

# Customer complaints analysis

## Importing Python libraries

```
In [1]: import numpy as np
import pandas as pd
pd.options.display.max_rows = 2000
import time
import emoji

from collections import defaultdict

from sklearn.feature_extraction.text import CountVectorizer, TfidfVectorizer
from sklearn.decomposition import LatentDirichletAllocation, TruncatedSVD

!python -m pip install -U pip setuptools wheel
!python -m pip install -U spacy
!python -m spacy download en_core_web_sm
import spacy
from spacy.lang.en.stop_words import STOP_WORDS

import gensim
from gensim.models import HdpModel

!python -m pip install tomotopy
import tomotopy as tp

from IPython.display import Markdown as md
```

Requirement already satisfied: pip in c:\apps\anaconda\lib\site-packages (23.3.2)

Requirement already satisfied: setuptools in c:\apps\anaconda\lib\site-packages (69.0.3)

Requirement already satisfied: wheel in c:\apps\anaconda\lib\site-packages (0.42.0)

Requirement already satisfied: spacy in c:\apps\anaconda\lib\site-packages (3.7.2)

Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in c:\apps\anaconda\lib\site-packages (from spacy) (3.0.11)

Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in c:\apps\anaconda\lib\site-packages (from spacy) (1.0.4)

Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\apps\anaconda\lib\site-packages (from spacy) (1.0.9)

Requirement already satisfied: cymem<2.1.0,>=2.0.2 in c:\apps\anaconda\lib\site-packages (from spacy) (2.0.7)

Requirement already satisfied: preshed<3.1.0,>=3.0.2 in c:\apps\anaconda\lib\site-packages (from spacy) (3.0.8)

Requirement already satisfied: thinc<8.3.0,>=8.1.8 in c:\apps\anaconda\lib\site-packages (from spacy) (8.2.2)

Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in c:\apps\anaconda\lib\site-packages (from spacy) (0.10.1)

Requirement already satisfied: srsly<3.0.0,>=2.4.3 in c:\apps\anaconda\lib\site-packages (from spacy) (2.4.5)

Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in c:\apps\anaconda\lib\site-packages (from spacy) (2.0.8)

Requirement already satisfied: weasel<0.4.0,>=0.1.0 in c:\apps\anaconda\lib\site-packages (from spacy) (0.3.4)

Requirement already satisfied: typer<0.10.0,>=0.3.0 in c:\apps\anaconda\lib\site-packages (from spacy) (0.7.0)

Requirement already satisfied: smart-open<7.0.0,>=5.2.1 in c:\apps\anaconda\lib\site-packages (from spacy) (5.2.1)

Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in c:\apps\anaconda\lib\site-packages (from spacy) (4.64.1)

Requirement already satisfied: requests<3.0.0,>=2.13.0 in c:\apps\anaconda\lib\site-packages (from spacy) (2.28.1)

Requirement already satisfied: pydantic!=1.8,!<1.8.1,<3.0.0,>=1.7.4 in c:\apps\anaconda\lib\site-packages (from spacy) (1.10.4)

Requirement already satisfied: jinja2 in c:\apps\anaconda\lib\site-packages (from spacy) (2.11.3)

Requirement already satisfied: setuptools in c:\apps\anaconda\lib\site-packages (from spacy) (69.0.3)

Requirement already satisfied: packaging>=20.0 in c:\apps\anaconda\lib\site-packages (from spacy) (21.3)

Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in c:\apps\anaconda\lib\site-packages (from spacy) (3.3.0)

Requirement already satisfied: numpy>=1.19.0 in c:\apps\anaconda\lib\site-packages (from spacy) (1.21.5)

Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in c:\apps\anaconda\lib\site-packages (from packaging>=20.0->spacy) (3.0.9)

Requirement already satisfied: typing-extensions>=4.2.0 in c:\apps\anaconda\lib\site-packages (from pydantic!=1.8,!<1.8.1,<3.0.0,>=1.7.4->spacy) (4.3.0)

Requirement already satisfied: charset-normalizer<3,>=2 in c:\apps\anaconda\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (2.0.4)

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Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\apps\anaconda\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (1.26.11)

Requirement already satisfied: certifi>=2017.4.17 in c:\apps\anaconda\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (2022.9.14)

Requirement already satisfied: blis<0.8.0,>=0.7.8 in c:\apps\anaconda\lib\site-packages (from thinc<8.3.0,>=8.1.8->spacy) (0.7.9)

Requirement already satisfied: confection<1.0.0,>=0.0.1 in c:\apps\anaconda\lib\site-packages (from thinc<8.3.0,>=8.1.8->spacy) (0.0.4)

Requirement already satisfied: colorama in c:\apps\anaconda\lib\site-packages (from tqdm<5.0.0,>=4.38.0->spacy) (0.4.5)

Requirement already satisfied: click<9.0.0,>=7.1.1 in c:\apps\anaconda\lib\site-packages (from typer<0.10.0,>=0.3.0->spacy) (8.0.4)

Requirement already satisfied: cloudpathlib<0.17.0,>=0.7.0 in c:\apps\anaconda\lib\site-packages (from weasel<0.4.0,>=

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0.1.0->spacy) (0.16.0)
Requirement already satisfied: MarkupSafe>=0.23 in c:\apps\anaconda\lib\site-packages (from jinja2->spacy) (2.0.1)
Collecting en-core-web-sm==3.7.1
  Downloading https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-3.7.1/en_core_web_sm-3.7.1-py3-none-any.whl (12.8 MB)
----- 12.8/12.8 MB 1.4 MB/s eta 0:00:00
Requirement already satisfied: spacy<3.8.0,>=3.7.2 in c:\apps\anaconda\lib\site-packages (from en-core-web-sm==3.7.1) (3.7.2)
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Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.0.9)
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Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.0.8)
Requirement already satisfied: weasel<0.4.0,>=0.1.0 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.3.4)
Requirement already satisfied: typer<0.10.0,>=0.3.0 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.7.0)
Requirement already satisfied: smart-open<7.0.0,>=5.2.1 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (5.2.1)
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Requirement already satisfied: pydantic!=1.8,!<1.8.1,<3.0.0,>=1.7.4 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.10.4)
Requirement already satisfied: jinja2 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.11.3)
Requirement already satisfied: setuptools in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (69.0.3)
Requirement already satisfied: packaging>=20.0 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (21.3)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2-

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>en-core-web-sm==3.7.1) (3.3.0)
Requirement already satisfied: numpy>=1.19.0 in c:\apps\anaconda\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.21.5)
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Requirement already satisfied: typing-extensions>=4.2.0 in c:\apps\anaconda\lib\site-packages (from pydantic!=1.8,!<1.8.1,<3.0.0,>=1.7.4->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (4.3.0)
Requirement already satisfied: charset-normalizer<3,>=2 in c:\apps\anaconda\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in c:\apps\anaconda\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (3.3)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\apps\anaconda\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.26.11)
Requirement already satisfied: certifi>=2017.4.17 in c:\apps\anaconda\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2022.9.14)
Requirement already satisfied: blis<0.8.0,>=0.7.8 in c:\apps\anaconda\lib\site-packages (from thinc<8.3.0,>=8.1.8->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.7.9)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in c:\apps\anaconda\lib\site-packages (from thinc<8.3.0,>=8.1.8->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.0.4)
Requirement already satisfied: colorama in c:\apps\anaconda\lib\site-packages (from tqdm<5.0.0,>=4.38.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.4.5)
Requirement already satisfied: click<9.0.0,>=7.1.1 in c:\apps\anaconda\lib\site-packages (from typer<0.10.0,>=0.3.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (8.0.4)
Requirement already satisfied: cloudpathlib<0.17.0,>=0.7.0 in c:\apps\anaconda\lib\site-packages (from weasel<0.4.0,>=0.1.0->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (0.16.0)
Requirement already satisfied: MarkupSafe>=0.23 in c:\apps\anaconda\lib\site-packages (from jinja2->spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (2.0.1)
[+] Download and installation successful
You can now load the package via spacy.load('en_core_web_sm')
Requirement already satisfied: tomotopy in c:\apps\anaconda\lib\site-packages (0.12.5)
Requirement already satisfied: numpy>=1.11.0 in c:\apps\anaconda\lib\site-packages (from tomotopy) (1.21.5)

```

---

## Importing complaints data from the CSV file

---

### Arizona complaints text

```

In [2]: # Importing the 'complaints_text_arizona' column from the arizona_massachusetts_comcast_complaints CSV file containing
# complaints text from Arizona

```

```
customer_complaints_arizona = pd.read_csv("arizona_massachusetts_comcast_complaints.csv",
                                           usecols=["complaints_text_arizona"])
```

In [3]: *# Displaying the first five rows of the customer complaints from Arizona*

```
customer_complaints_arizona.head()
```

Out[3]:

**complaints\_text\_arizona**

- |   | complaints_text_arizona                           |
|---|---|
| 0 | First off, I've been without internet for a we... |
| 1 | So, after having gone over Comcast's measly 30... |
| 2 | After 8 years I was very disappointed with my ... |
| 3 | This is one company you do not want to deal wi... |
| 4 | Okay, I had this technician come out about 2 w... |

In [4]: *# Total number of complaints from Arizona*

```
print(".....\n",
      "Total number of rows from Arizona is: ", len(customer_complaints_arizona),
      "\n.....\n")

# Filtering the complaints data to display only the rows containing a complaint and removing any empty/null rows

customer_complaints_arizona=customer_complaints_arizona[pd.notnull(customer_complaints_arizona['complaints_text_arizona'])]
number_of_non_null_rows = customer_complaints_arizona.shape[0]
print("The total number of rows after removing null entries is: ", str(number_of_non_null_rows),
      "\n.....\n")
print(customer_complaints_arizona[slice(5)]) # Displaying the first 5 rows for Arizona
```

```
.....
Total number of rows from Arizona is: 138
.....

The total number of rows after removing null entries is: 17
.....
```

```

                                complaints_text_arizona
0  First off, I've been without internet for a we...
1  So, after having gone over Comcast's measly 30...
2  After 8 years I was very disappointed with my ...
3  This is one company you do not want to deal wi...
4  Okay, I had this technician come out about 2 w...
```

### Massachusetts complaints text

```
In [5]: # Importing the 'complaints_text_massachusetts' column from the arizona_massachusetts_comcast_complaints CSV file
        # containing the complaints text from Massachusetts
```

```
customer_complaints_massachusetts = pd.read_csv("arizona_massachusetts_comcast_complaints.csv",
                                                usecols=["complaints_text_massachusetts"])
```

```
In [6]: # Displaying the first five rows of the customer complaints from Massachusetts
```

```
customer_complaints_massachusetts.head()
```

```
Out[6]:
```

**complaints\_text\_massachusetts**

```

0  Had Comcast. Overall the terrible experience e...
1  I was experiencing some technical difficulties...
2  Consistently, with the last couple of weeks (a...
3  Been dealing with a nightmare at Comcast for a...
4  I signed up for a one day pass with XFINITY wh...
```

```
In [7]: # Total number of complaints from Massachusetts
```

```
print(".....\n",
      "Total number of rows from Massachusetts is: ", len(customer_complaints_massachusetts),
      "\n.....\n")
```

```
# Filtering the complaints data to display only the rows containing a complaint and removing any empty/null rows

customer_complaints_massachusetts = customer_complaints_massachusetts[pd.notnull(
    customer_complaints_massachusetts['complaints_text_massachusetts'])]

number_of_non_null_rows = customer_complaints_massachusetts.shape[0]
print("The total number of rows after removing null entries is: ", str(number_of_non_null_rows),
      "\n.....\n")
print(customer_complaints_massachusetts[slice(5)])    # Displaying the first 5 rows for Massachusetts

.....
Total number of rows from Massachusetts is: 138
.....

The total number of rows after removing null entries is: 138
.....

               complaints_text_massachusetts
0  Had Comcast. Overall the terrible experience e...
1  I was experiencing some technical difficulties...
2  Consistently, with the last couple of weeks (a...
3  Been dealing with a nightmare at Comcast for a...
4  I signed up for a one day pass with XFINITY wh...
```

---

## Implementing the Bag-of-words(BoW) technique using spaCy and sklearn

---

### Creating a list of complaints from the imported data

```
In [8]: # Creating a list of complaints for each U.S. state respectively

arizona_complaints_list = customer_complaints_arizona.complaints_text_arizona.values.tolist()
massachusetts_complaints_list = customer_complaints_massachusetts.complaints_text_massachusetts.values.tolist()

