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WordNet is a large lexical database of English. Nouns, verbs, adjectives and adverbs are grouped into sets of cognitive synonyms (synsets), each expressing a distinct concept. Synsets are interlinked by means of conceptual-semantic and lexical relations.
WordNet's structure makes it a useful tool for computational linguistics and natural language processing.

WordNet superficially resembles a thesaurus, in that it groups words together based on their meanings. However, there are some important distinctions.

- First, WordNet interlinks not just word forms—strings of letters—but specific senses of words. As a result, words that are found in close proximity to one another in the network are semantically disambiguated.
- Second, WordNet labels the semantic relations among words, whereas the groupings of words in a thesaurus does not follow any explicit pattern other than meaning similarity.

```
from  nltk.corpus  import  wordnet

syns  =  wordnet.synsets(``"program"``)

print``(syns[``0``].name())

print``(syns[``0``].lemmas()[``0``].name())

print``(syns[``0``].definition())

print``(syns[``0``].examples())
```

The output will look like:
plan.n.01
plan
a series of steps to be carried out or goals to be accomplished
['they drew up a six-step plan', 'they discussed plans for a new bond issue']

Next, how might we discern synonyms and antonyms to a word? The lemmas will be synonyms, and then you can use .antonyms to find the antonyms to the lemmas. As such, we can populate some lists like:

```
import  nltk

from  nltk.corpus  import  wordnet

synonyms  =  []

antonyms  =  []

for  syn  in  wordnet.synsets(``"good"``):

  for  l  in  syn.lemmas():

    synonyms.append(l.name())

    if  l.antonyms():

      antonyms.append(l.antonyms()[``0``].name())

print``(``set``(synonyms))

print``(``set``(antonyms))
```

The output will be two sets of synonyms and antonyms
{'beneficial', 'just', 'upright', 'thoroughly', 'in_force', 'well', 'skilful', 'skillful', 'sound', 'unspoiled', 'expert', 'proficient', 'in_effect', 'honorable', 'adept', 'secure', 'commodity', 'estimable', 'soundly', 'right', 'respectable', 'good', 'serious', 'ripe', 'salutary', 'dear', 'practiced', 'goodness', 'safe', 'effective', 'unspoilt', 'dependable', 'undecomposed', 'honest', 'full', 'near', 'trade_good'} {'evil', 'evilness', 'bad', 'badness', 'ill'}

Now , let's compare the similarity index of any two words

```
import  nltk

from  nltk.corpus  import  wordnet

w1  =  wordnet.synset(``'run.v.01'``)

w2  =  wordnet.synset(``'sprint.v.01'``)

print``(w1.wup_similarity(w2))
```

Output:
0.857142857143

```
w1  =  wordnet.synset(``'ship.n.01'``)

w2  =  wordnet.synset(``'boat.n.01'``)
```

```
print``(w1.wup_similarity(w2))
```

Output:
0.9090909090909091