

```
!pip install nltk spacy
```

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Requirement already satisfied: nltk in /usr/local/lib/python3.12/dist-packages (3.9.1)
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Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/dist-pac
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Requirement already satisfied: wrapt in /usr/local/lib/python3.12/dist-pac
Requirement already satisfied: smart-open<8.0.0,>=5.2.1 in /usr/local/lib/python3.12/dist-pac
```

```
import nltk
import spacy
from nltk.tokenize import sent_tokenize, word_tokenize
from nltk.stem import PorterStemmer, WordNetLemmatizer
```

```
nltk.download('punkt')
nltk.download('wordnet')
nltk.download('omw-1.4')
nltk.download('punkt_tab')
```

```
[nltk_data] Downloading package punkt to /root/nltk_data...
[nltk_data]   Package punkt is already up-to-date!
[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 punkt_tab to /root/nltk_data...
[nltk_data]   Unzipping tokenizers/punkt_tab.zip.
True
```

```
medical_text = """
Diabetes is a chronic disease that affects how the body processes blood sugar.
If untreated, diabetes may cause heart disease, kidney failure, nerve damage and vision problems.
```

```
Early diagnosis and proper treatment help improve patient outcomes.  
"""
```

```
nltk_sentences = sent_tokenize(medical_text)  
print(nltk_sentences)
```

```
['\nDiabetes is a chronic disease that affects how the body processes blood sugar.', 'If untreated
```

```
nlp = spacy.load("en_core_web_sm")  
doc = nlp(medical_text)  
spacy_sentences = [sent.text for sent in doc.sents]  
print(spacy_sentences)
```

```
['\nDiabetes is a chronic disease that affects how the body processes blood sugar.\n', 'If untreated
```

```
nltk_words = word_tokenize(medical_text)  
print(nltk_words)
```

```
['Diabetes', 'is', 'a', 'chronic', 'disease', 'that', 'affects', 'how', 'the', 'body', 'processes'
```

```
spacy_words = [token.text for token in doc]  
print(spacy_words)
```

```
['\n', 'Diabetes', 'is', 'a', 'chronic', 'disease', 'that', 'affects', 'how', 'the', 'body', 'proc
```

```
stemmer = PorterStemmer()  
stemmed_words = [stemmer.stem(word) for word in nltk_words if word.isalpha()]  
print(stemmed_words)
```

```
['diabet', 'is', 'a', 'chronic', 'diseas', 'that', 'affect', 'how', 'the', 'bodi', 'process', 'blo
```

```
lemmatizer = WordNetLemmatizer()  
lemmatized_words_nltk = [lemmatizer.lemmatize(word) for word in nltk_words if word.isalpha()]  
print(lemmatized_words_nltk)
```

```
['Diabetes', 'is', 'a', 'chronic', 'disease', 'that', 'affect', 'how', 'the', 'body', 'process', '
```

```
spacy_lemmas = [token.lemma_ for token in doc if token.is_alpha]  
print(spacy_lemmas)
```

```
['Diabetes', 'be', 'a', 'chronic', 'disease', 'that', 'affect', 'how', 'the', 'body', 'process', '
```

