Importing Data and Libraries

```
import numpy as np
import pandas as pd
import nltk
import seaborn as sns
import matplotlib.pyplot as plt
import requests
from sklearn.metrics import confusion_matrix, accuracy_score,
roc_auc_score, roc_curve
from sklearn.feature_extraction.text import CountVectorizer
from nltk.tokenize import RegexpTokenizer
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import classification_report
pd.set_option('max_colwidth', -1)
```

```
/var/folders/y3/mktmx25j76jdclf2d09s33fc0000gn/T/
ipykernel_2134/2756304771.py:14: FutureWarning: Passing a negative
integer is deprecated in version 1.0 and will not be supported in
future version. Instead, use None to not limit the column width.
  pd.set_option('max_colwidth', -1)
```

Learning about the data

```
dataset=pd.read_csv('/Users/pro/Desktop/data.csv')
display(dataset.tail())
```

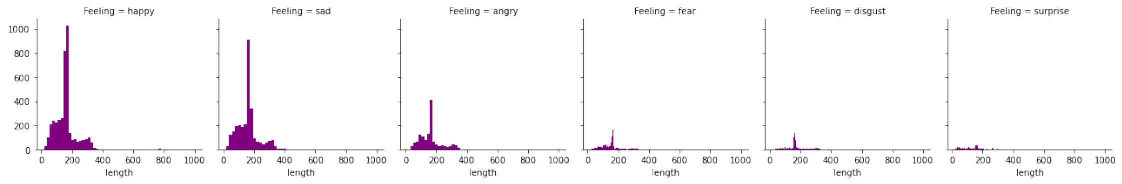
```
       Sl no  \
10012  10016
10013  10017
10014  10018
10015  10019
10016  10019


Tweets  \
10012  Tweet #85: @Matteo tweeted "@GameSpot @Frannkchesco @EAStarWars
Controversy THEY caused.Yes, we all know to expect this kind of
corporate bullshitting by this point, but it's still brazen and
irritating as f***.It's a good game now that's getting even
better.Still shoulda been that way in Day 1.So many games releasing
like this 😒"
10013  Tweet #86: @𝐚𝐧𝐢𝐬𝐭𝐨𝐧 tweeted "@BRATgiirl_ that’s so
irritating 😒 I wish people cared about their kids more wtf"
```

```
10014  Tweet #87: @Chowkidar Ricky Sharma tweeted "@MamataOfficial G
aapne besharmi ki saari hadhe paar kar di. Janta kabhi bhi aapko maaf
nahi karegi. You are absolutely wrong person sorry to say that you are
so irritating. https://t.co/poUdtAnq1A"

10015  Tweet #88: @Katoe.EXE tweeted "u know what i hate. indie
alternative whatever genre music that;s "deep" but the fucking singing
doesn't match the bpm of the soundtrack and shit just sounds off-tune
and give you an irritating headache.aka mitski"

10016  Tweet #88: @Katoe.EXE tweeted "u know what i hate. indie
alternative whatever genre music that;s "deep" but the fucking singing
doesn't match the bpm of the soundtrack and shit just sounds off-tune
and give you an irritating headache.aka mitski"


      Search key Feeling
10012  irritating  angry
10013  irritating  angry
10014  irritating  angry
10015  irritating  angry
10016  irritating  angry
```

Dataset Summary

```
dataset.describe(include='all')
dataset['length'] = dataset['Tweets'].apply(len)
dataset.head()
graph = sns.FacetGrid(data=dataset,col='Feeling')
graph.map(plt.hist,'length',bins=50,color='Purple')
```

```
<seaborn.axisgrid.FacetGrid at 0x7fd1e8b49670>
```



GETTING THE MEAN VALUES OF THE VOTE COLUMNS WRT THE STARS ON THE REVIEW

```
val = dataset.groupby('Feeling').mean()
val
```

```
                Sl no      length
Feeling
angry     4932.246085  165.794183
disgust   4262.874411  170.572998
fear      4122.549247  152.156431
```

```
happy     4560.091141  160.319501
sad       5739.734995  161.599158
surprise  7632.000000  136.441103
```

** FINDING THE CORRELATION BETWEEN THE VOTE COLUMNS**

```
val.corr()
```

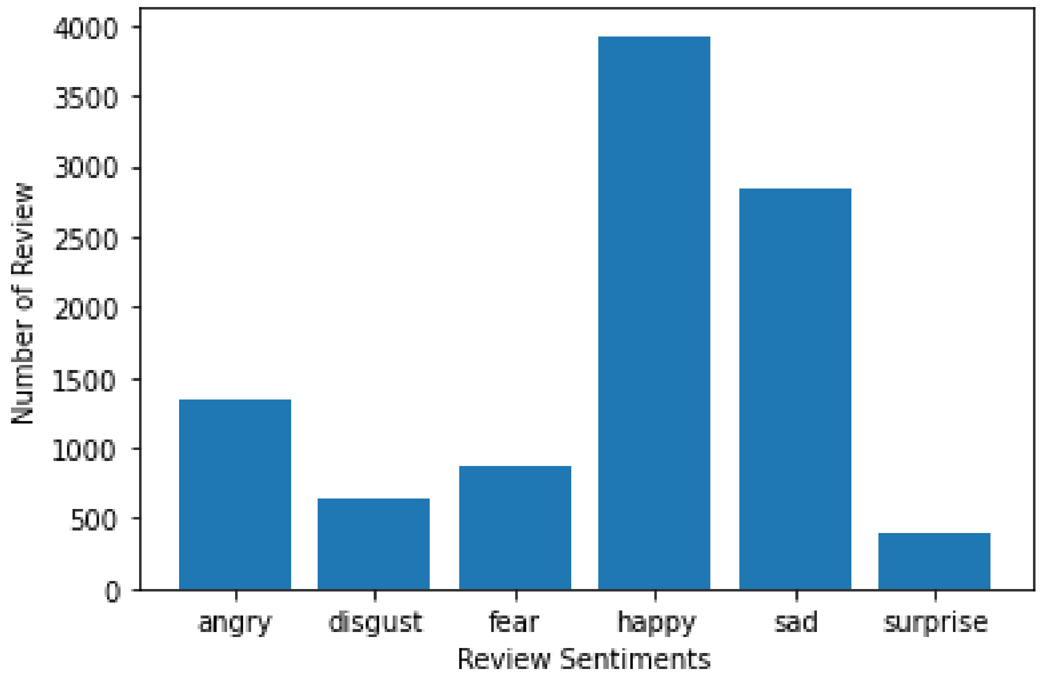
```
           Sl no    length
Sl no   1.000000 -0.742981
length -0.742981  1.000000
```

```
dataset.Feeling.value_counts()
```

```
happy       3928
sad         2849
angry       1341
fear        863
disgust     637
surprise    399
Name: Feeling, dtype: int64
```

PLOT THE DATASET

```
Sentiment_val=dataset.groupby('Feeling').count()
plt.bar(Sentiment_val.index.values, Sentiment_val['Tweets'])
plt.xlabel('Review Sentiments')
plt.ylabel('Number of Review')
plt.show()
```



Tokenizer to remove unwanted elements from out data like symbols and numbers

```
tf=TfidfVectorizer()
Fit = tf.fit(dataset['Tweets'])
text_tf = Fit.transform(dataset['Tweets'])
```

Train and Test data

```
x=text_tf
# y=dataset['Emotion'].astype('int')
y=dataset['Feeling']
x_train, x_test, y_train, y_test = train_test_split(x,y,
test_size=0.3, random_state=1)
```

Implementing Decision Tree Classifier

```
dt = DecisionTreeClassifier(random_state=42)
dt.fit(x_train,y_train)
preddt = dt.predict(x_test)
print("Confusion Matrix for Decision Tree:")
print(confusion_matrix(y_test,preddt))
dtt_score = round(accuracy_score(y_test,preddt)*100,2)
print("Score:",dtt_score)
print("Classification Report:")
print(classification_report(y_test,preddt))
```

```
Confusion Matrix for Decision Tree:
[[ 351    0    1   28   15    0]
 [    1  179    1   16    1    0]
 [    1    0  205   37    6    1]
 [   24   10   33 1099   51    5]
 [   13    3    7   95  712    0]
 [    0    0    0   14    2   95]]
Score: 87.86
Classification Report:
              precision    recall  f1-score   support

       angry       0.90      0.89      0.89       395
     disgust       0.93      0.90      0.92       198
        fear       0.83      0.82      0.82       250
       happy       0.85      0.90      0.88      1222
         sad       0.90      0.86      0.88       830
    surprise       0.94      0.86      0.90       111

    accuracy                           0.88      3006
   macro avg       0.89      0.87      0.88      3006
weighted avg       0.88      0.88      0.88      3006
```

Implementing Logistic Regression

```
from sklearn.linear_model import LogisticRegression
lr = LogisticRegression(random_state=42)
lr.fit(x_train,y_train)
lr_preddt = lr.predict(x_test)
print("Confusion Matrix for Logistic regression:")
print(confusion_matrix(y_test,lr_preddt))

logi_score = round(accuracy_score(y_test,lr_preddt)*100,2)
print("Score:",logi_score)

print("Classification Report:")
print(classification_report(y_test,lr_preddt))
```

```
Confusion Matrix for Logistic regression:
[[ 254    0    0  100   41    0]
 [   0   96    0   91   11    0]
 [   1    0  114  125   10    0]
 [   0    0    1 1211   10    0]
 [   3    0    1  149  677    0]
 [   0    0    0   64    5   42]]
Score: 79.64
Classification Report:
              precision    recall  f1-score   support

       angry       0.98      0.64      0.78       395
     disgust       1.00      0.48      0.65       198
        fear       0.98      0.46      0.62       250
       happy       0.70      0.99      0.82      1222
         sad       0.90      0.82      0.85       830
    surprise       1.00      0.38      0.55       111

    accuracy                           0.80      3006
   macro avg       0.93      0.63      0.71      3006
weighted avg       0.84      0.80      0.79      3006


/Users/pro/opt/anaconda3/lib/python3.9/site-packages/sklearn/
linear_model/_logistic.py:814: ConvergenceWarning: lbfgs failed to
converge (status=1):
STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.

Increase the number of iterations (max_iter) or scale the data as
shown in:
    https://scikit-learn.org/stable/modules/preprocessing.html
Please also refer to the documentation for alternative solver options:

https://scikit-learn.org/stable/modules/linear_model.html#logistic-
```

```
regression
  n_iter_i = _check_optimize_result(
```

Implementing k Nearest Neighbors

```
from sklearn.neighbors import KNeighborsClassifier

lir = KNeighborsClassifier(n_neighbors=6,algorithm='brute')
lir.fit(x_train,y_train)
lir_preddt = lir.predict(x_test)
print("Confusion Matrix for kNN:")
print(confusion_matrix(y_test,lir_preddt))

knn_score = round(accuracy_score(y_test,lir_preddt)*100,2)
print("Score:",knn_score)

print("Classification Report:")
print(classification_report(y_test,lir_preddt))
```

```
Confusion Matrix for kNN:
[[229   5  11  94  55   1]
 [ 13 123   6  27  28   1]
 [ 16   3 145  57  27   2]
 [ 71  22  34 940 148   7]
 [ 42  15  28 175 569   1]
 [  4   2   2  27  13  63]]
Score: 68.83
Classification Report:
              precision    recall  f1-score   support

       angry       0.61      0.58      0.59       395
     disgust       0.72      0.62      0.67       198
        fear       0.64      0.58      0.61       250
       happy       0.71      0.77      0.74      1222
         sad       0.68      0.69      0.68       830
    surprise       0.84      0.57      0.68       111

    accuracy                           0.69      3006
   macro avg       0.70      0.63      0.66      3006
weighted avg       0.69      0.69      0.69      3006
```

Implementing SVM

```
from sklearn.svm import SVC
clf = SVC()
clf.fit(x_train,y_train)
pred2 = clf.predict(x_test)
print(confusion_matrix(y_test,pred2))
```

```
svm_score=clf.score(x_test,y_test)*100
print("Score:",svm_score)
print("Classification Report:")
print(classification_report(y_test,pred2))
```

```
[[ 229    0    2  133   31    0]
 [   0   94    0  101    3    0]
 [   0    0  105  141    4    0]
 [   1    0    0 1219    2    0]
 [   3    0    1  190  636    0]
 [   0    0    0   68    0   43]]
Score: 77.3785761809714
Classification Report:
              precision    recall  f1-score   support

       angry       0.98      0.58      0.73       395
     disgust       1.00      0.47      0.64       198
        fear       0.97      0.42      0.59       250
       happy       0.66      1.00      0.79      1222
         sad       0.94      0.77      0.84       830
    surprise       1.00      0.39      0.56       111

    accuracy                           0.77      3006
   macro avg       0.93      0.60      0.69      3006
weighted avg       0.84      0.77      0.76      3006
```

Implementing Naive Bayes

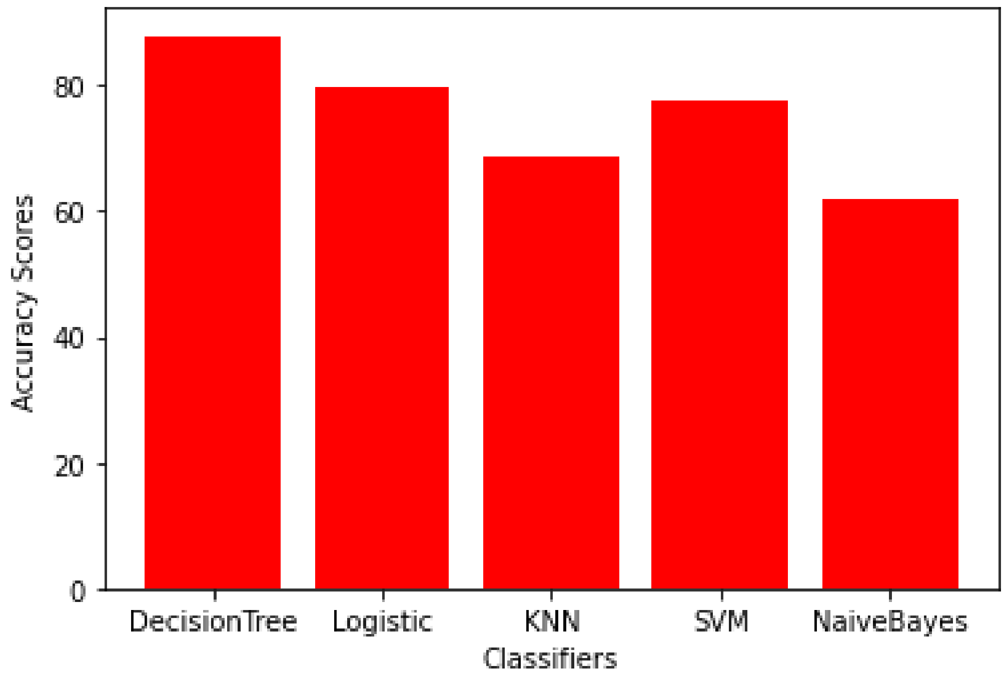
```
from sklearn.naive_bayes import GaussianNB
nb = GaussianNB()
nb.fit(x_train.toarray(),y_train)
pred3 = nb.predict(x_test.toarray())
print(confusion_matrix(y_test,pred3))
naiveBayes_score=nb.score(x_test.toarray(),y_test)*100
print("Score:",naiveBayes_score)
print("Classification Report:")
print(classification_report(y_test,pred3))
```

```
[[207   2  13  97  70   6]
 [ 10 102   5  39  42   0]
 [ 10   5 115  67  49   4]
 [ 67  16  37 836 235  31]
 [ 65  11  25 175 537  17]
 [  9   1   0  25  13  63]]
Score: 61.876247504990026
Classification Report:
              precision    recall  f1-score   support

       angry       0.56      0.52      0.54       395
```

```
     disgust       0.74      0.52      0.61       198
        fear       0.59      0.46      0.52       250
       happy       0.67      0.68      0.68      1222
         sad       0.57      0.65      0.60       830
    surprise       0.52      0.57      0.54       111

    accuracy                           0.62      3006
   macro avg       0.61      0.57      0.58      3006
weighted avg       0.62      0.62      0.62      3006
```

Model Analysis

```
scores=[dtt_score,logi_score,knn_score,svm_score,naiveBayes_score]
title=["DecisionTree","Logistic","KNN","SVM","NaiveBayes"]
plt.bar(title,scores, color ='red')

plt.xlabel("Classifiers")
plt.ylabel("Accuracy Scores")

plt.show()
```



Model for new test data

```
inp = "The horror movie was so scary."
text_tf_inp = Fit.transform(pd.Series(inp))
preddt = dt.predict(text_tf_inp)
```

```
print(inp)
print("Emotion: ", preddt[0])
print()

inp = "John comforts anyone when they are upset or overwhelmed."
text_tf_inp = Fit.transform(pd.Series(inp))
preddt = dt.predict(text_tf_inp)
print(inp)
print("Emotion: ", preddt[0])
print()

inp = " A 26 year old man kidnapped, raped & impregnated a 11 year old 
girl in Ohio"
text_tf_inp = Fit.transform(pd.Series(inp))
preddt = dt.predict(text_tf_inp)
print(inp)
print("Emotion: ", preddt[0])
print()

inp = "What a surprise I feel sick now, thank you so much!"
text_tf_inp = Fit.transform(pd.Series(inp))
preddt = dt.predict(text_tf_inp)
print(inp)
print("Emotion: ", preddt[0])
print()

inp = "I really love you. Your are sweet and charming."
text_tf_inp = Fit.transform(pd.Series(inp))
preddt = dt.predict(text_tf_inp)
print(inp)
print("Emotion: ", preddt[0])
print()
```

```
The horror movie was so scary.
Emotion:  fear

John comforts anyone when they are upset or overwhelmed.
Emotion:  sad

 A 26 year old man kidnapped, raped & impregnated a 11 year old girl 
in Ohio
Emotion:  disgust

What a surprise I feel sick now, thank you so much!
Emotion:  surprise

I really love you. Your are sweet and charming.
Emotion:  happy
```