```python
In [44]: import spacy
```

```python
In [45]: nlp = spacy.load('en_core_web_sm')
```

```python
In [46]: from spacy.matcher import Matcher
```

```python
In [47]: matcher = Matcher(nlp.vocab)
```

```python
In [48]: # Creating Patters for 'SolarPower'

         pattern1 = [{'LOWER': 'solarpower'}]
         pattern2 = [{'LOWER': 'solar'}, {'LOWER': 'power'}]
         pattern3 = [{'LOWER': 'solar'}, {'IS_PUNCT': True}, {'LOWER': 'power'}]
```

```python
In [49]: matcher.add('SolarPower', None, pattern1, pattern2, pattern3)
```

```python
In [50]: doc = nlp(u'The Solar Power industry continues to grow as demand\
         for solarpower increases. Solar-power cars are gaining popularity.')
```

```python
In [51]: found_matches = matcher(doc)
         print(found_matches)
```

```
[(8656102463236116519, 1, 3), (8656102463236116519, 9, 10), (8656102463
236116519, 12, 15)]
```

```python
In [52]: for match_id, start, end in found_matches:
             string_id = nlp.vocab.strings[match_id]
             span = doc[start: end]
             print(match_id, string_id, start, end, span.text)
```

```
8656102463236116519 SolarPower 1 3 Solar Power
8656102463236116519 SolarPower 9 10 solarpower
8656102463236116519 SolarPower 12 15 Solar-power
```

```python
In [53]: # Remove matcher 'SolarPower'
```

```python
In [54]: matcher.remove('SolarPower')
```

```python
In [55]: pattern1 = [{'LOWER': 'solarpower'}]
         pattern2 = [{'LOWER': 'solar'}, {'IS_PUNCT' : True, 'OP': '*'},{'LOWER':
```

```python
In [56]: matcher.add('SolarPower', None, pattern1, pattern2)
```

```
In [57]: doc2 = nlp(u'Solar--Power is solarpower for cars!')
```

```
In [58]: matches_found = matcher(doc2)
         print(matches_found)
```

```
[(8656102463236116519, 0, 3), (8656102463236116519, 4, 5)]
```

Phrase Matching

```
In [69]: import spacy
         from spacy.matcher import PhraseMatcher
```

```
In [70]: matcher = PhraseMatcher(nlp.vocab)
```

```
In [71]: with open(r'../TextFiles/reaganomics.txt', encoding='latin1') as f:
             doc3 = nlp(f.read())
```

```
In [72]: # Create a list of match phrases

         phrase_list = ['voodoo economics', 'supply-side economics', 'trickle-dow
                        'free-market economics']
```

```
In [73]: phrase_patterns = [nlp(text) for text in phrase_list]
```

```
In [74]: type(phrase_patterns[0])
```

```
Out[74]: spacy.tokens.doc.Doc
```

```
In [75]: phrase_patterns[0]
```

```
Out[75]: voodoo economics
```

```
In [76]: print(phrase_patterns[0])
```

```
         voodoo economics
```

```
In [77]: #Observation: No quotes in output since type =  spacy.token.doc.Doc (and
```

In [78]:
```python
phrase_patterns
```

Out[78]:
```
[voodoo economics,
 supply-side economics,
 trickle-down economics,
 free-market economics]
```

In [79]:
```python
#Pass each Doc object into matcher (note the use of asterisk!)
matcher.add('EconMatcher', None, *phrase_patterns)
```

In [80]:
```python
found_matches = matcher(doc3)
```

In [81]:
```python
found_matches
```

Out[81]:
```
[(3680293220734633682, 41, 45),
 (3680293220734633682, 49, 53),
 (3680293220734633682, 54, 56),
 (3680293220734633682, 61, 65),
 (3680293220734633682, 673, 677),
 (3680293220734633682, 2984, 2988)]
```

In [83]:
```python
# To find out where it is actually matching

for match_id, start, end in found_matches:
    string_id = nlp.vocab.strings[match_id]
    span = doc3[start : end]
    print(match_id, string_id, start, end, span.text)
```

```
3680293220734633682 EconMatcher 41 45 supply-side economics
3680293220734633682 EconMatcher 49 53 trickle-down economics
3680293220734633682 EconMatcher 54 56 voodoo economics
3680293220734633682 EconMatcher 61 65 free-market economics
3680293220734633682 EconMatcher 673 677 supply-side economics
3680293220734633682 EconMatcher 2984 2988 trickle-down economics
```

In [84]:
```python
# To see tokens surrounding the term you are looking for

for match_id, start, end in found_matches:
    string_id = nlp.vocab.strings[match_id]
    span = doc3[start - 5 : end + 5]
    print(match_id, string_id, start, end, span.text)
```

```
3680293220734633682 EconMatcher 41 45 policies are commonly associated
with supply-side economics, referred to as trickle
3680293220734633682 EconMatcher 49 53 economics, referred to as trickl
e-down economics or voodoo economics by political
3680293220734633682 EconMatcher 54 56 trickle-down economics or voodoo
economics by political opponents, and
3680293220734633682 EconMatcher 61 65 by political opponents, and free
-market economics by political advocates.


3680293220734633682 EconMatcher 673 677 attracted a following from the
supply-side economics movement, which formed in
3680293220734633682 EconMatcher 2984 2988 became widely known as "tric
kle-down economics", due to the
```

In [ ]: