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Experiment No.2
Apply Tokenization on given English and Indian Language Text
Date of Performance:
Date of Submission:

Aim: Apply Tokenization on given English and Indian Language Text

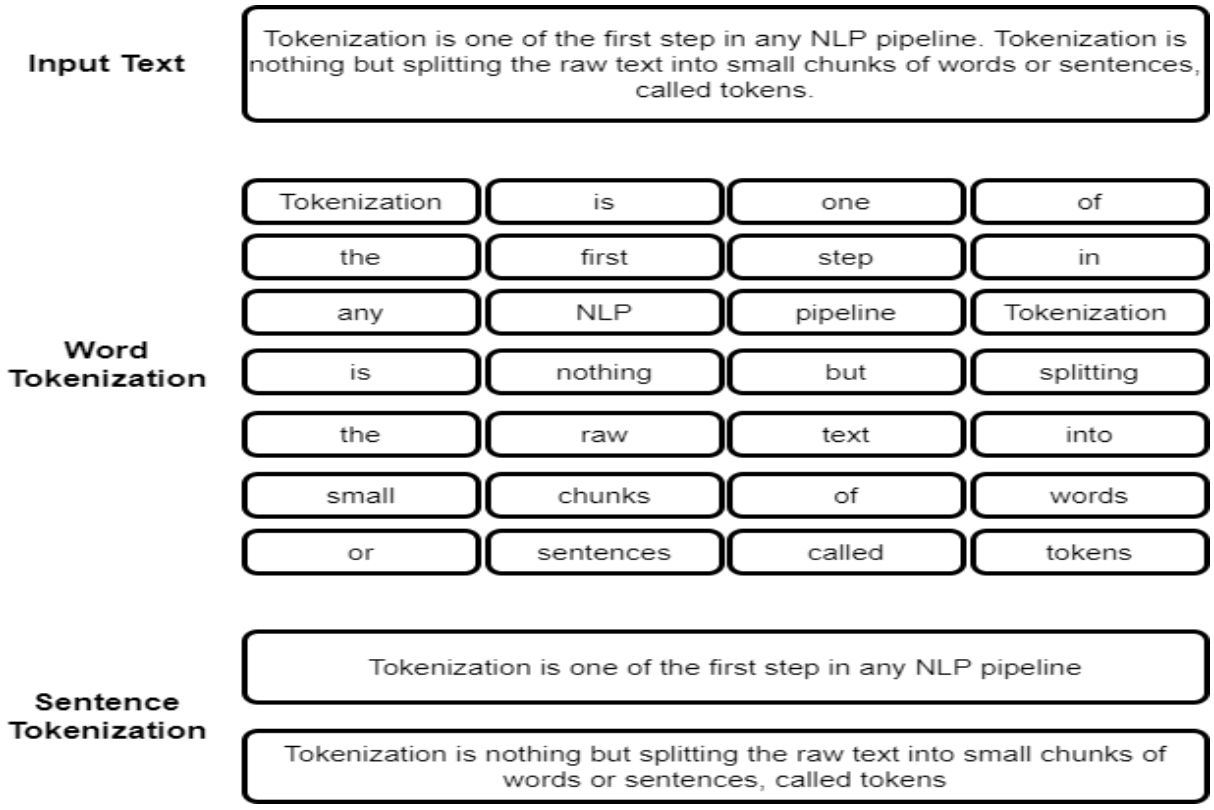
Objective: Able to perform sentence and word tokenization for the given input text for English and Indian Language.

Theory:

Tokenization is one of the first steps in any NLP pipeline. Tokenization is nothing but splitting the raw text into small chunks of words or sentences, called tokens. If the text is split into words, then it's called 'Word Tokenization' and if it's split into sentences then it's called 'Sentence Tokenization'. Generally 'space' is used to perform the word tokenization and characters like 'periods, exclamation point and newline char are used for Sentence Tokenization. We have to choose the appropriate method as per the task in hand. While performing the tokenization a few characters like spaces, punctuations are ignored and will not be the part of the final list of tokens.

Why Tokenization is Required?

Every sentence gets its meaning by the words present in it. So by analyzing the words present in the text we can easily interpret the meaning of the text. Once we have a list of words we can also use statistical tools and methods to get more insights into the text. For example, we can use word count and word frequency to find out the importance of word in that sentence or document.