# Printing first 5 complaints from Arizona
print("Arizona customer complaints: \n")
print(arizona_complaints_list[:5])

# Printing first 5 complaints from Massachusetts
print("\n*2, "Massachusetts customer complaints: \n")
print(massachusetts_complaints_list[:5])
```





## Arizona customer complaints:

['First off, I\'ve been without internet for a week and on demand for a week as well. So I call the second day after no thing worked the first day to schedule a visit and the automated system kept saying that there was an outage in my area and it\'ll be resolved by 12:36. So I call later that afternoon and tell them and they try to send signals to the modem or whatever and it wouldn\'t work. So we scheduled a visit for that Friday between 10-12. Mind you that the first optio n they gave me was for the following freaking Monday and I said HECK NO that is way too long, I have a business to run. So the guy came on Friday at 1:30 NOT between 10-12 because I saw him pull up, he sat there for like 20 minutes and whe n I looked again he was freaking gone! So now I\'m a little hot, so I call and ask what the heck is going on and why\'d he just leave and the lady said, "Well there\'s another outage in your area and he wouldn\'t have been able to do anyth ing but he should have at least came to your door and told you but he didn\'t". So later we rescheduled another appoint ment for Sunday between 3-4 and confirmed it. So I don\'t go to church. I\'m here waiting on them to come and it\'s 4 an d all call like, "Where are you guys?" And this lady on the phone tells me that it has been rescheduled for freaking Tu esday! I\'m like WTF! Seriously! How the heck can you just do that?!! She said that after further checking for like 10 mins that the local office called to reschedule but no one picked up so we couldn\'t confirm. I was like, "But you just said it\'s scheduled for Tuesday so how the heck did you confirm that if no one picked up?" They didn\'t call by the wa y. So you just don\'t come?? You cancel it on your own and don\'t freaking show up?!! She said "yes ma\'am that\'s corr ect..." So I\'m pissed by now and then she says that someone will call me back by 6 with a rescheduled... No one has ca lled!!! This isn\'t the first time something like this has happened... But I can guarantee it\'ll be the last... I\'M G OING WITH DIRECT!!! 🙌', 'So, after having gone over Comcast\'s measly 300Gb data cap for a full year, I call up to ca ncel. I\'m transferred to customer retention, where I explain my problem. Which is: I signed up for unlimited Internet. You changed the unlimited to limited because you don\'t like people streaming Netflix or downloading video games or you know, any of the 1000s of reasons people have for using the Internet. This wonderful customer retention specialist tell s me he can give me a 500gb data cap and free HBO for a year. Wow. And just the month before I called to see about gett ing a higher package but was told that 300gb is the highest limit for residential customers. Whatever. Maybe they chang ed their mind. I took it. First month after that, no problems. Second month, my bill comes in and sure enough, I\'m bei ng charged for data overages. Called up Comcast again. 45 minute wait time. Just to be told that I was never signed up for any 500gb data cap plan, that the month where I wasn\'t charged for overages was a month where they had given me a "pass"...one of three months allotted for customers who go over their data allotment. I\'ve been going over my data pla n for two years straight. I used those three months up the first three months they began instituting data caps. Liars. That\'s all these people do. Say something to get you off the phone and let someone else deal with you later. From now on, I\'ll record every call I have with these thieving liars and I urge everyone else to do the same. And when you catc h them, post it where people can see.', "After 8 years I was very disappointed with my recent experience with Comcast/X finity. I contacted the company about transferring my service because the Commercial assured me that they could make mo ving easy. To me this was really false advertisement. Despite contacting xfinity in advance, I received two different a ppointments, which required me to be present both days and when day 1 arrived No one showed up or even gave courtesy of calling. On day 2 service personnel was an hour late and when he arrived he told me he needed additional help and would not be available for another week. No one took me serious. It's almost like the company treated me as if I wasn't big e nough for them to show concern.", "This is one company you do not want to deal with. We got Comcast the middle of July and the first bill came in around the first of August for 200\$. That's with no extra charges. There is not one person th at I talked to that has not lied to me. Since July I've had my cable shut off twice after agreeing to pay them 103\$ on August 31. They were the one that told me to pay that amount not me. Every time I talk to someone they tell me somethin g different. I've asked them to listen to our conversations but they won't. This company has put me through so much cra p. It's unbelievable. Like I said there has not been one person that works for Comcast that has not lied to me. If yo u're looking for a honest and reputable company then Comcast is not the one. Comcast is the most crooked company I have

ever met.", 'Okay, I had this technician come out about 2 weeks ago to hook up my Xfinity voice and internet service. He goes out back and sees my small garden blocking the area he had to work. So instead of avoiding my plants, this fool pulls up my wooden border and tosses it in the yard. He also stomped on all my plants like they weren't there. The wooden border is heavy with about 3 or 4 large nails sticking out. The thing was in my yard with the nails up... Anyone could have come through and stepped on it or tripped on the log. My son is the one who found it and informed me after he had left. Also, before he finished work at my house and before my son discovered the mess made outside, he left and said he had to go elsewhere to finish another job then come back to my house. He left and came back 45 minutes later then had the nerve to sit on my couch for 10-15 minutes saying he had to wait until a certain time to "clock in". WTF? So, you're gonna sit in my house watching TV until it's time to work? Really? I called Comcast and filed a complaint. I was told I would hear something after Memorial Day. I still haven't and I don't think I will because they just don't give a damn. But they had my bill posted to the account 2 days later.']

#### Massachusetts customer complaints:

[I had Comcast. Overall the terrible experience everyone else is describing but there was no other provider in my area at the time, so we just dealt with it. Ultimately moved out of my apartment to an area that was serviced by other providers, so I called to cancel my account. Took forever, but finally get through, and take my hardware back to the store. KEEP YOUR RECEIPT. Had to deal with a debt collector for 9 months claiming I owed money for not returning the hardware. Luckily I had physical proof. I honestly would have just paid the \$60 or whatever it was if I wasn't sure they'd just keep calling. Would deny liability, it would get kicked to a different debt collection agency, someone new would call me a few months later. FINALLY went away, but I will never use Comcast again. The best part is that when I'd call for customer service, they would "accidentally" disconnect my call. HINT: If you want to cancel services or complain, choose the option on the customer service menu for "add more services." They'll connect you to an agent immediately and you can ultimately get them to connect you to the right department directly. They'll probably still disconnect you a few times though.', 'I was experiencing some technical difficulties with my on demand service in June. Technical support solution to this problem was to reset my box. After a couple of attempts they seemed to have the system up and running. The support rep asked me if I was able to access any movies. I said yes. He said "you're all set". This problem happened again in July. They redid the whole previous process again. Again telling me it's all set. In August my fiance called regarding an entirely different issue, went to automated system, told him his account balance was almost \$500.00. We thought that had to be a mistake. After speaking with the billing dept we found out there was over 100 on-demand movies ordered in 1 month. I was really confused due to I had a lock on the service & a code would be needed to make any purchase. I did not give anyone this code. Apparently, when tech support reset my boxes it wiped out all of my parental settings. So, my 5 yr old son was able to order anything he wanted to watch. A little over 100 movies and episodes. I made 5 phone calls about this issue in the following 2 days. Comcast/Xfinity refused to remove the charges saying the movies and episodes were watched. The supervisor I requested to speak to never called me back. Finally I spoke to a rep that reviewed the account and got a supposed supervisor to approve a credit to my account due to our history not showing these sort of purchases before or any incidences like this. She went on to say she would need to split the credit into 2 due to it exceeding her credit applying limit. She thanked me for being a loyal customer and we hung up. Well, after making a payment earlier this week I come home to find my service interrupted. It was too late to speak to anyone at 9:30 pm so I called the following afternoon. Only to find out after we hung up after that call in August, there was a so called review which lead to someone determining the credits would not be applied to my account due to the movies and episodes we're all watch. Even though their technical support wiped out my parental settings and told me I was all set. I am so dissatisfied with this whole experience I am returning my equipment. I will never be a Comcast/Xfinity customer ever again.', 'Consistently, with the last couple of weeks (at least), I have had slow web page loading, download and upload spe

ed, and poor reliability of packet/datagram transmission. I feel that they intentionally misrepresent their operational products and should be held accountable. Their patronizing customer service is apparently part of their policy to placate to cover for poor performance.', "Been dealing with a nightmare at Comcast for at least 3 years now. I pay \$90 a month for high-speed internet and receive half the speed I pay for. I have to keep calling there for them to turn my internet speed up. Then my service works good for a few days and it's right back down again. I've been through modems, wireless internet boxes, and still nothing but problems. They are no doubt in my mind throttling back on internet service.", "I signed up for a one day pass with XFINITY when I was back in Boston. The password wasn't working even after resetting it so I called the number on the email. The customer service person forwarded me to the technical support person who then forwarded me to the Wi-Fi department who then forwarded me to someone that suggested that I call the number that I first called!!! After complaining that I was being sent in circles one guy tried to help by calling the initial number. Never got this resolved. I DO NOT suggest using their one day service. Find another carrier."]

## Using spaCy

```
In [9]: # Setting up the natural language processing/NLP pipeline

nlp = spacy.load("en_core_web_sm")    # Loading the "en_core_web_sm" language model due to its efficiency
stop_words = STOP_WORDS               # Storing default spaCy stopwords under variable name 'stop_words'
print("The stopwords are: <", len(stop_words), ">\n", stop_words, "\n\n")
# Adding more words to the stopwords list
nlp.Defaults.stop_words |= {"gb", "heck", "oh", "wtf", "go", "will", "january", "february", "march", "april", "may",
                             "june", "july", "august", "september", "october", "november", "december", "saturday", "sunday",
                             "monday", "tuesday", "wednesday", "thursday", "friday", "yr", "m", "mp", "s", "e", "ma", "o", "n",
                             "non", "asap", "ss", "dont", "gc", "etc"}
print("The updated stopwords are: <", len(stop_words), ">\n", stop_words, "\n\n")
stop_words_list = list(stop_words) # Creating a list of stopwords

# for word in stop_words: # Printing stopwords and whether they are considered as stopwords
#     lexeme = nlp.vocab[word]
#     print(lexeme.text, lexeme.is_stop)

# Defining a function to remove 'unwanted' words from the processed text and add unwanted words to a list of removed words

def remove_unnecessary_words(main_list, stopwords, words_removed_list, list_of_processed_tokens,
                             list_of_processed_text, list_of_lists_processed_text):

    for unwanted_word in main_list[:]:
        if unwanted_word in stopwords:
            #print("The removed word is: ", unwanted_word, "\n\n")
```

```
main_list.remove(unwanted_word)

if unwanted_word not in words_removed_list:
    words_removed_list.append(unwanted_word)
else:
    continue
else:
    continue

print("Updated list of length <", len(main_list), "> : ", main_list)
list_of_processed_tokens.append(main_list) # Processed complaint tokens are stored as a list in processed tokens list
# print("List of processed tokens length: ", len(list_of_processed_tokens), "\n\n")
joint_text_str = " ".join(main_list) # Creating a string by joining the processed tokens
list_of_processed_text.append(joint_text_str) # String of processed tokens is added to list of processed text
list_of_lists_processed_text.append([joint_text_str]) # String of processed tokens is stored as a list of lists
```

The stopwords are: < 326 >

{'down', 'already', 'sometime', 'out', 'are', 'seems', 'really', 'becomes', 'could', 'through', 'an', 'these', 'noon', 'e', 'thru', 'whose', 'by', 'first', 'it', 'along', 'via', 'because', 'hence', 'where', 'back', 'alone', 'as', 'else', 'that', 'after', 're', 'less', 'whether', 'who', 'other', 'd', 'a', 'which', 'moreover', 'beside', 'our', 'in', 'put', 'least', 'most', 'make', 'thus', 'everywhere', 'meanwhile', 'those', 'from', 'whoever', 'keep', 'four', 'quite', 't', 'hemselves', 'unless', 'few', 'always', 'm', 'his', 'throughout', 'did', 'get', 'thereafter', 'except', 'm', 'however', 'r', 'should', 'hundred', 'is', 'whither', 'per', 'no', 'both', 'some', 'somehow', 'though', 'front', 'although', 'might', 'ten', 'show', 'of', 'we', 'she', 'onto', 'rather', 'yourselves', 'but', 'can', 'now', 'being', 'ever', 'am', 'have', 'its', 'once', 'move', 'much', 'were', 'eight', 'former', 'everyone', 'how', 'besides', 'thereby', 'or', 'many', 'regarding', 'becoming', 'anywhere', 'namely', 'ourselves', 'doing', 'been', 'various', 'ca', 'become', 'across', 'anything', 'nor', 'anyway', 'without', 'above', 'the', 'for', 'another', 'eleven', 'see', 'there', 'just', 'hereafter', 'next', 'all', 'against', 'indeed', 'none', 'if', 'three', 'using', 'otherwise', 'us', 'what', 'only', 'be', 'whereby', 'twelve', 'every', 'into', 'forty', 'must', 'd', 'two', 'several', 're', 'had', 'twenty', 'before', 'between', 'towards', 's', 'my', 'anyhow', 'take', 'until', 'whereas', 'n't', 'afterwards', 'hereby', 'hers', 'you', 'him', 'yet', 'top', 'among', 've', 're', 've', 'together', 'never', 'since', 'itself', 'me', 'therein', 'call', 'each', 'herself', 'off', 'll', 'latterly', 's', 'perhaps', 'amongst', 'herein', 'last', 'nobody', 'mostly', 'nowhere', 'll', 'so', 'up', 'why', 'too', 'sixty', 've', 'whereafter', 'they', 'one', 'nine', 'own', 'serious', 'side', 'elsewhere', 'very', 'will', 'thence', 'full', 'then', 'at', 'fifteen', 'six', 'formerly', 'to', 'nevertheless', 'toward', 's', 'enough', 'over', 'became', 'ours', 'seem', 'others', 'part', 'himself', 'has', 'further', 'whereupon', 'please', 'say', 'used', 'empty', 'again', 'even', 'while', 'may', 'neither', 'everything', 'five', 'mine', 'not', 'give', 'latter', 'n't', 'wherein', 'n't', 'sometimes', 'often', 'beyond', 'll', 'below', 'go', 'do', 'he', 'someone', 'name', 'third', 'still', 'and', 'your', 'about', 'anyone', 'than', 'same', 'this', 'around', 'made', 'whatever', 'was', 'amount', 'with', 'during', 'yourself', 'beforehand', 're', 'hereupon', 's', 'almost', 'whole', 'thereupon', 'behind', 'seemed', 'seeming', 'also', 'cannot', 'such', 'their', 'due', 'somewhere', 'whence', 'well', 'them', 'myself', 'yours', 'bottom', 'when', 'done', 'under', 'would', 'her', 'd', 'within', 'i', 'fifty', 'here', 'something', 'more', 'whom', 'nothing', 'does', 'on', 'any', 'm', 'upon', 'therefore', 'either', 'wherever', 'whenever'}

The updated stopwords are: < 362 >

{'down', 'wt', 'already', 'sometime', 'out', 'wednesday', 'are', 'seems', 'really', 'etc', 'becomes', 'could', 'through', 'an', 'these', 'september', 'noone', 'thru', 'whose', 'by', 'thursday', 'first', 'it', 'along', 'via', 'march', 'because', 'hence', 'where', 'back', 'alone', 'as', 'else', 'that', 'after', 're', 'less', 'whether', 'who', 'other', 'd', 'a', 'which', 'moreover', 'beside', 'our', 'in', 'put', 'least', 'most', 'make', 'thus', 'yr', 'everywhere', 'meanwhile', 'those', 'from', 'whoever', 'keep', 'november', 'four', 'sunday', 'quite', 'm', 'themselves', 'unless', 'ma', 'few', 'always', 'm', 'his', 'throughout', 'monday', 'did', 'get', 'thereafter', 'except', 'm', 'however', 'should', 'hundred', 'is', 'whither', 'per', 'no', 'both', 'some', 'somehow', 'though', 'front', 'tuesday', 'although', 'might', 'gc', 'oh', 'ten', 'show', 'of', 'we', 'she', 'onto', 'rather', 'yourselves', 'but', 'can', 'december', 'now', 'being', 'ever', 'am', 'have', 'its', 'once', 'dont', 'move', 'much', 'were', 'eight', 'former', 'everyone', 'how', 'besides', 'thereby', 'or', 'many', 'regarding', 'becoming', 'anywhere', 'namely', 'ourselves', 'doing', 'been', 'various', 'ca', 'february', 'become', 'asap', 'across', 'anything', 'nor', 'anyway', 'without', 'above', 'the', 'for', 'another', 'eleven', 'see', 'there', 'just', 'hereafter', 'next', 'all', 'against', 'indeed', 'none', 'if', 'o', 'three', 'saturday', 'using', 'otherwise', 'us', 'what', 'only', 'be', 'whereby', 'twelve', 'every', 'into', 'forty', 'must', 'd', 'two', 'several', 're', 'had', 'twenty', 'before', 'between', 'towards', 'my', 'anyhow', 'take', 'non', 'until', 'whereas', 'n't', 'afterwards', 'hereby', 's', 'hers', 'friday', 'you', 'him', 'yet', 'top', 'among', 've', 're', 've', 'together', 'never', 'since', 'itself', 'me', 'therein', 'call', 'each', 'herself', 'january', 'off', 'll', 'latterly', 's',

'perhaps', 'amongst', 'herein', 'last', 'nobody', 'mostly', 'nowhere', 'll', 'so', 'up', 'why', 'too', 'sixty', 've', 'whereafter', 'they', 'one', 'heck', 'nine', 'own', 'serious', 'side', 'elsewhere', 'very', 'will', 'thence', 'full', 'then', 'at', 'fifteen', 'six', 'formerly', 'to', 'nevertheless', 'toward', 's', 'enough', 'over', 'became', 'ours', 'seem', 'august', 'others', 'part', 'himself', 'has', 'further', 'whereupon', 'please', 'say', 'used', 'gb', 'empty', 'again', 'even', 'while', 'may', 'neither', 'ss', 'everything', 'five', 'mine', 'not', 'give', 'latter', 'n't', 'wherein', 'n't', 'sometimes', 'often', 'beyond', 'll', 'below', 'e', 'go', 'wtf', 'do', 'he', 'someone', 'name', 'third', 's till', 'and', 'your', 'about', 'anyone', 'than', 'same', 'this', 'around', 'made', 'whatever', 'was', 'amount', 'with', 'during', 'yourself', 'beforehand', 're', 'hereupon', 's', 'july', 'almost', 'whole', 'thereupon', 'behind', 'seemed', 'seeming', 'also', 'october', 'cannot', 'such', 'their', 'due', 'somewhere', 'whence', 'well', 'them', 'myself', 'your s', 'bottom', 'when', 'done', 'under', 'would', 'her', 'd', 'within', 'i', 'fifty', 'here', 'something', 'more', 'who m', 'nothing', 'mp', 'does', 'on', 'june', 'any', 'april', 'm', 'upon', 'therefore', 'either', 'wherever', 'whenever'}

## Preprocessing complaints from Arizona

