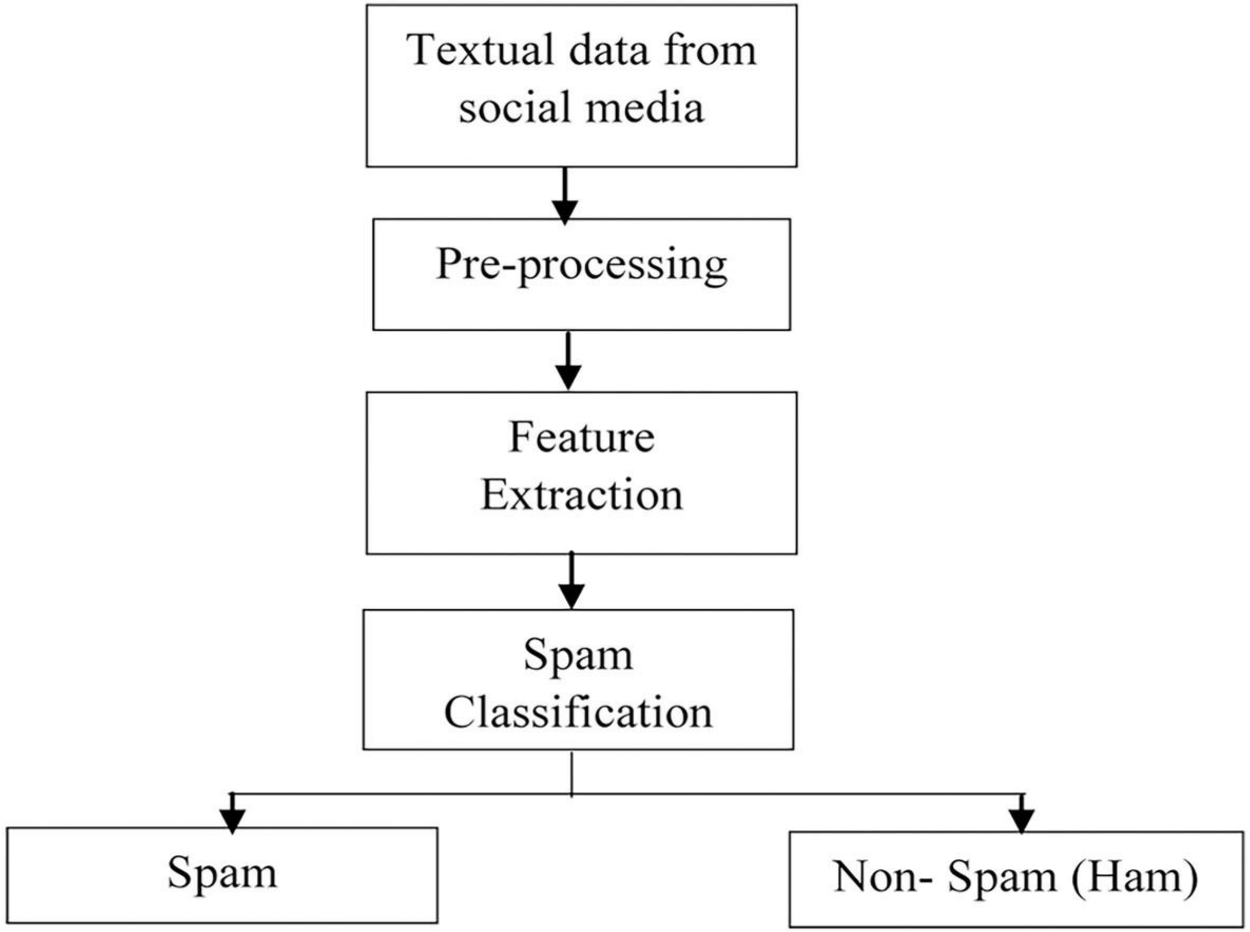
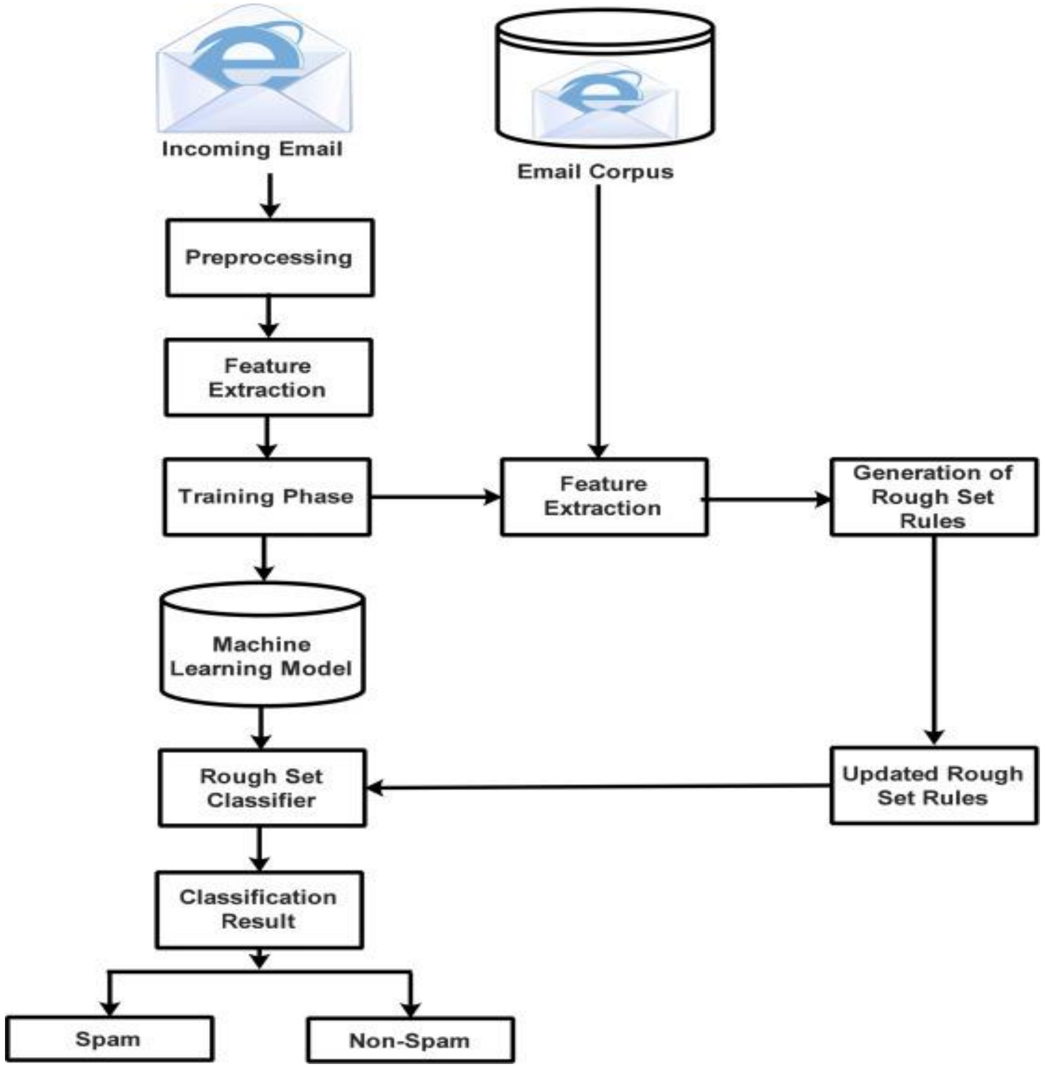
Real Time Text Classification for Spam Detection

Flow Chart

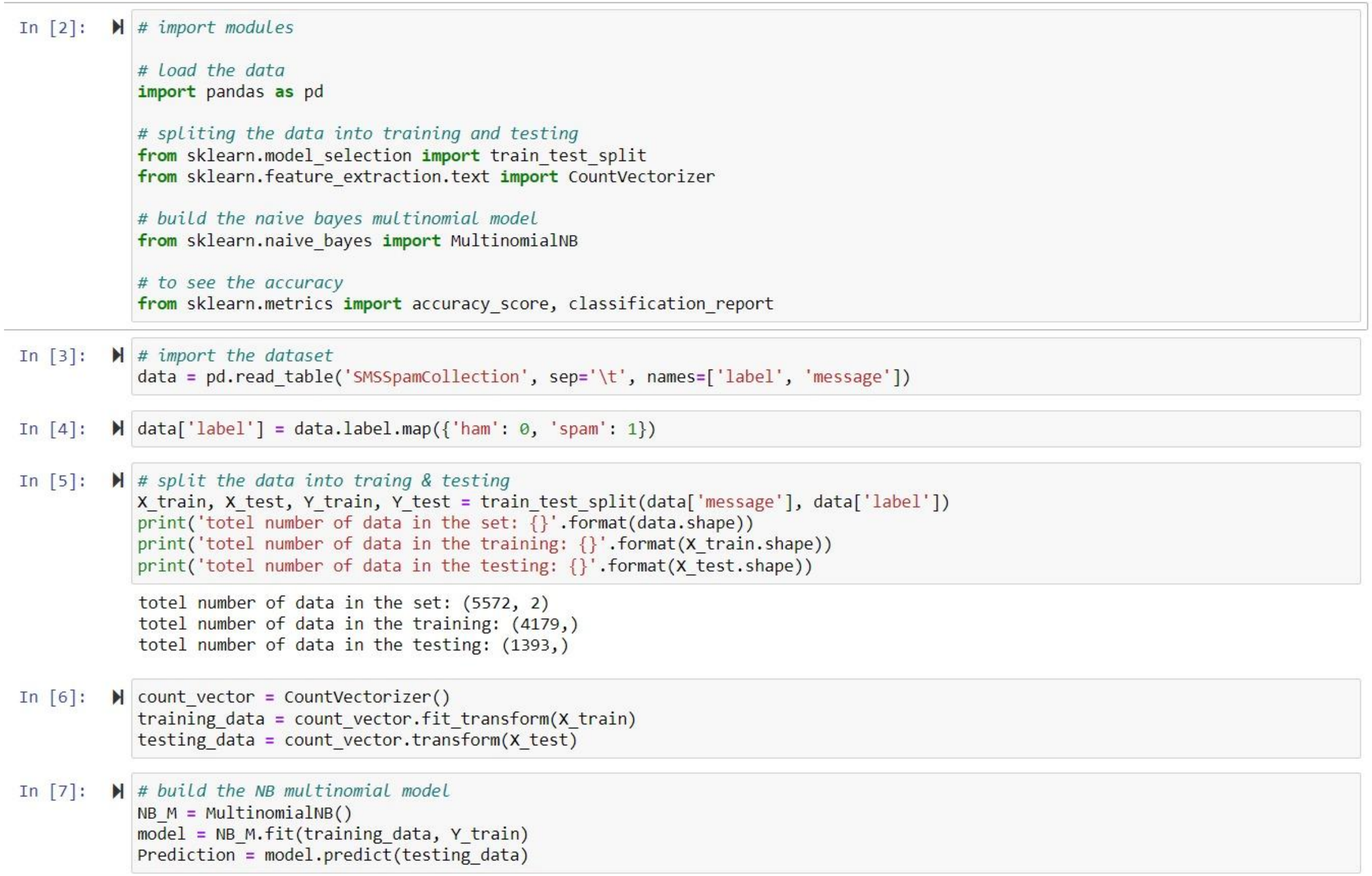


Textual data from social media
Pre-processing
Feature Extraction
Spam Classification
Spam
Non- Spam (Ham)

Architecture Diagram



Coding



```
# import modules

# load the data
import pandas as pd

# spliting the data into training and testing
from sklearn.model_selection import train_test_split
from sklearn.feature_extraction.text import CountVectorizer

# build the naive bayes multinomial model
from sklearn.naive_bayes import MultinomialNB

# to see the accuracy
from sklearn.metrics import accuracy_score, classification_report
```

```
# import the dataset
data = pd.read_table('SMSSpamCollection', sep='\t', names=['label', 'message'])
```