Output:

Library required for Preprocessing

In [ ]:
```
!pip install nltk
```

```
Requirement already satisfied: nltk in /usr/local/lib/python3.10/dist-packages (3.8.1)
Requirement already satisfied: click in /usr/local/lib/python3.10/dist-packages (from nltk) (8.1.6)
Requirement already satisfied: joblib in /usr/local/lib/python3.10/dist-packages (from nltk) (1.3.2)
Requirement already satisfied: regex>=2021.8.3 in /usr/local/lib/python3.10/dist-packages (from nltk) (2023.6.3)
Requirement already satisfied: tqdm in /usr/local/lib/python3.10/dist-packages (from nltk) (4.66.1)
```

In [ ]:
```
import nltk
```

In [ ]:
```
nltk.download()
```

```
NLTK Downloader
---------------------------------------------------------------------------
    d) Download   l) List    u) Update   c) Config   h) Help   q) Quit
---------------------------------------------------------------------------
Downloader> d

Download which package (l=list; x=cancel)?
  Identifier> punkt
    Downloading package punkt to /root/nltk_data...
      Unzipping tokenizers/punkt.zip.
---------------------------------------------------------------------------
    d) Download   l) List    u) Update   c) Config   h) Help   q) Quit
```

Sentence Tokenization

In [ ]:
```
from nltk.tokenize import sent_tokenize
```

In [ ]:
```
text = '''Stephenson 2-18 is now known as being one of the largest, if not the current largest star ever discov
        Stephenson 2-18 has a radius of 2,150 solar radii, being larger than almost the entire orbit of Saturn
```

In [ ]:
```
text
```

Out[ ]:
```
'Stephenson 2-18 is now known as being one of the largest, if not the current largest star ever discovered, sur
passing other stars like VY Canis Majoris and UY Scuti.\n        Stephenson 2-18 has a radius of 2,150 solar ra
dii, being larger than almost the entire orbit of Saturn (1,940 - 2,169 solar radii).'
```

In [ ]:
```
sentences = sent_tokenize (text)
```

In [ ]:
```
sentences
```

Out[ ]:
```
['Stephenson 2-18 is now known as being one of the largest, if not the current largest star ever discovered, su
rpassing other stars like VY Canis Majoris and UY Scuti.',
 'Stephenson 2-18 has a radius of 2,150 solar radii, being larger than almost the entire orbit of Saturn (1,940
- 2,169 solar radii).']
```

Word Tokenization

In [ ]:
```
from nltk.tokenize import word_tokenize
```

In [ ]:
```
words = word_tokenize (text)
```

In [ ]:
```
words
```

Out[ ]:
```
['Stephenson',
 '2-18',
 'is',
 'now',
 'known',
 'as',
 'being',
 'one',
 'of',
 'the',
 'largest',
 ',',
 'if',
 'not',
 'the',
 'current',
 'largest',
```

In [ ]:
```
for w in words:
    print (w)
```

```
Stephenson
2-18
is
now
known
as
being
one
of
the
largest
,
if
not
the
current
largest
star
ever
discovered
,
surpassing
other
stars
like
```

Levels of Sentences Tokenization using Comprehension

In [ ]:
```
sent_tokenize (text)
```

Out[ ]:
```
['Stephenson 2-18 is now known as being one of the largest, if not the current largest star ever discovered, su
rpassing other stars like VY Canis Majoris and UY Scuti.',
 'Stephenson 2-18 has a radius of 2,150 solar radii, being larger than almost the entire orbit of Saturn (1,940
- 2,169 solar radii).']
```

In [ ]:
```
[word_tokenize (text) for t in sent_tokenize(text)]
```

Out[ ]:
```
[['Stephenson',
  '2-18',
  'is',
  'now',
  'known',
  'as',
  'being',
  'one',
  'of',
  'the',
  'largest',
  ',',
  'if',
  'not',
  'the',
  'current',
```

In [ ]:
```
from nltk.tokenize import wordpunct_tokenize
```

In [ ]:
```
wordpunct_tokenize (text)
```

Out[ ]:
```
['Stephenson',
 '2',
 '-',
 '18',
 'is',
 'now',
 'known',
 'as',
 'being',
 'one',
 'of',
 'the',
 'largest',
 ',',
 'if',
 'not',
 'the',
 'current',
 'largest',
 'star',
 'ever',
 'discovered',
```

Filteration of Text by converting into lower case

In [ ]:
```
text.lower()
```

Out[ ]:
```
'stephenson 2-18 is now known as being one of the largest, if not the current largest star ever discovered, sur
passing other stars like vy canis majoris and uy scuti.\n        stephenson 2-18 has a radius of 2,150 solar ra
dii, being larger than almost the entire orbit of saturn (1,940 - 2,169 solar radii).'
```

In [ ]:
```
text.upper()
```

Out[ ]:
```
'STEPHENSON 2-18 IS NOW KNOWN AS BEING ONE OF THE LARGEST, IF NOT THE CURRENT LARGEST STAR EVER DISCOVERED, SUR
PASSING OTHER STARS LIKE VY CANIS MAJORIS AND UY SCUTI.\n        STEPHENSON 2-18 HAS A RADIUS OF 2,150 SOLAR RA
DII, BEING LARGER THAN ALMOST THE ENTIRE ORBIT OF SATURN (1,940 - 2,169 SOLAR RADII).'
```

Conclusion:

There are a number of tools available for tokenization of Indian language input. Some of the most popular tools include:

iNLTK: iNLTK is a Python library for natural language processing (NLP) in Indian languages. It includes a variety of NLP tools, including a tokenizer for Indian languages.

Mila NMT: Mila NMT is a machine translation toolkit that includes a tokenizer for Indian languages.