

# Assignment 5

March 5, 2020

## 1 Assignment 7

### 1.1 Problem 1

Read the entire text of the file “The Raven.tx” and create a list, `words_list`, of the words in the file using the string method `split()` with the default split character. Print the number of words in the list using `len()`.

[0]:

```
[3]: # Place your code here.  
fhandle = open("The Raven.txt", "r")  
  
words_List = []  
for lines in fhandle:  
    line = lines.split()  
    for words in line:  
  
        words_List.append(words)  
print(len(words_List))
```

1067

[0]:

### 1.2 Problem 2

Use the set function to create a set of all of the words in the list and name the set “Universe”.

```
[4]: # Place your code here.  
Universe = set(words_List)  
print(len(Universe))
```

553

### 1.3 Problem 3

Using set comprehension produce a set called capwords consisting of all the words in the Universe which begin with capital letters. Use `re.search()` and an appropriate regex. Don't forget to import `re`.

Print the set and a count of the items in the set.

```
[9]: # Place your code here.
capwords = {l for l in Universe if l == l.capitalize()}
print(len(capwords))
```

97

### 1.4 Problem 4

Using set comprehension, create sets ewords and awords. An eword contains a lower case “e” or an uppercase “E”. The set awords has an obvious analogous definition. Print these sets and their counts. Note that the membership conditions can the “in” operator. A regular expression is not necessary.

```
[6]: # Place your code here.

ewords = {j for j in Universe if ("e" in j or "E" in j) }
awords = {x for x in Universe if ("a" in x or "A" in x) }

print("The number of words with 'e' in it is", len(ewords))
print(ewords)
print("The number of words with 'a' in it is", len(awords))
print(awords)
```

The number of words with 'e' in it is 308

```
{'muttered,', 'moment', 'eyes', 'dreary,', 'lie', 'Lenore-', 'ancient',
'Nameless', 'Then', 'agreeing', 'dreaming', 'Thrilled', '"Lenore?',
'enchanted-', 'me', 'crest', 'evermore.', 'unbroken!-quit', 'made', 'sure',
'silken,', 'more.', 'syllable', '"Get', 'whispered', 'little', 'the', 'least',
'Let', 'bore', 'shutter,', 'burned', 'before."', 'minute', 'there-is', 'stern',
'beast', 'velvet-violet', 'Startled', 'pondered,', 'While', 'hear', 'lattice;',
'help', 'tinkled', 'lies', 'fluttered-', 'angels', 'farther', 'token',
'discourse', 'repeating', 'weak', 'cushioned', 'adore-', 'Once', 'Raven',
'beguiling', 'yore-', 'more', 'She', 'silence', '"Wretch,', 'darkness',
'chamber', 'fiery', 'opened', 'see,', 'he', 'forgotten', 'decorum', 'be',
'Raven,', 'Then,', 'yore', 'beating', 'there', 'flutter,', 'Hopes', 'dream',
'hesitating', 'reply', 'gently', 'ember', '"Prophet!"', 'o'er,', 'nodded,',
'longer,', 'Merely', 'me-tell', 'late', 'gave', 'surcease', 'gloated', 'beak',
'Deep', 'laden', 'came', 'wondering,', 'louder', 'spoken!', 'scarcely', 'Take',
'rare', 'whether', 'ease', 'more!"', 'entreating', 'Presently', '"Other',
'shrieked,', 'maiden', 'undaunted,', 'while', 'Eagerly', 'he;', 'censer',
```

'take', 'Meant', 'then,', 'nearly', 'shaven,', 'blessed', 'thee-by', 'nepenthe',  
 'spoken', 'thee', 'Gilead?-tell', 'memories', 'thereat', 'yore;', 'unseen',  
 'heart', 'forgiveness', 'these', 'some', '"Lenore!"-', 'stronger;', 'wheeled',  
 'implore!"', 'demon's', 'heart,', 'implore;', 'echo', 'scarce', 'then', 'Leave',  
 'when,', 'spoke', 'answer', 'Darkness', 'before-', 'me-filled', 'broken',  
 'bends', 'Disaster', 'token,', 'suddenly', 'seat', 'grave', 'we', 'Lenore."',  
 'expressing', 'stayed', 'head', 'leave', 'Desolate', 'obeisance', 'myself',  
 'spoken,', 'felt', 'faster', 'muttered', 'lore-', 'implore-', 'reclining',  
 'utters', 'Heaven', 'unbroken,', 'uttered-not', 'ebony', 'ashore,', 'before;',  
 'shore!"', 'perched', 'yet', 'stillness', 'seeming', 'somewhat', 'lent',  
 'you"-here', 'before.', 'Tell', 'wore,', 'each', 'Hope', 'Followed', 'Seraphim',  
 'bleak', 'methought,', 'streaming', 'shore!', 'stopped', 'sent,', 'craven,',  
 'Perched', 'tossed', 'haunted-tell', 'me,', 'fearing,', 'plume',  
 'lifted-nevermore!', 'terrors', 'stately', 'purple', 'heard', 'never', 'cried,',  
 'Tempter', '"Be', 'store', 'home', 'Lenore;', 'have', 'volume', 'nevermore!',  
 'dirges', 'whispered,', 'explore;', 'Aidenn,', 'explore-', 'betook', 'mystery',  
 'core;', 'one', 'friends', 'feather', 'relevancy', 'murmured', '"surely',  
 'Perched,', 'forget', 'fiend!"', 'perfumed', '"Surely,"', 'evil!-prophet',  
 'whose', 'wide', 'wandering', '"Nevermore."', 'grew', 'name', 'tufted', 'Ever',  
 'remember', 'Whether', 'press,', 'more."', 'desert', 'marvelled', 'shore-',  
 'sainted', 'here', 'master', 'o'er', 'weary,', 'countenance',  
 'Never-nevermore'. "', 'Some', 'stepped', 'burden', 'separate', 'bore-',  
 'seeing', 'something', 'Open', 'bore;', 'peering,', 'melancholy', 'mien',  
 'followed', 'entrance', 'Lenore!"', '"Doubtless,"', 'Over', 'tempest', 'sent',  
 'Respite-respite', 'December;', 'uncertain', 'dreams', 'loneliness', 'dared',  
 'ever', 'unmerciful', 'dreaming,', 'meaning-little', 'guessing,', 'wished',  
 'denser,', 'devil!', 'being', 'lonely', 'engaged', 'velvet', 'above', 'devil!-',  
 'sculptured'}

The number of words with 'a' in it is 181

{'That', 'dreary,', 'cannot', 'radiant', 'ancient', 'an', 'human', 'Nameless',  
 'agreeing', 'Straight', 'Pallas', 'Caught', 'plainly,', 'dreaming', 'many',  
 'sat', 'enchanted-', 'unhappy', '"what', 'made', '"art', 'ghastly,', 'rapping',  
 'syllable', 'sad', 'least', 'fast', 'again', 'beast', 'Startled', 'hear', 'had',  
 'lattice;', 'all', 'quaff', 'angels', 'farther', 'As', 'repeating', 'weak',  
 'adore-', 'Raven', 'at', 'curtain', 'chamber', 'shadow', 'said', 'Raven,',  
 'beating', 'dream', 'Back', 'balm', 'Madam,', 'hesitating', 'late', 'saintly',  
 'surcease', 'gloated', 'clasp', 'fancy', 'beak', 'black', 'laden', 'came',  
 'floating', 'rare', 'scarcely', 'Take', 'ease', 'entreating', 'maiden',  
 'undaunted,', 'parting,', 'land', 'Eagerly', 'take', 'nearly', 'Meant', 'gave',  
 'as', 'shaven,', 'Gilead?-tell', 'thereat', 'heart', 'Clasp', 'fact', 'heart,',  
 'upstarting-', 'scarce', 'Leave', 'quaint', 'gloating', 'ungainly', 'answer',  
 'Darkness', 'what', 'aptly', 'and', 'Disaster', 'seat', 'grave', 'stayed',  
 'head', 'leave', 'Desolate', 'obeisance', 'pallid', 'faster', 'lamp-light',  
 'that', 'air', 'Heaven', 'ashore,', 'mortal', 'somewhat', 'Quaff,', 'foot-  
 falls', 'each', 'ungainly,', 'Ah,', 'bleak', 'streaming', 'Seraphim',  
 'morrow;-vainly', 'napping,', 'haunted-tell', 'craven,', 'fearing,', 'weary,',  
 'heard', 'stately', 'fancy,', 'Plutonian', 'have', 'Aidenn,', 'back', 'feather',  
 'days', 'relevancy', 'croaking', 'said,', 'What', 'lady,', 'Shall', 'rapping',

```
'gaunt,', 'And', 'shall', 'wandering', 'distant', 'name', 'hath', 'fantastic',  
' marvelled', 'a', 'tapping', 'sainted', 'master', 'countenance', 'tapping,',  
'separate', 'sad,', 'faintly', 'melancholy', 'entrance', 'was', 'sat,',  
'Ghastly', 'placid', 'uncertain', 'dreams', 'dared', '"tapping', 'dreaming,',  
'meaning-little', 'ah,', 'Fancy', 'above', 'engaged', 'darkness', 'than'}
```

## 1.5 Problem 5

Verify that intersection is an associative operation with these particular sets. The associative law states that for all sets  $A$ ,  $B$  and  $C$ .

$$A \cap (B \cap C) = (A \cap B) \cap C$$

You have three subsets of the Universe to make your example. Use them in any order. Note that only a single line of code is necessary.

```
[7]: # Place your code here.
```

```
def subset(a,b,c):  
    return a & (b & c) == (a & b) & c  
subset(capwords,ewords,awords)
```

```
[7]: True
```

```
[0]:
```