 0, 1, 6, 5, 7, 2, 0, 7, 0, 4, 0, 0, 7, 6, 1, 7,
       2, 3, 5, 6, 1, 2, 3, 3, 6, 3, 0, 5, 4, 5, 4, 2, 3, 4, 1, 5, 5, 3,
       4, 1, 7, 5, 2, 5, 6, 4, 1, 2, 7, 3, 3, 6, 0, 1, 5, 5, 3, 3, 4, 2,
       4, 5, 0, 6, 6, 4, 6, 4, 0, 5, 7, 5, 0, 6, 3, 4, 6, 4, 5, 0, 0, 5,
       6, 6, 1, 6, 3, 1, 1, 3, 7, 1, 7, 1, 1, 4, 7, 6, 6, 5, 7, 0, 6, 6,
       7, 4])
```

In [29]:
```
f, (ax1, ax2) = plt.subplots(1, 2, sharey=True,figsize=(10,6))
ax1.set_title('K Means')
ax1.scatter(data[0][:,0],data[0][:,1],c=kmeans.labels_,cmap='rainbow')
ax2.set_title("Original")
ax2.scatter(data[0][:,0],data[0][:,1],c=data[1],cmap='rainbow')
```

Out[29]:
```
<matplotlib.collections.PathCollection at 0xb52b2b0>
```



In [ ]: