Lab#1, NLP Spring 2023

This is due on 2023/03/06 15:30, commit to your github as a PDF (lab1.pdf) (File>Print>Save as PDF).

IMPORTANT: After copying this notebook to your Google Drive, please paste a link to it below. To get a publicly-accessible link, hit the *Share* button at the top right, then click "Get shareable link" and copy over the result. If you fail to do this, you will receive no credit for this lab!

LINK: paste your link here

https://colab.research.google.com/drive/10V35CX7Bw-JZ6KIVEw6cWBMmpwZBAE2x?usp=share_link

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Question 1 (100 points)

Let's switch over to coding! Write some code in this cell to compute the number of unique word **tokens** in this paragraph (5 steps of Text Normalisation: 1. Lowercase Conversion, 2. Remove punctuations, 3. Stemming, 4. Lemmatisation, 5. Stopword Removal). Use a whitespace tokenizer to separate words (i.e., split the string by white space). Be sure that the cell's output is visible in the PDF file you turn in on Github.

按兩下 (或按 Enter 鍵) 即可編輯

```
paragraph = '''Last night I dreamed I went to Manderley again. It seemed to me
that I was passing through the iron gates that led to the driveway.
The drive was just a narrow track now, its stony surface covered
with grass and weeds. Sometimes, when I thought I had lost it, it
would appear again, beneath a fallen tree or beyond a muddy pool
formed by the winter rains. The trees had thrown out new
low branches which stretched across my way. I came to the house
suddenly, and stood there with my heart beating fast and tears
filling my eyes.'''

# DO NOT MODIFY THE VARIABLES
tokens = 0
word_tokens = []
```

```
# YOUR CODE HERE! POPULATE THE tokens and word_tokens VARIABLES WITH THE CORRECT VALUE

#1
paragraph_lower = paragraph.lower()



#2
import nltk
nltk.download("punk")
def remove_punct(paragraph_lower):
    return [word for word in paragraph_lower if word.isalpha]
sent = remove_punct(paragraph_lower)

#3
from nltk.stem import PorterStemmer, LancasterStemmer, SnowballStemmer



port = PorterStemmer()
stemmed_port = [port.stem(token) for token in sent]

lanc = LancasterStemmer()
stemmed_lanc = [lanc.stem(token) for token in sent]

snow = SnowballStemmer("english")
stemmed_snow = [snow.stem(token) for token in sent]

#4
from nltk.stem import WordNetLemmatizer
nltk.download("wordnet")
nltk.download('omw-1.4')

lemmatiser = WordNetLemmatizer()
lemmatised = [lemmatiser.lemmatize(token) for token in stemmed_snow ]

#5
from nltk.corpus import stopwords
nltk.download("stopwords")

stop_words = set(stopwords.words("english"))

words_no_stop = [word for word in lemmatised if word not in stop_words]

tokens = len(words_no_stop)
word_tokens = words_no_stop

# DO NOT MODIFY THE BELOW LINE!



print('Number of word tokens: %d' % (tokens))
print("printing lists separated by commas")
print(*word_tokens, sep = ", ")
```

```
    Number of word tokens: 316
    printing lists separated by commas
```

```
l,  , n, g, h,  ,  , r, e, e,  ,  , w, e, n,  ,  , n, e, r, l, e,  , g, n, .,  ,  , e, e, e,
, h,  ,  , w,  , p, n, g,  , h, r, u, g, h,  , h, e,  , r, n,  , g, e,  , h,  , l, e,  ,  , h
, h, e,  , r, v, e,  , w,  , j, u,  ,  , n, r, r, w,  , r, c, k,  , n, w, ,,  ,  , n,  , u, r
, w, h,  , g, r,  , n,  , w, e, e, .,  , e, e, ,,  , w, h, e, n,  ,  , h, u, g, h,  ,  , h,
, w, u, l,  , p, p, e, r,  , g, n, ,,  , b, e, n, e, h,  ,  , f, l, l, e, n,  , r, e, e,  , r
, f, r, e,  , b,  , h, e,  , w, n, e, r,  , r, n, .,  , h, e,  , r, e, e,  , h,  , h, r, w, r
, l, w,  , b, r, n, c, h, e,  , w, h, c, h,  , r, e, c, h, e,  , c, r,  ,  , w, .,  ,  , c, e
, u, e, n, l, ,,  , n,  ,  , h, e, r, e,  , w, h,  ,  , h, e, r,  , b, e, n, g,  , f,  , n,
, f, l, l, n, g,  ,  , e, e, .
[nltk_data] Error loading punk: Package 'punk' not found in index
[nltk_data] Downloading package wordnet to /root/nltk_data...
[nltk_data]   Package wordnet is already up-to-date!
[nltk_data] Downloading package omw-1.4 to /root/nltk_data...
[nltk_data]   Package omw-1.4 is already up-to-date!
[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data]   Package stopwords is already up-to-date!
```