Klasifikasi

Membaca Data

In [133]:
```
import pandas as pd

df = pd.read_csv("data.csv")
df
```

Out[133]:

	Unnamed: 0	acousticness	danceability	duration_ms	energy	instrumentalness	key	livene
0	0	0.01020	0.833	204600	0.434	0.021900	2	0.16
1	1	0.19900	0.743	326933	0.359	0.006110	1	0.13
2	2	0.03440	0.838	185707	0.412	0.000234	2	0.15
3	3	0.60400	0.494	199413	0.338	0.510000	5	0.09
4	4	0.18000	0.678	392893	0.561	0.512000	5	0.43
...	...	...	...	...	...	...	...	
2012	2012	0.00106	0.584	274404	0.932	0.002690	1	0.12
2013	2013	0.08770	0.894	182182	0.892	0.001670	1	0.05
2014	2014	0.00857	0.637	207200	0.935	0.003990	0	0.21
2015	2015	0.00164	0.557	185600	0.992	0.677000	1	0.09
2016	2016	0.00281	0.446	204520	0.915	0.000039	9	0.21

2017 rows × 17 columns

Features dan Target

In [144]:
```
features = df[df.columns[0:-3]]
target = df[df.columns[-3]]
target
```

Out[144]:
```
0       1
1       1
2       1
3       1
4       1
       ..
2012    0
2013    0
2014    0
2015    0
2016    0
Name: target, Length: 2017, dtype: int64
```

Membagi Data ke dalam data latih

In [145]:
```
from sklearn.model_selection import train_test_split

x_train, x_test, y_train, y_test = train_test_split(features, target, test_siz
e=0.25, random_state=42)
```

Membuat Classifire (KNN)

In [146]:
```
from sklearn.neighbors import KNeighborsClassifier

knn = KNeighborsClassifier(n_neighbors=5)
knn.fit(x_train, y_train)
```

Out[146]:
```
KNeighborsClassifier()
```

Menghitung Akurasi

In [147]:
```
knn.score(x_test, y_test)
```

Out[147]:
```
0.8772277227722772
```

Tes pada data uji

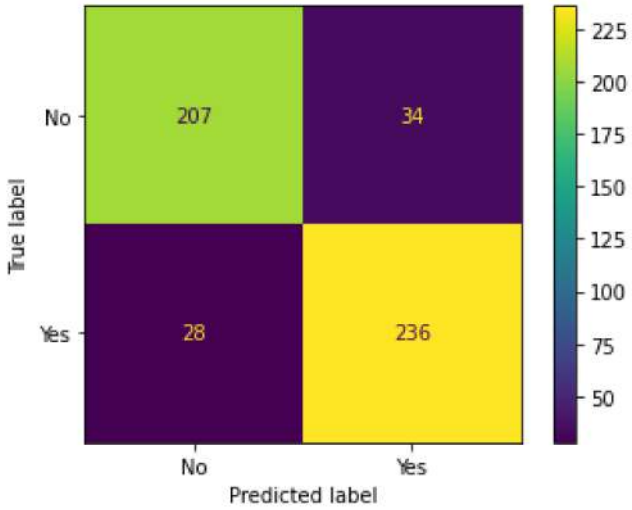
In [148]:
```
predict = knn.predict(x_test)
```

Confusion Matrix

In [137]:
```
from sklearn.metrics import confusion_matrix, ConfusionMatrixDisplay

cm = confusion_matrix(y_test, predict)
ConfusionMatrixDisplay(cm, display_labels=['No', 'Yes']).plot()
```

Out[137]:
```
<sklearn.metrics._plot.confusion_matrix.ConfusionMatrixDisplay at 0x7fdb4d1d8
5d0>
```



Klastering

In [99]:
```
import pandas as pd

df = pd.read_csv("data.csv")

df = df[df.columns[2:5]]
df
```

Out[99]:

	danceability	duration_ms	energy
0	0.833	204600	0.434
1	0.743	326933	0.359
2	0.838	185707	0.412
3	0.494	199413	0.338
4	0.678	392893	0.561
...	...	...	...
2012	0.584	274404	0.932
2013	0.894	182182	0.892
2014	0.637	207200	0.935
2015	0.557	185600	0.992
2016	0.446	204520	0.915

2017 rows × 3 columns

K-Means

In [116]:
```
from sklearn.cluster import  KMeans

kmeans = KMeans(n_clusters=2)
kmeans_labels = kmeans.fit_predict(df)

#tambah kolom
df['Klaster'] = kmeans_labels
df
```

Out[116]:

