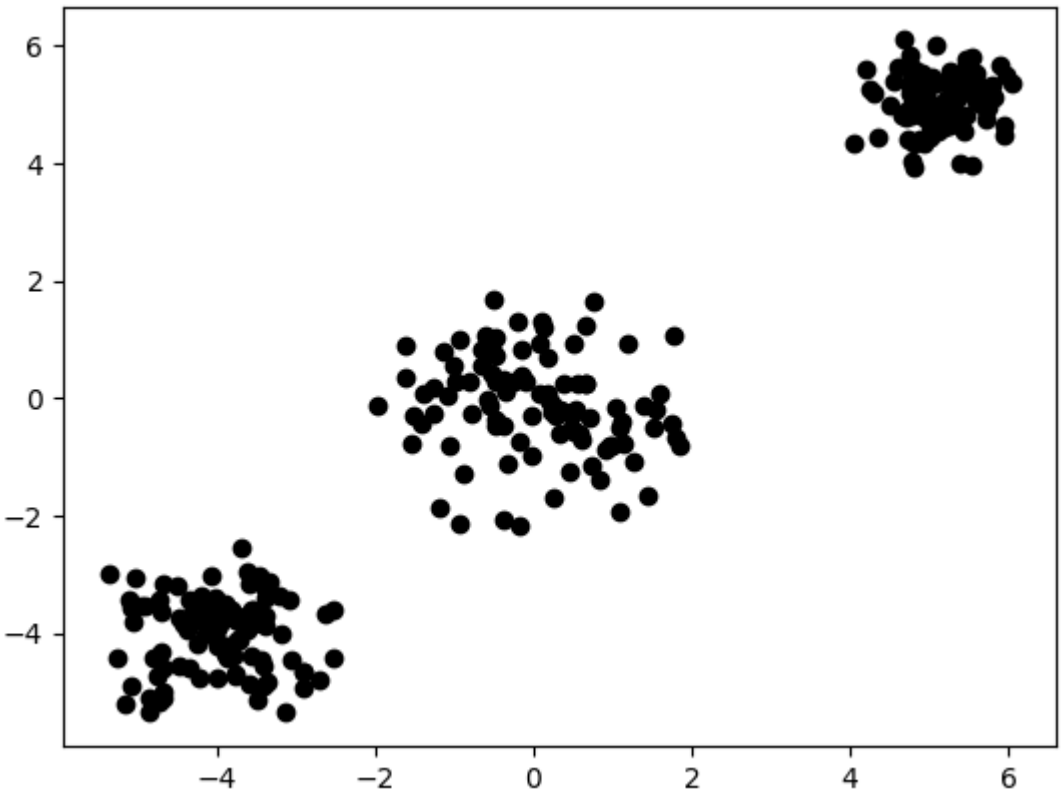
In [2]:
```
import numpy as np
import matplotlib.pyplot as plt
```

In [3]:
```
X1=np.random.standard_normal((100,2))
X2=np.random.standard_normal((100,2))*0.6+np.ones((100,2))-5
X3=np.random.standard_normal((100,2))*0.4+2*np.ones((100,2))+3
X=np.concatenate((X1,X2,X3),axis=0)
plt.scatter(X[:,0],X[:,1],c='k')
plt.show()
```



In [4]:
```
from sklearn.cluster import KMeans
from sklearn import metrics
from scipy.spatial.distance import cdist
```

In [5]:
```
n=3
k_means=KMeans(n_clusters=n)
k_means.fit(X)
```

Out[5]:
```
KMeans
KMeans(n_clusters=3)
```

In [6]:
```
centroids=k_means.cluster_centers_
labels=k_means.labels_
print(centroids)
print()
print(labels)
```

```
[[-3.97991829 -4.0233284 ]
 [ 5.1241335   5.03611923]
 [ 0.03497332 -0.11228508]]

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```

In [9]:
```
for i in range(n):
  cluster_points = X[labels == i]
  plt.scatter(cluster_points[:, 0], cluster_points[:, 1], label=f'Cluster {i + 1
plt.scatter(centroids[:, 0], centroids[:, 1], s=20, color=['red'], label='Centro
plt.title('K-Means Clustering')
plt.xlabel('X-Axis')
plt.ylabel('Y-Axis')
plt.legend()
plt.show()
```

In [ ]: