CS 6375 ASSIGNMENT 2

Names of students in your group: Aditya Kulkarni (axk230069@utdallas.edu)

Number of free late days used:	0	
Note: You are allowed a total of 4 free late days for	the entire semester.	You can use at most 2

for each assignment. After that, there will be a penalty of 10% for each late day.

Please list clearly all the sources/references that you have used in this assignment.

Report:

1. Data File Used

From the given data, we are using "gdnhealthcare.txt" file. The file has 2997 samples.

Format of file: <id>|<date time information>|<tweet>

The tweets contain URLs, hashtags, and user ids.

Note: any other data file can be used in the same code via command line argument.

2. Pre-Processing

For pre-processing the data we have used simple string functions like replace(), split() and strip(), as well as regular expressions for removing URLs and other symbols.

```
i. Remove the tweet id and timestamp.
20 delim = lines[i].split("|")[2:]
21 lines[i] = " | ".join(delim)
```

ii. Remove any word that starts with the symbol @ e.g. @AnnaMedaris.

```
24 lines[i] = " ".join(filter(lambda x: x[0] != '@', lines[i].split()))
```

- iii. Remove any hashtag symbols e.g. convert #depression to depression.
 27 lines[i] = lines[i].replace('#', '')
- iv. Remove any URL.

```
v. Convert every word to lowercase.
35          lines[i] = lines[i].lower()
vi. Removed all punctuations and other symbols.
38          lines[i] = re.sub('[^A-Za-z0-9]+', '', lines[i])
39          lines[i] = " ".join(lines[i].split())
```

3. Results

The results are generated on a single file.

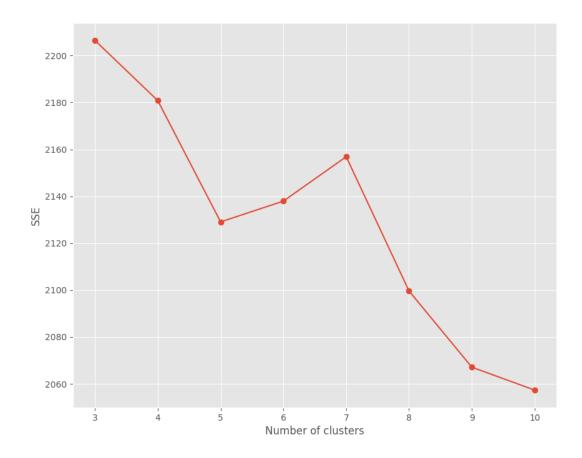
Jaccard distance is used to calculate distance between two sentences:

```
72 def jaccard_distance(t1, t2):

73 return 1 - (len(set(t1).intersection(t2)) /

74 len(set().union(t1, t2)))
```

For experiments, we have set value of k from 3 to 10. The SSE and cluster distribution is noted below:



Cluster 0 Length: 1069	_	k	SSE	Clusters
Cluster 2 Length: 327 Cluster 0 Length: 583 Cluster 1 Length: 796 Cluster 2 Length: 401 Cluster 3 Length: 1060 Cluster 3 Length: 1060 Cluster 3 Length: 1060 Cluster 1 Length: 392 5 2129.08 Cluster 1 Length: 392 Cluster 4 Length: 431 Cluster 3 Length: 431 Cluster 4 Length: 528 Cluster 1 Length: 528 Cluster 1 Length: 528 Cluster 2 Length: 296 Cluster 3 Length: 296 Cluster 4 Length: 553 Cluster 5 Length: 254 Cluster 1 Length: 79 Cluster 1 Length: 79 Cluster 2 Length: 167 7 2156.88 Cluster 3 Length: 828 Cluster 4 Length: 607 Cluster 6 Length: 221 Cluster 6 Length: 221 Cluster 1 Length: 308 Cluster 1 Length: 308 Cluster 1 Length: 73 Cluster 5 Length: 255 Cluster 6 Length: 265 Cluster 6 Length: 265 Cluster 7 Length: 173 Cluster 6 Length: 173 Cluster 7 Length: 1027 Cluster 1 Length: 51 Cluster 1 Length: 53 Cluster 1 Length: 33 Cluster 6 Length: 245 Cluster 6 Length: 245 Cluster 7 Length: 33 Cluster 8 Length: 33 Cluster 8 Length: 33 Cluster 9 Length: 33 Cluster 1 Length: 33 Cluster 4 Length: 33 Cluster 1 Length: 33 Cluster 1 Length: 33 Cluster 4 Length: 33 Cluster 5 Length: 33 Cluster 5 Length: 33 Cluster 6 Length: 33 Cluster 6 Length: 33 Cluster 7 Length: 33 Cluster 8 Length: 33 Cluster 9 Lengt				Cluster 0 Length: 1069
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