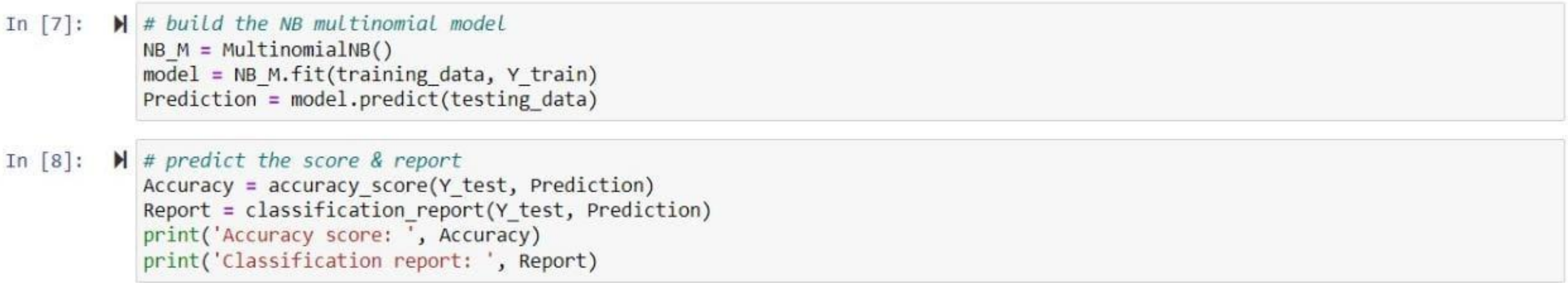
```
data['label'] = data.label.map({'ham': 0, 'spam': 1})
```

```
# split the data into traing & testing
X_train, X_test, Y_train, Y_test = train_test_split(data['message'], data['label'])
print('totel number of data in the set: {}'.format(data.shape))
print('totel number of data in the training: {}'.format(X_train.shape))
print('totel number of data in the testing: {}'.format(X_test.shape))
```

```
totel number of data in the set: (5572, 2)
totel number of data in the training: (4179,)
totel number of data in the testing: (1393,)
```

```
count_vector = CountVectorizer()
training_data = count_vector.fit_transform(X_train)
testing_data = count_vector.transform(X_test)
```

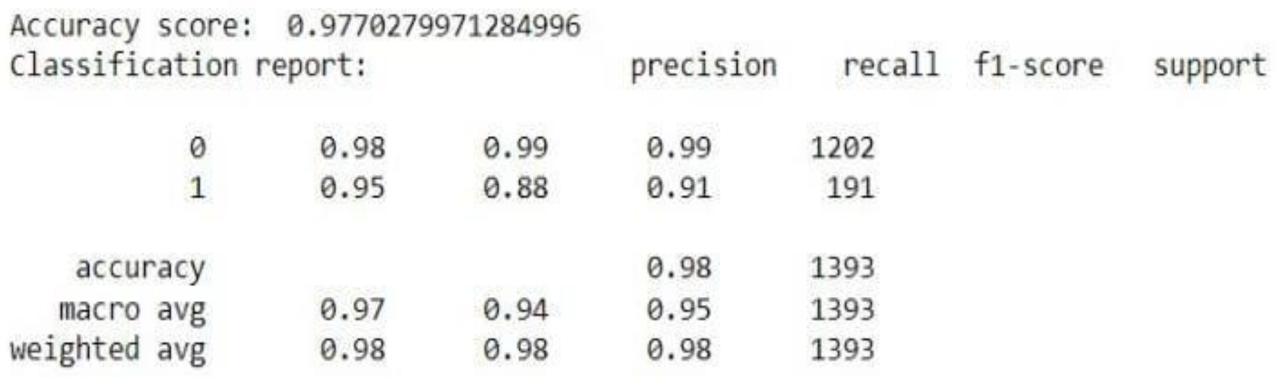
```
# build the NB multinomial model
NB_M = MultinomialNB()
model = NB_M.fit(training_data, Y_train)
Prediction = model.predict(testing_data)
```



```
# build the NB multinomial model
NB_M = MultinomialNB()
model = NB_M.fit(training_data, Y_train)
Prediction = model.predict(testing_data)
```

```
# predict the score & report
Accuracy = accuracy_score(Y_test, Prediction)
Report = classification_report(Y_test, Prediction)
print('Accuracy score: ', Accuracy)
print('Classification report: ', Report)
```

Output



```
Accuracy score:  0.9770279971284996
Classification report:                precision    recall  f1-score   support

           0       0.98      0.99      0.99      1202
           1       0.95      0.88      0.91       191

    accuracy                           0.98      1393
   macro avg       0.97      0.94      0.95      1393
weighted avg       0.98      0.98      0.98      1393
```