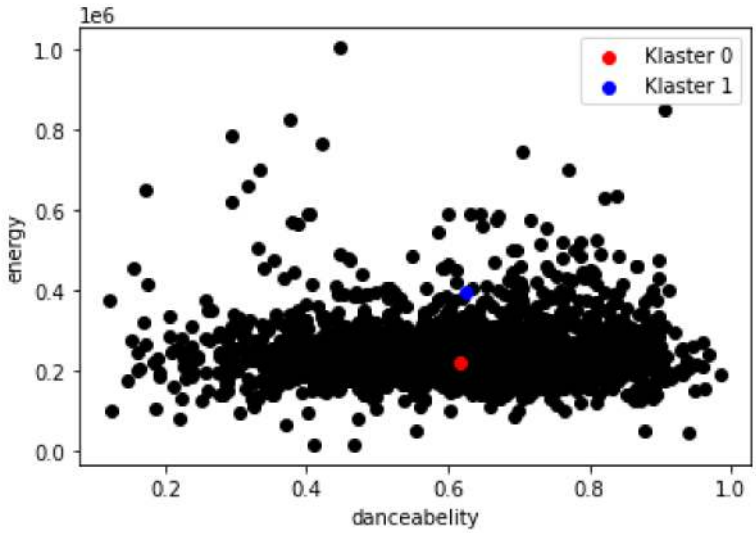
	danceability	duration_ms	energy	Klaster
0	0.833	204600	0.434	0
1	0.743	326933	0.359	1
2	0.838	185707	0.412	0
3	0.494	199413	0.338	0
4	0.678	392893	0.561	1
...	...	...	...	...
2012	0.584	274404	0.932	0
2013	0.894	182182	0.892	0
2014	0.637	207200	0.935	0
2015	0.557	185600	0.992	0
2016	0.446	204520	0.915	0

2017 rows × 4 columns

Visualisasi

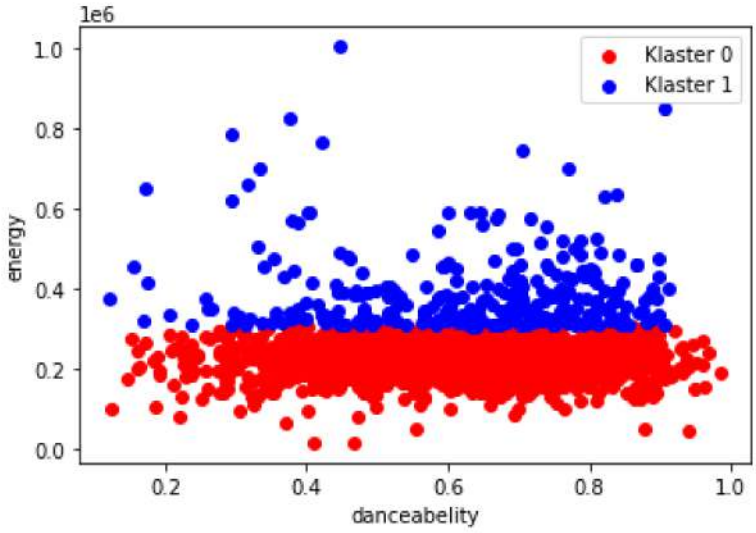
In [128]:
```
from  matplotlib import pyplot as plt

plt.scatter(df.iloc[:,0], df.iloc[:,1], c="black")
plt.scatter(kmeans.cluster_centers_[0, 0], kmeans.cluster_centers_[0,1], c =
"red", label='Klaster 0')
plt.scatter(kmeans.cluster_centers_[1, 0], kmeans.cluster_centers_[1,1], c =
"blue", label='Klaster 1')
plt.xlabel('danceabelity')
plt.ylabel('energy')
plt.legend()
plt.show()
```



Keanggotaan

In [131]:
```
dfc0 = df[df['Klaster']==0]
plt.scatter(dfc0.iloc[:,0], dfc0.iloc[:,1], c="red", label='Klaster 0')
dfc1 = df[df['Klaster']==1]
plt.scatter(dfc1.iloc[:,0], dfc1.iloc[:,1], c="blue", label='Klaster 1')
plt.xlabel('danceabelity')
plt.ylabel('energy')
plt.legend()
plt.show()
```



Performa Klastering

In [132]:
```
wcss = []
for i in range(1,11):
    kmeans = KMeans(n_clusters=i)
    kmeans.fit(df)
    wcss.append(kmeans.inertia_)

plt.plot(range(1,11),wcss)
plt.xlabel('jumlah klaster')
plt.ylabel('nilai wcss')
plt.show()
```