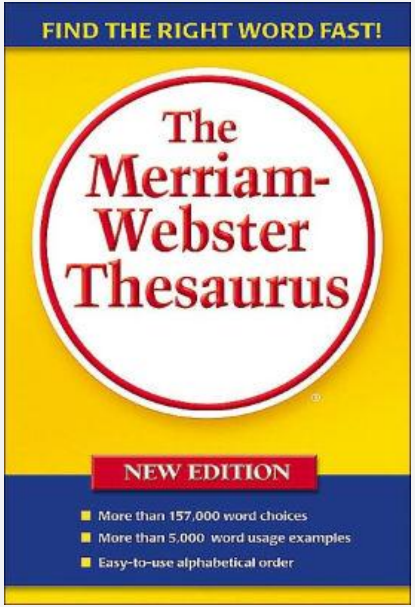
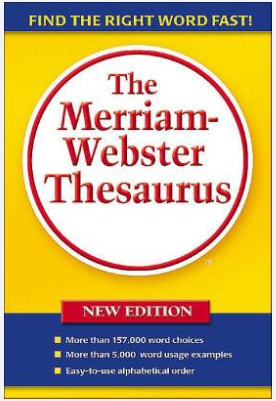
Representing a thesaurus

```
thesaurus = {'fast' : 'speedy',
             'old' : 'aged',
             'slow' : 'sluggish',
             'difficult' : 'challenging'}
```


FIND THE RIGHT WORD FAST!
The Merriam-Webster Thesaurus
NEW EDITION
More than 157,000 word choices
More than 5,000 word usage examples
Easy-to-use alphabetical order

https://www.thesaurus.com

Representing a thesaurus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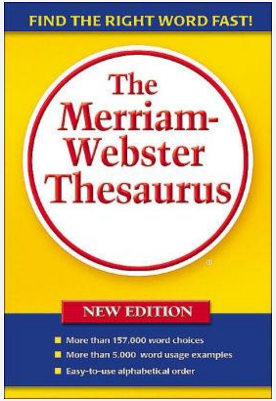
```
thesaurus = {'fast' : {'quick', 'agile', 'speedy'},
             'old' : {'aged', 'antique'},
             'slow' : {'sluggish'},
             'difficult' : {'hard', 'challenging', 'arduous'}}
```

Activity

Add 'strong' with two similar words

```
thesaurus = {'fast' : {'quick', 'agile', 'speedy'},
             'old' : {'aged', 'antique'},
             'slow' : {'sluggish'},
             'difficult' : {'hard', 'challenging', 'arduous'}}
```

Add 'strong' with two similar words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             'old' : {'aged', 'antique'},
             'slow' : {'sluggish'},
             'difficult' : {'hard', 'challenging', 'arduous'}}
```

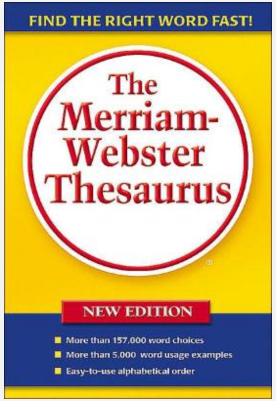
```
thesaurus['strong'] = set()
thesaurus['strong'].add('durable')
thesaurus['strong'].add('robust')
```

Activity

Add an additional similar word for 'slow'

```
thesaurus = {'fast' : {'quick', 'agile', 'speedy'},
             'old' : {'aged', 'antique'},
             'slow' : {'sluggish'},
             'difficult' : {'hard', 'challenging', 'arduous'},
             'strong' : {'durable', 'robust'}}
```

Add an additional similar word for 'slow'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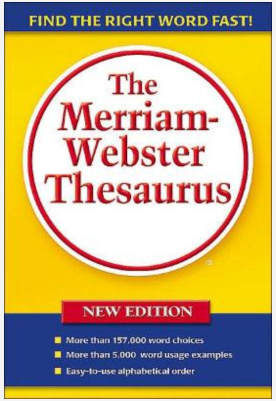
thesaurus = {'fast' : {'quick', 'agile', 'speedy'},
             'old' : {'aged', 'antique'},
             'slow' : {'sluggish'},
             'difficult' : {'hard', 'challenging', 'arduous'},
             'strong' : {'durable', 'robust'}}
```

```
thesaurus['slow'].add('gradual')
```

Add an additional similar word for 'slow'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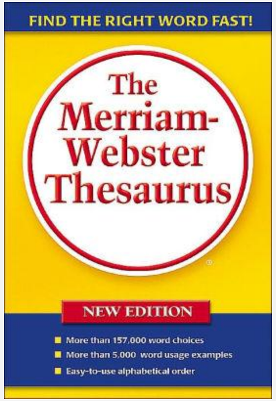
thesaurus = {'fast' : {'quick', 'agile', 'speedy'},
             'old' : {'aged', 'antique'},
             'slow' : {'sluggish', 'gradual'},
             'difficult' : {'hard', 'challenging', 'arduous'},
             'strong' : {'durable', 'robust'}}
```

Thesaurus file format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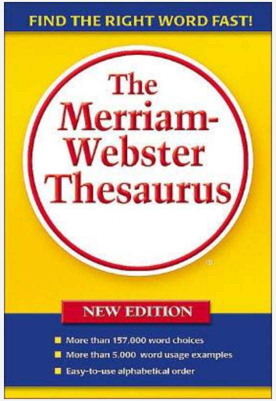
```
strong : durable robust
brave : fearless courageous
difficult : hard challenging arduous
slow : sluggish gradual
```

```
> brave
words similar to brave are:
  courageous fearless
> difficult
words similar to difficult are:
  hard arduous challenging
> instant
Sorry, I do not know that word
> exit
```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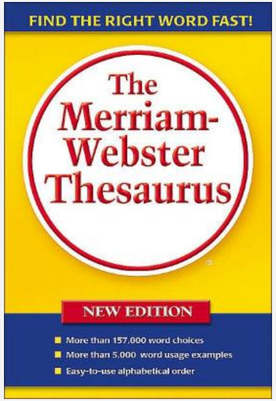
```
> brave
words similar to brave are:
  courageous fearless
> ADD
What word to add? brave
What is a similar word? adventurous
> brave
words similar to brave are:
  courageous adventurous fearless
> exit
```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```python
def add_word(base_word, similar_word):
    # ???

def add_line(line):
    # ???

def save_thesaurus():
    # ???

def load_thesaurus():
    # ???

def main():
    # ???

main()
```

Activity

```
def add_word(thes, base_word, similar_word):
    ''' Add similar_word to the set of words that are similar
        to base_word. The steps:
      (1) if base_word is not already in the thesaurus, add it
          and map to an empty set
      (2) get the set associated with base_word
      (3) add the similar_word to the set
    '''
```

```python
def add_word(thes, base_word, similar_word):
    if base_word not in thes:
        thes[base_word] = set()
    thes[base_word].add(similar_word)
```

Activity

```python
def add_line(thes, line):
    ''' This function takes a single line from a thesaurus
        file. For example:

        strong : durable robust stable

      The function should process the line, and then add
      the word(s) to the thesaurus dictionary. Also
      remember to use the add_word function!
    '''
```

```python
def add_line(thes, line):
    sp = line.split(' : ')
    key = sp[0]
    similar = sp[1].split(' ')
    for word in similar:
        add_word(thes, key, word)
```

```python
def add_line(thes, line):
    sp = line.split(' : ')
    for word in sp[1].split(' '):
        add_word(thes, sp[0], word)
```

```python
def add_word(thes, base_word, similar_word):
    if base_word not in thes:
        thes[base_word] = set()
    thes[base_word].add(similar_word)

def add_line(thes, line):
    sp = line.split(' : ')
    for word in sp[1].split(' '):
        add_word(thes, sp[0], word)
```

```python
def save_thesaurus():
    # ???

def load_thesaurus():
    # ???


def main():
    # ???

main()
```

Activity

```
def load_thesaurus(thes):
    ''' Open the thesaurus file and store each
    line into the thesaurus dictionary. Remember,
    you can use the add_line function.
    '''
```

```
def load_thesaurus(thes):
    f = open('thesaurus.txt', 'r')
    lines = f.readlines()
    for line in lines:
        add_line(thes, line.strip('\n'))
    f.close()
```

Activity

```python
def save_thesaurus(thes):
    ''' Save the contents of the thesaurus
    dictionary into thesaurus.txt. You can
    overwrite the old contents.
    '''
```

```python
def save_thesaurus(thes):
    f = open('thesaurus.txt', 'w')
    for k, v in thes.items():
        l = list(v)
        f.write(k + ' : ' + ' '.join(l) + '\n')
    f.close()
```

```python
def add_word(thes, base_word, similar_word):
    if base_word not in thes:
        thes[base_word] = set()
    thes[base_word].add(similar_word)

def add_line(thes, line):
    sp = line.split(' : ')
    for word in sp[1].split(' '):
        add_word(thes, sp[0], word)

def load_thesaurus(thes):
    f = open('thesaurus.txt', 'r')
    lines = f.readlines()
    for line in lines:
        add_line(thes, line.strip('\n'))
```

```python
def save_thesaurus(thes):
    f = open('thesaurus.txt', 'w')
    for k, v in thes.items():
        l = list(v)
        f.write(k + ' : ' + ' '.join(l) + '\n')
    f.close()


def main():
    # ???

main()
```

Activity

```python
def main():
    thesaurus = {}
    load_thesaurus(thesaurus)
    while True:
        text = input('> ')
        if text == 'exit':
            return
        if text.startswith('ADD'):
            ### (A) ask for a key-word, and a similar word, add
        else:
            if text in thesaurus:
                ### (B) show similar words to the word entered
            else:
                ### (C) ???
```

```python
def main():
    thesaurus = {}
    load_thesaurus(thesaurus)
    while True:
        text = input('> ')
        if text == 'exit':
            break
        if text.startswith('ADD'):
            word = input('What word to add? ')
            similar_word = input('What is a similar word? ')
            add_word(thesaurus, word, similar_word)
        else:
            if text in thesaurus:
                similar = thesaurus[text]
                print('words similar to ' + text + ' are:')
                print('  ' + ' '.join(similar))
            else:
                print('Sorry, I do not know that word')
```

```python
def add_word(thes, base_word, similar_word):
    if base_word not in thes:
        thes[base_word] = set()
    thes[base_word].add(similar_word)

def add_line(thes, line):
    sp = line.split(' : ')
    for word in sp[1].split(' '):
        add_word(thes, sp[0], word)

def load_thesaurus(thes):
    f = open('thesaurus.txt', 'r')
    lines = f.readlines()
    for line in lines:
        add_line(thes, line.strip('\n'))
```

```python
def save_thesaurus(thes):
    f = open('thesaurus.txt', 'w')
    for k, v in thes.items():
        l = list(v)
        f.write(k + ' : ' + ' '.join(l) + '\n')
    f.close()

def main():
    thesaurus = {}
    load_thesaurus(thesaurus)
    while True:
        text = input('> ')
        if text == 'exit':
            break
        if text.startswith('ADD'):
            word = input('What word to add? ')
            similar_word = input('What is a similar word? ')
            add_word(thesaurus, word, similar_word)
            save_thesaurus(thesaurus)
        else:
            if text in thesaurus:
                similar = thesaurus[text]
                print('words similar to ' + text + ' are:')
                print('  ' + ' '.join(similar))
            else:
                print('Sorry, I do not know that word')
main()
```