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Natural Language Processing Lab

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Importing the Dependencies

```python
from nltk.stem.porter import PorterStemmer
from nltk.stem.snowball import SnowballStemmer
from nltk.stem.lancaster import LancasterStemmer
from nltk.stem.regexp import RegexpStemmer

from nltk.stem import WordNetLemmatizer
```

```python
tokens = ["running", "runners", "ran", "runs", "swimming", "swimmer", "swam", "swims", "ju
          "jumps"]
```

Stemming Using Porter Stemmer, Snowball Stemmer, Lancaster Stemmer and Regexp Stemmer

```python
porter = PorterStemmer()
snowball = SnowballStemmer("english")
lancaster = LancasterStemmer()
regexp = RegexpStemmer("ing$|s$|ed$", min=4)
```

```python
print("Stemming Results:")
print("Porter Stemmer:", [porter.stem(token) for token in tokens])
print("Snowball Stemmer:", [snowball.stem(token) for token in tokens])
print("Lancaster Stemmer:", [lancaster.stem(token) for token in tokens])
print("Regexp Stemmer:", [regexp.stem(token) for token in tokens])
```

```
Stemming Results:
Porter Stemmer: ['run', 'runner', 'ran', 'run', 'swim', 'swimmer', 'swam', 'swim', 'jump
Snowball Stemmer: ['run', 'runner', 'ran', 'run', 'swim', 'swimmer', 'swam', 'swim', 'ju
```

```
Lancaster Stemmer: ['run', 'run', 'ran', 'run', 'swim', 'swim', 'swam', 'swim', 'jump',
Regexp Stemmer: ['runn', 'runner', 'ran', 'run', 'swimm', 'swimmer', 'swam', 'swim', 'ji
```

Lemmatization Using WordNet Lemmatizer

```python
lemmatizer = WordNetLemmatizer()
```

```python
print("\nLemmatization Results:")
print("WordNet Lemmatizer:", [lemmatizer.lemmatize(token) for token in tokens])
```

```
Lemmatization Results:
WordNet Lemmatizer: ['running', 'runner', 'ran', 'run', 'swimming', 'swimmer', 'swam',
```