In [2]:
```python
import pandas as pd
music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
music_data
```

Out[2]:

	age	gender	genre
0	20	1	HipHop
1	23	1	HipHop
2	25	1	HipHop
3	26	1	Jazz
4	29	1	Jazz
5	30	1	Jazz
6	31	1	Classical
7	33	1	Classical
8	37	1	Classical
9	20	0	Dance
10	21	0	Dance
11	25	0	Dance
12	26	0	Acoustic
13	27	0	Acoustic
14	30	0	Acoustic
15	31	0	Classical
16	34	0	Classical
17	35	0	Classical

In [ ]:
```python
#Seprating dataset into 2 parts so that we can get a predictions from the machine when asked.
```

In [3]:
```python
import pandas as pd
music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
X = music_data.drop(columns=['genre'])
X
```

Out[3]:

	age	gender
0	20	1
1	23	1
2	25	1
3	26	1
4	29	1
5	30	1
6	31	1
7	33	1
8	37	1
9	20	0
10	21	0
11	25	0
12	26	0
13	27	0
14	30	0
15	31	0
16	34	0
17	35	0

In [4]:
```python
music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
X = music_data.drop(columns=['genre'])
y = music_data['genre']
y
```

```
Out[4]:  0         HipHop
         1         HipHop
         2         HipHop
         3           Jazz
         4           Jazz
         5           Jazz
         6      Classical
         7      Classical
         8      Classical
         9          Dance
         10         Dance
         11         Dance
         12       Acoustic
         13       Acoustic
         14       Acoustic
         15     Classical
         16     Classical
         17     Classical
         Name: genre, dtype: object
```

In [ ]:
```python
#traning data for making predictions.
```

In [6]:
```python
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
X = music_data.drop(columns=['genre'])
y = music_data['genre']

model = DecisionTreeClassifier()
model.fit(X,y)
music_data
```

Out[6]:

	age	gender	genre
0	20	1	HipHop
1	23	1	HipHop
2	25	1	HipHop
3	26	1	Jazz
4	29	1	Jazz
5	30	1	Jazz
6	31	1	Classical
7	33	1	Classical
8	37	1	Classical
9	20	0	Dance
10	21	0	Dance
11	25	0	Dance
12	26	0	Acoustic
13	27	0	Acoustic
14	30	0	Acoustic
15	31	0	Classical
16	34	0	Classical
17	35	0	Classical

In [ ]:
```python
#Passing inputs to machice so that they can make predictions.
```

In [23]:
```python
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
X = music_data.drop(columns=['genre'])
y = music_data['genre']

model = DecisionTreeClassifier()
```

```python
X = X.values #conversion of X into array.
model.fit(X, y)
predictions = model.predict([ [21, 1], [22, 0] ])
predictions
```

Out[23]: `array(['HipHop', 'Dance'], dtype=object)`

In [ ]: `#Measuring accuracy of the model.`

In [31]:
```python
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score

music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
X = music_data.drop(columns=['genre'])
y = music_data['genre']
X_train, X_test, y_train, y_test = train_test_split(x, y, test_size=0.2)

model = DecisionTreeClassifier()
X = X.values #conversion of X into array.
model.fit(X_train, y_train)
predictions = model.predict(X_test)

score = accuracy_score(y_test, predictions)
score
```

Out[31]: `0.5`

In [ ]: `# Storing a trained model in a file`

In [33]:
```python
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
import joblib

music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
X = music_data.drop(columns=['genre'])
y = music_data['genre']

model = DecisionTreeClassifier()
X = X.values #conversion of X into array.
model.fit(X, y)
```

```
joblib.dump(model, 'music-recommender.joblib')
```

Out[33]: ['music-recommender.joblib']

In [ ]: `#checking model predicting behaviour.`

In [2]:
```python
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
import joblib

# music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
# X = music_data.drop(columns=['genre'])
# y = music_data['genre']

# model = DecisionTreeClassifier()
# X = X.values #conversion of X into array.
# model.fit(X, y)

model = joblib.load('music-recommender.joblib')
predictions = model.predict([[21, 1]])
predictions
```

Out[2]: array(['HipHop'], dtype=object)

In [ ]: `#Visualizing a decision tree.`

In [ ]:
```python
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
from sklearn import tree

music_data = pd.read_csv(r'C:\Users\SAMAD\Downloads\Datasets\music.csv')
X = music_data.drop(columns=['genre'])
y = music_data['genre']

model = DecisionTreeClassifier()
X = X.values #conversion of X into array.
model.fit(X, y)

tree.export_graphviz(model, out_file='music-recommender.dot',
                         feature_names=['age', 'gender'],
                         class_name=sorted(y.unique()),
```

```python
                        label='all', #names of parameter.
                        rounded=True, #shape.
                        filled=True) #borders.
```

In [ ]: