Movie script Text Analysis(2)

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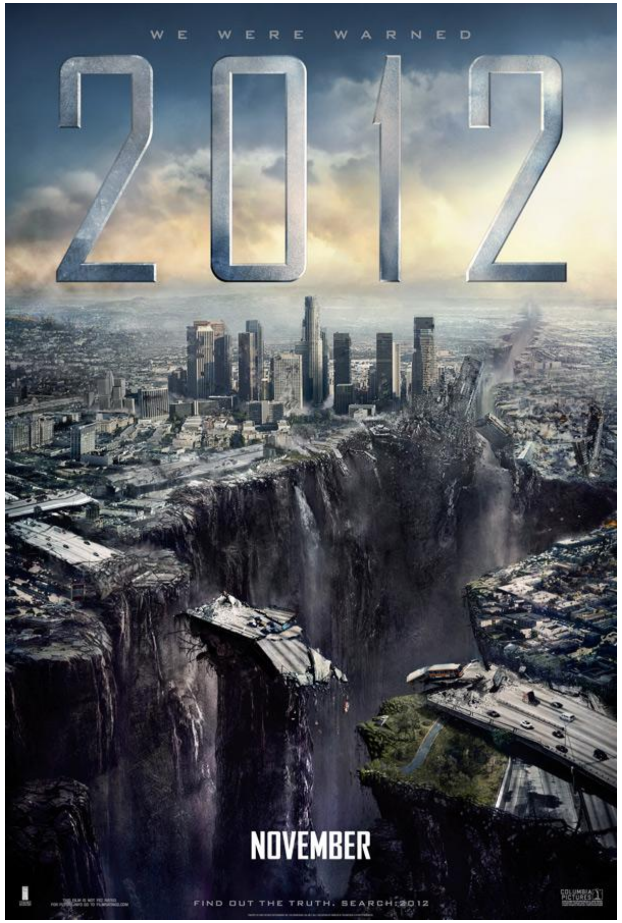
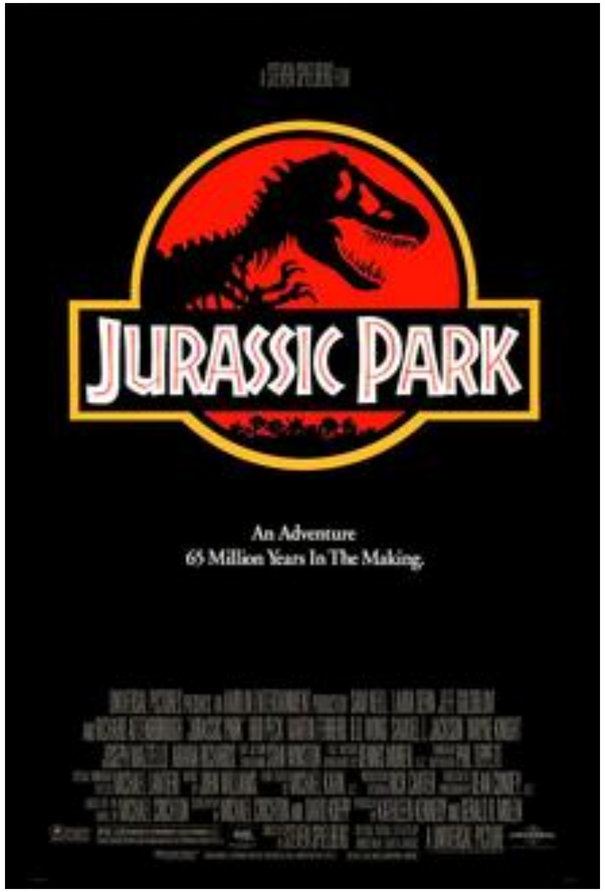
What kind of movies?



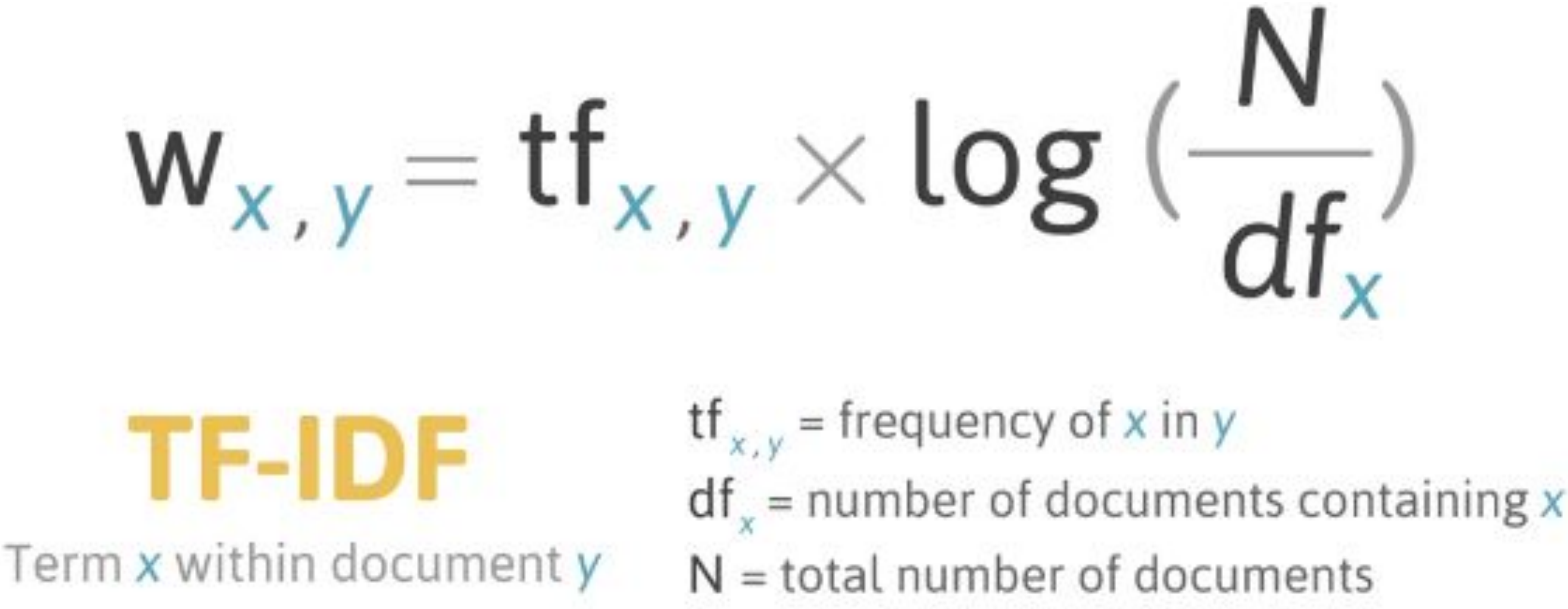
Title : **2012**
(Roland Emmerich)



Title : **Jurassic Park**
(Steven Allan Spielberg)

classifier

- I use TF-IDF



$$w_{x,y} = tf_{x,y} \times \log\left(\frac{N}{df_x}\right)$$

TF-IDF

Term x within document y

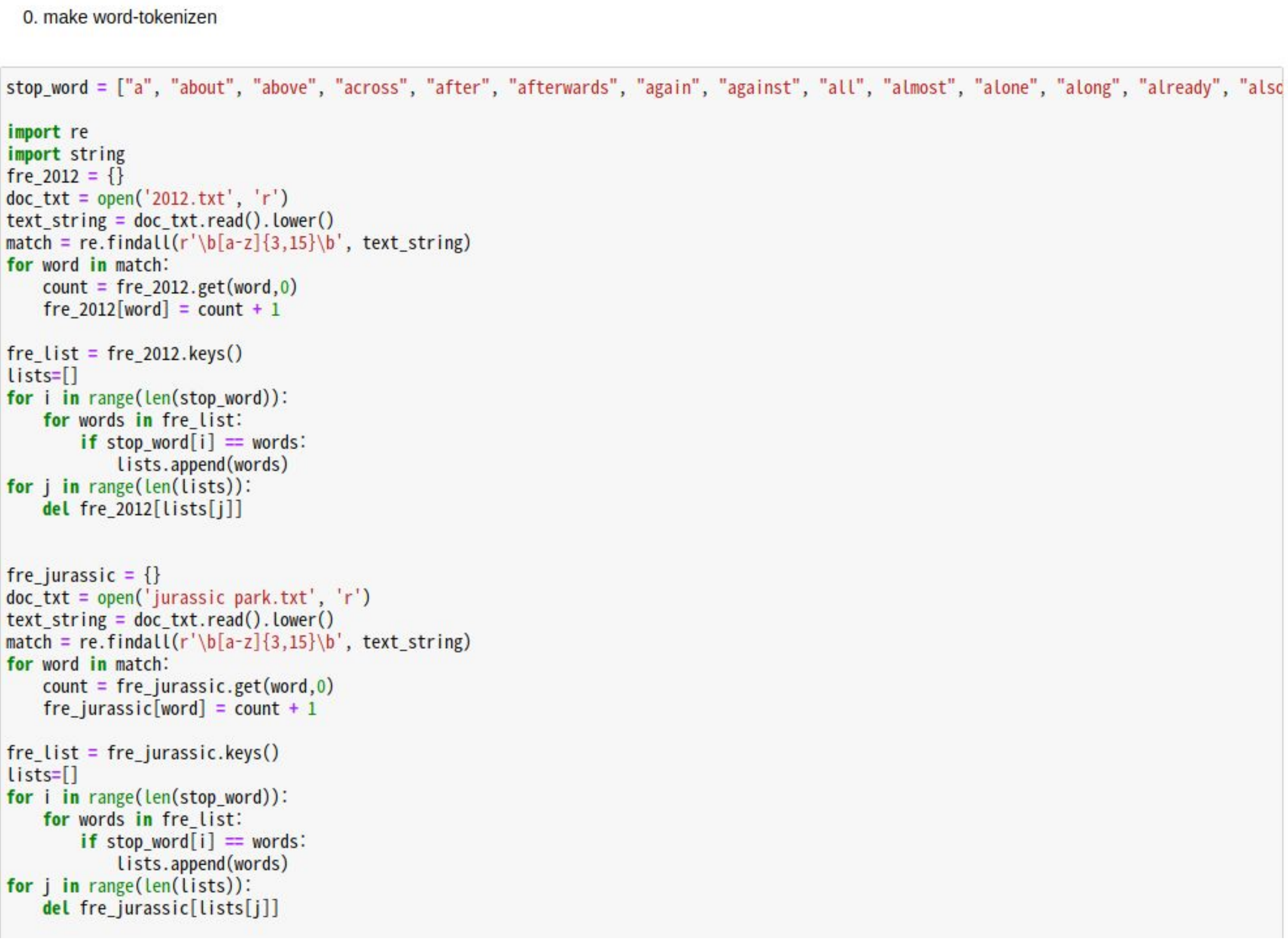
$tf_{x,y}$ = frequency of x in y

df_x = number of documents containing x

N = total number of documents

Code Explanation – word tokenize

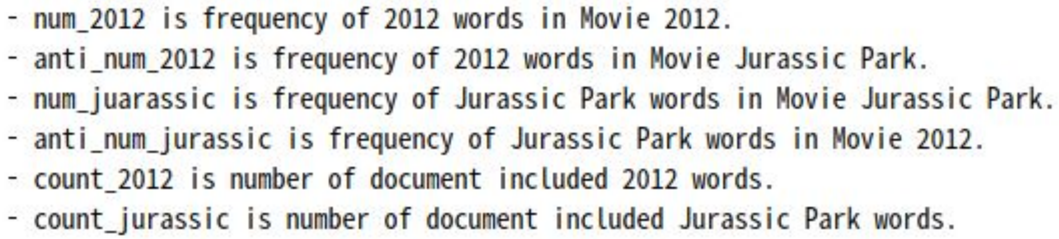
From Assignment 1



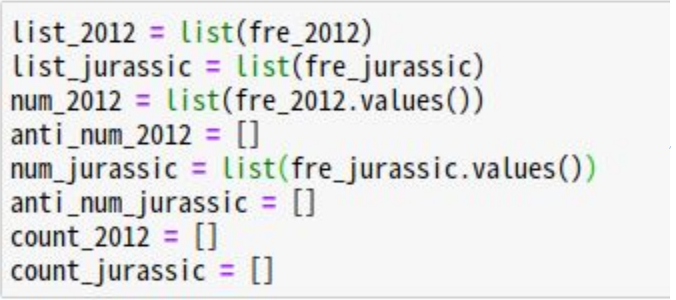
0. make word-tokenizen

```
stop_word = ["a", "about", "above", "across", "after", "afterwards", "again", "against", "all", "almost", "alone", "along", "already", "als

import re
import string
fre_2012 = {}
doc_txt = open('2012.txt', 'r')
text_string = doc_txt.read().lower()
match = re.findall(r'\b[a-z]{3,15}\b', text_string)
for word in match:
    count = fre_2012.get(word,0)
    fre_2012[word] = count + 1

fre_list = fre_2012.keys()
lists=[]
for i in range(len(stop_word)):
    for words in fre_list:
        if stop_word[i] == words:
            lists.append(words)
for j in range(len(lists)):
    del fre_2012[lists[j]]


fre_jurassic = {}
doc_txt = open('jurassic park.txt', 'r')
text_string = doc_txt.read().lower()
match = re.findall(r'\b[a-z]{3,15}\b', text_string)
for word in match:
    count = fre_jurassic.get(word,0)
    fre_jurassic[word] = count + 1

fre_list = fre_jurassic.keys()
lists=[]
for i in range(len(stop_word)):
    for words in fre_list:
        if stop_word[i] == words:
            lists.append(words)
for j in range(len(lists)):
    del fre_jurassic[lists[j]]
```

Code Explanation – parameter’s meaning

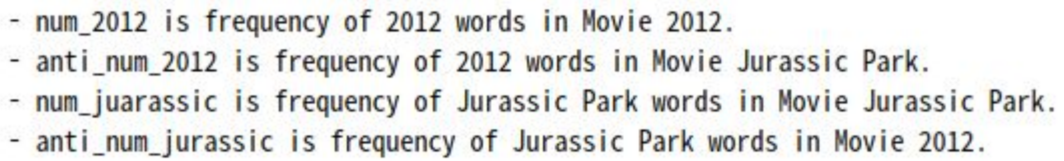


- num_2012 is frequency of 2012 words in Movie 2012.
- anti_num_2012 is frequency of 2012 words in Movie Jurassic Park.
- num_juarassic is frequency of Jurassic Park words in Movie Jurassic Park.
- anti_num_jurassic is frequency of Jurassic Park words in Movie 2012.
- count_2012 is number of document included 2012 words.
- count_jurassic is number of document included Jurassic Park words.

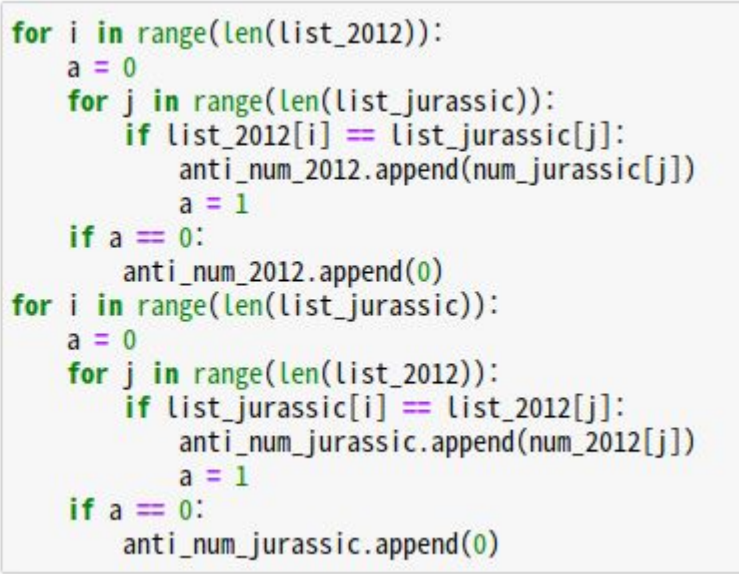


```
list_2012 = list(fre_2012)
list_jurassic = list(fre_jurassic)
num_2012 = list(fre_2012.values())
anti_num_2012 = []
num_jurassic = list(fre_jurassic.values())
anti_num_jurassic = []
count_2012 = []
count_jurassic = []
```

Code Explanation – parameter’s meaning

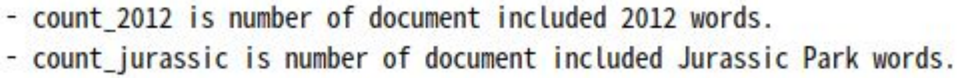


- num_2012 is frequency of 2012 words in Movie 2012.
- anti_num_2012 is frequency of 2012 words in Movie Jurassic Park.
- num_juarassic is frequency of Jurassic Park words in Movie Jurassic Park.
- anti_num_jurassic is frequency of Jurassic Park words in Movie 2012.

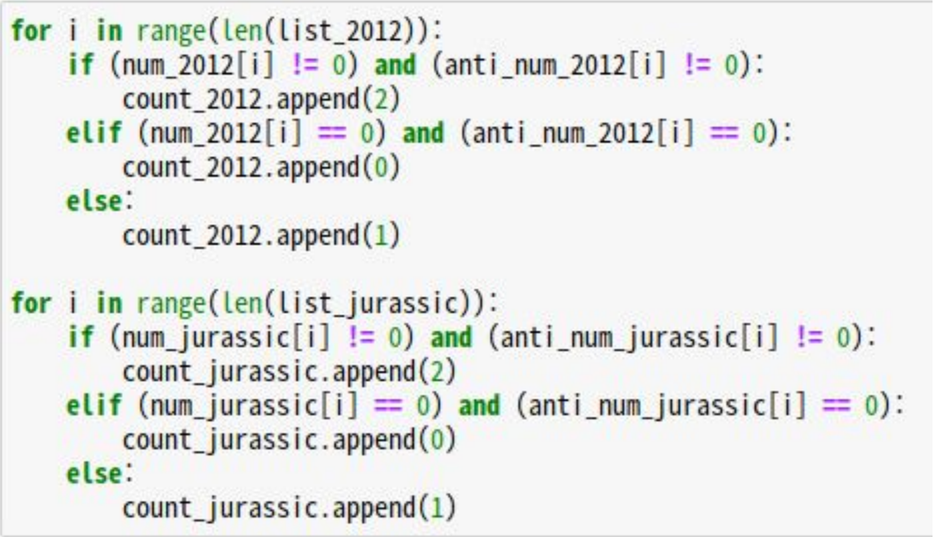


```
for i in range(len(list_2012)):
    a = 0
    for j in range(len(list_jurassic)):
        if list_2012[i] == list_jurassic[j]:
            anti_num_2012.append(num_jurassic[j])
            a = 1
    if a == 0:
        anti_num_2012.append(0)
for i in range(len(list_jurassic)):
    a = 0
    for j in range(len(list_2012)):
        if list_jurassic[i] == list_2012[j]:
            anti_num_jurassic.append(num_2012[j])
            a = 1
    if a == 0:
        anti_num_jurassic.append(0)
```

Code Explanation – parameter’s meaning



- count_2012 is number of document included 2012 words.
- count_jurassic is number of document included Jurassic Park words.



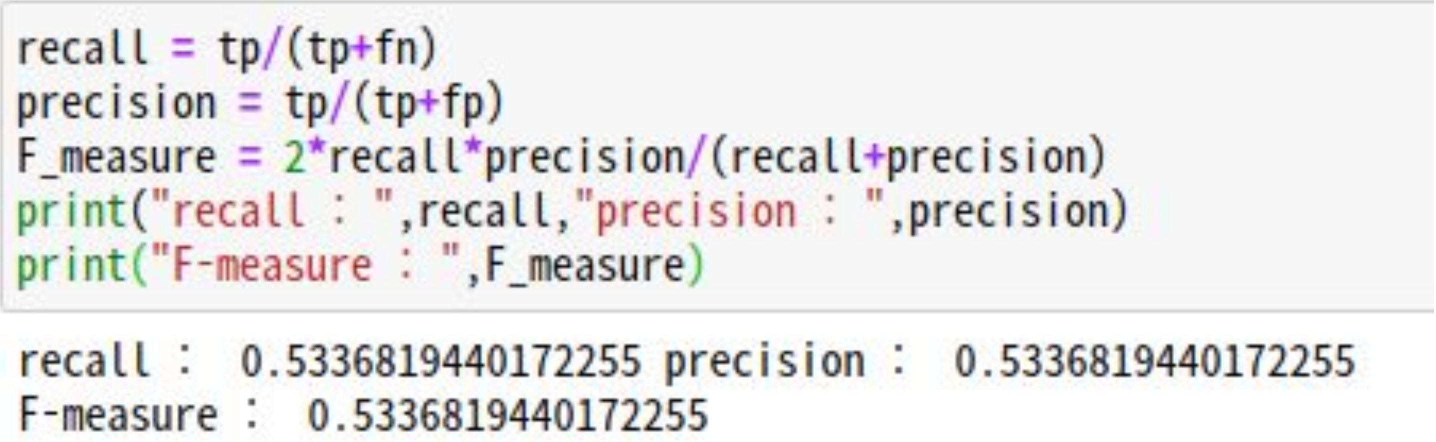
```
for i in range(len(list_2012)):
    if (num_2012[i] != 0) and (anti_num_2012[i] != 0):
        count_2012.append(2)
    elif (num_2012[i] == 0) and (anti_num_2012[i] == 0):
        count_2012.append(0)
    else:
        count_2012.append(1)

for i in range(len(list_jurassic)):
    if (num_jurassic[i] != 0) and (anti_num_jurassic[i] != 0):
        count_jurassic.append(2)
    elif (num_jurassic[i] == 0) and (anti_num_jurassic[i] == 0):
        count_jurassic.append(0)
    else:
        count_jurassic.append(1)
```

Evaluate

- Before F-measure, I assume that I find **movie 2012** using both scripts. so **relevent document is 2012** and **non-relevent document is Jurassic Park.**

F-measure

- By above code, now we know TF, N, DF.
- -> so we can calculate TF-IDF like TF * log(N/DF).
- And then we can calculate F-measure like this.



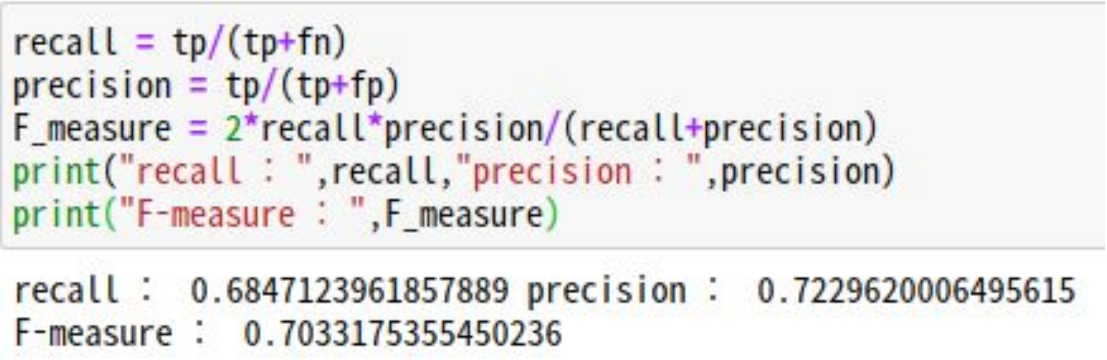
```python
recall = tp/(tp+fn)
precision = tp/(tp+fp)
F_measure = 2*recall*precision/(recall+precision)
print("recall : ",recall,"precision : ",precision)
print("F-measure : ",F_measure)
```

```
recall :  0.5336819440172255 precision :  0.5336819440172255
F-measure :  0.5336819440172255
```

Conclusion

- First, I use all words in both movie script. So F-measure isn’t good. When you only use words of high frequency, then you can measure high F-measure.
- And then, I use only two movie script. So when there some words in both script, their tf-idf will be 0.

If N>2



```
recall = tp/(tp+fn)
precision = tp/(tp+fp)
F_measure = 2*recall*precision/(recall+precision)
print("recall : ",recall,"precision : ",precision)
print("F-measure : ",F_measure)
```

```
recall :  0.6847123961857889 precision :  0.7229620006495615
F-measure :  0.7033175355450236
```

It means when I use N+1,instead N, then tf-idf won’t 0, so I can get more better F-measure.

thanks