Experiment-13

AIM: Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Python ML library classes.

```python
import pandas as pd

from sklearn.model_selection import train_test_split

from sklearn.naive_bayes import GaussianNB

from sklearn.metrics import accuracy_score


data = pd.read_csv('E:/data.csv', delimiter=',')


print("Column names in the dataset:")

print(data.columns)


print("\nFirst few rows of the dataset:")

print(data.head())


target_column = 'target'


if target_column not in data.columns:

    print(f"Error: '{target_column}' column not found in the dataset.")

else:

    X = data.drop(columns=target_column)
```

```python
    y = data[target_column]

    X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3,
random_state=42)

    model = GaussianNB()

    model.fit(X_train, y_train)

    y_pred = model.predict(X_test)

    accuracy = accuracy_score(y_test, y_pred)

    print(f'Accuracy: {accuracy:.2f}')
```

Output:

```
Column names in the dataset:
Index(['age,', 'sex,', 'cp,', 'trestbps,', 'chol,', 'fbs,', 'restecg,',
       'thalach,', 'exang,', 'oldpeak,', 'slope,', 'ca,', 'thal,', 'target'],
      dtype='object')

First few rows of the dataset:
   age,  sex,  cp,  trestbps,  chol,  fbs,  restecg,  thalach,  exang,  \
0    63    1    3       145    233    1         2        150       0
1    37    1    2       130    250    0         0        187       0
2    41    0    1       130    204    0         2        172       0
3    56    1    1       120    236    0         0        178       0
4    57    1    2       120    354    0         0        163       0

   oldpeak,  slope,  ca,  thal,  target
0      2.3      3    0      6       1
1      3.5      2    0      3       1
2      1.4      1    0      3       1
3      0.8      1    0      3       1
4      0.6      1    0      7       1
Accuracy: 1.00
```