In [1]:

```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.naive_bayes import MultinomialNB
from sklearn.metrics import accuracy_score

# Load the dataset
df = pd.read_csv('sms.csv', encoding='ISO-8859-1')

# Display the first few rows of the dataframe
print(df.head())

# Convert 'v1' column to binary labels (1 for spam, 0 for ham)
df['spam'] = df['v1'].apply(lambda x: 1 if x == 'spam' else 0)

# Display the first few rows of the dataframe with the new 'spam' column
print(df.head())

# Split the data into features and labels
X = df['v2']
y = df['spam']

# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,

# Convert text data into numerical data using CountVectorizer
vectorizer = CountVectorizer()
X_train_count = vectorizer.fit_transform(X_train)
X_test_count = vectorizer.transform(X_test)

# Initialize and train the Naive Bayes model
model = MultinomialNB()
model.fit(X_train_count, y_train)

# Evaluate the model
y_pred = model.predict(X_test_count)
accuracy = accuracy_score(y_test, y_pred)
print(f"Model accuracy: {accuracy:.4f}")

# Predict on new data
emails = [
    'How are you brother?',
    'Get Flat 50% on Your body outfits'
]
emails_count = vectorizer.transform(emails)
predictions = model.predict(emails_count)
print("Predictions:", predictions)
```

```
     v1                                                 v2 Unnamed: 2  \
0   ham  Go until jurong point, crazy.. Available only ...         NaN
1   ham                      Ok lar... Joking wif u oni...         NaN
2  spam  Free entry in 2 a wkly comp to win FA Cup fina...         NaN
3   ham  U dun say so early hor... U c already then say...         NaN
4   ham  Nah I don't think he goes to usf, he lives aro...         NaN

  Unnamed: 3 Unnamed: 4
0        NaN        NaN
1        NaN        NaN
2        NaN        NaN
3        NaN        NaN
4        NaN        NaN
     v1                                                 v2 Unnamed: 2  \
0   ham  Go until jurong point, crazy.. Available only ...         NaN
1   ham                      Ok lar... Joking wif u oni...         NaN
2  spam  Free entry in 2 a wkly comp to win FA Cup fina...         NaN
3   ham  U dun say so early hor... U c already then say...         NaN
4   ham  Nah I don't think he goes to usf, he lives aro...         NaN

  Unnamed: 3 Unnamed: 4  spam
0        NaN        NaN     0
1        NaN        NaN     0
2        NaN        NaN     1
3        NaN        NaN     0
4        NaN        NaN     0
Model accuracy: 0.9839
Predictions: [0 1]
```

In [ ]: