| DATA: 23/04/2022<br><br>EXP No: 09 | Title of the Lab<br><br>Implementation of NLP Programs | Name:Avinash reddy Vasipalli<br>Registration Number:<br>RA1911027010007<br>Section: N1 Lab Batch: 1<br>Day Order: 2 |
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**AIM:** To perform the sentimental analysis using Natural Language Processing (NLP).
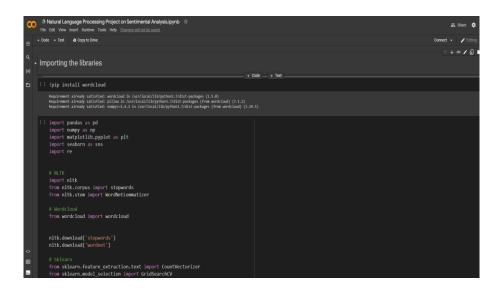
**Algorithm:**

NLP algorithms are used to provide automatic summarization of the main points in a given text or document. NLP algorithms are also used to classify text according to predefined categories or classes and are used to organize information and in email routing and spam filtering.

NLP algorithms are typically based on machine learning algorithms. Instead of hand-coding large sets of rules, NLP can rely on machine learning to automatically learn these rules by analysing a set of examples (i.e., a large corpus, like a book, down to a collection of sentences), and making a statistical inference.

**Steps for NLP algorithm: -**

- ➢ Lexical Analysis and Morphological. The first phase of NLP is the Lexical Analysis
- ➢ Syntactic Analysis (Parsing)
- ➢ Semantic Analysis
- ➢ Discourse Integration
- ➢ Pragmatic Analysis

# Source Code:

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```python
from sklearn.model_selection import GridSearchCV
from sklearn.ensemble import RandomForestClassifier

# Evaluation Metrics
from sklearn.metrics import accuracy_score, confusion_matrix, classification_report
```

```
[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data]   Package stopwords is already up-to-date!
[nltk_data] Downloading package wordnet to /root/nltk_data...
[nltk_data]   Package wordnet is already up-to-date!
```

```python
!pip install scikit-plot
```

```
Requirement already satisfied: scikit-plot in /usr/local/lib/python3.7/dist-packages (0.3.7)
Requirement already satisfied: scipy>=0.9 in /usr/local/lib/python3.7/dist-packages (from scikit-plot) (1.4.1)
Requirement already satisfied: scikit-learn>=0.18 in /usr/local/lib/python3.7/dist-packages (from scikit-plot) (0.22.2.post1)
Requirement already satisfied: joblib>=0.10 in /usr/local/lib/python3.7/dist-packages (from scikit-plot) (1.0.1)
Requirement already satisfied: matplotlib>=1.4.0 in /usr/local/lib/python3.7/dist-packages (from scikit-plot) (3.2.2)
Requirement already satisfied: numpy>=1.11 in /usr/local/lib/python3.7/dist-packages (from matplotlib>=1.4.0->scikit-plot) (1.19.5)
Requirement already satisfied: pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib>=1.4.0->scikit-plot) (2.4.7)
Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib>=1.4.0->scikit-plot) (2.8.2)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib>=1.4.0->scikit-plot) (1.3.2)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.7/dist-packages (from matplotlib>=1.4.0->scikit-plot) (0.10.0)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from cycler>=0.10->matplotlib>=1.4.0->scikit-plot) (1.15.0)
```

```python
from scikitplot.metrics import plot_confusion_matrix
```

## Import the dataset

Link: https://www.kaggle.com/praveengovi/emotions-dataset-for-nlp?select=train.txt

```python
df_train = pd.read_csv('/content/drive/MyDrive/Datasets/archive/train.txt',delimiter=';', names=['text','label'])
df_val = pd.read_csv('/content/drive/MyDrive/Datasets/archive/val.txt', delimiter=';', names=['text','label'])
```

```python
df_train
```

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```python
df.label.value_counts().plot.bar()
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7f3dba337510>
```



```python
# Positive Sentiments - Joy, Love, Surprise - 1
# Negative Sentiments - Anger, Sadness, Fear - 0
```

```python
df.head()
```

| | text | label |
|---|---|---|
| 0 | i didnt feel humiliated | sadness |
| 1 | i can go from feeling so hopeless to so damned... | sadness |
| 2 | im grabbing a minute to post i feel greedy wrong | anger |
| 3 | i am ever feeling nostalgic about the fireplac... | love |
| 4 | i am feeling grouchy | anger |

```python
df['label'].replace(to_replace=['surprise', 'joy', 'love'], value=1, inplace=True)
```

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```python
from wordcloud import WordCloud
```

```python
# Word Cloud
plt.figure(figsize=(50,28))
word = ''
for i in var:
    for j in i:
        word += " ".join(j)

wc = WordCloud(width=1000, height= 500, background_color='white', min_font_size=10).generate(word)
plt.imshow(wc)
```

```
<matplotlib.image.AxesImage at 0x7f3db9c3c45b>
```