WORKSHEET – 4

Name : Harish Kumar R B
Roll no : 19BCS205

1)

Code:

```
from sklearn.naive_bayes import GaussianNB
from sklearn.preprocessing import LabelEncoder
import pandas as pd

data = {'weather':['sunny', 'sunny', 'overcast', 'rainy', 'rainy', 'rainy', 'overcast',
'sunny', 'sunny', 'rainy', 'sunny', 'overcast', 'overcast', 'rainy'],
'temp': ['hot', 'hot', 'hot', 'mild', 'cool', 'cool', 'cool', 'mild', 'cool',
'mild', 'mild', 'mild', 'hot', 'mild'],
'play': ['no', 'no', 'yes', 'yes', 'yes', 'no', 'yes', 'no', 'yes', 'yes',
'yes', 'yes', 'yes', 'no']}

le = LabelEncoder()
le1 = LabelEncoder()
df = pd.DataFrame.from_dict(data)

cle1 = le.fit(df.weather)
cle2 = le1.fit(df.temp)


df.weather = cle1.transform(df.weather)
df.temp = cle2.transform(df.temp)


x = df.loc[:, df.columns != 'play']
y = df['play']

gnb = GaussianNB()
gnb.fit(x, y)

test_data = {'weather': ['overcast' ,'sunny', 'rainy'], 'temp':['mild', 'cool', 'hot']}

test = pd.DataFrame.from_dict(test_data)

test.weather = cle1.transform(test.weather)
test.temp = cle2.transform(test.temp)

print(gnb.predict(test))
```

Output:

```
(base) PS E:\Users\college\dwdm\apriori> python bayes.py
['yes' 'no' 'yes']
```

2)

Code:

```
import pandas as pd
from sklearn.naive_bayes import GaussianNB
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score

df = pd.read_csv('pima-indians-diabetes.csv',
    header=None,
    names=['pregnancies','glucose','bp','skinThick','insulin','bmi','dpf','age', 'class'])
print(df)

X = df.loc[:, df.columns != 'class']
y = df['class']

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

gnb = GaussianNB()
gnb.fit(X_train, y_train)

predictions = gnb.predict(X_test)

print(predictions)
print(accuracy_score(y_test, predictions))
```

Output:

```
(base) PS E:\Users\college\dwdm\apriori> python bayes_csv.py
[0 0 0 0 1 1 0 1 0 1 0 1 1 0 0 0 0 0 1 0 0 0 1 0 1 1 0 0 0 0 1 1 1 1 1 1 1
 0 1 0 0 0 0 1 0 1 1 0 0 1 0 1 1 0 0 0 1 0 0 1 1 0 1 1 0 1 0 1 0 1 1 0 0 0
 0 1 0 0 0 0 1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 1 0 1 0 0 1 0 1 0
 0 0 1 0 0 1 0 0 1 0 0 0 0 0 1 0 1 1 1 1 1 1 0 1 1 0 0 1 1 0 0 0 0 1 0 0 0 0
 0 1 0 0 1 0]
0.7662337662337663
```