```
In [10]: start_time_spacy_ari = time.time()

list_of_complaints_a = []      # List of list of complaints, each element -> complaint as a list
plain_complaints_list_a = []   # List of complaints, each element -> complaint text
processed_tokens_list_a = []   # List of processed tokens in each text
vocabulary_a = []              # Empty list that will get appended with results i.e. unique words later in the code
words_removed_from_list_a = [] # List of words removed from processed text => remaining stopwords in processed tokens

# Index is a variable that will be used to iterate through the complaints text list
index_a = 0

# Using the while loop to iterate through the complaints_text_list
while len(arizona_complaints_list) > index_a:
    for individual_complaint in arizona_complaints_list:
        # Removing emojis so that they don't get tokenized
        if len(emoji.emoji_list(individual_complaint)) > 0:
            print(emoji.emoji_list(individual_complaint), "\n"*2)
            arizona_complaints_list[index_a] = emoji.replace_emoji(individual_complaint, replace="")
            print("The list has been upadated.\n\n", index_a, ": ", arizona_complaints_list[index_a], "\n"*2)
            individual_complaint = arizona_complaints_list[index_a]

        # Text Preprocessing
        doc_a = nlp(individual_complaint)
        # Lemmatizing tokens, converting them to lowercase and omitting stopwords, punctuations and numbers
        # processed_a creates string objects
        processed_a = " ".join(token.lemma_.lower() for token in doc_a if not token.is_stop and not token.is_punct
                                and token.is_alpha)
        print("\nprocessed_a ", index_a, " is: \n\n", processed_a, "\n\n")
```

```
split_processed_a = processed_a.split()
print("split_processed_a ", index_a, " is of length <", len(split_processed_a), "> :\n\n", split_processed_a, "\n")
print("Removing unnecessary words ...\n\n")
remove_unnecessary_words(split_processed_a, stop_words_list, words_removed_from_list_a, processed_tokens_list_a,
                          plain_complaints_list_a, list_of_complaints_a)
print("\n\nUnnecessary words removed!\n\n")

for word in split_processed_a:
    if word not in vocabulary_a:
        vocabulary_a.append(word)

index_a += 1  # Incrementing index by 1

end_time_spacy_ari = time.time()
runtime_spacy_ari = round(end_time_spacy_ari - start_time_spacy_ari, 2)

print("\n\n ***** \n\n",
      "The time taken to run this code is: ", runtime_spacy_ari, "seconds",
      "\n\n ***** \n\n")
```

```
[{'match_start': 2022, 'match_end': 2023, 'emoji': '👉'}]
```

The list has been updated.

0 : First off, I've been without internet for a week and on demand for a week as well. So I call the second day after nothing worked the first day to schedule a visit and the automated system kept saying that there was an outage in my area and it'll be resolved by 12:36. So I call later that afternoon and tell them and they try to send signals to the modem or whatever and it wouldn't work. So we scheduled a visit for that Friday between 10-12. Mind you that the first option they gave me was for the following freaking Monday and I said HECK NO that is way too long, I have a business to run. So the guy came on Friday at 1:30 NOT between 10-12 because I saw him pull up, he sat there for like 20 minutes and when I looked again he was freaking gone! So now I'm a little hot, so I call and ask what the heck is going on and why'd he just leave and the lady said, "Well there's another outage in your area and he wouldn't have been able to do anything but he should have at least came to your door and told you but he didn't". So later we rescheduled another appointment for Sunday between 3-4 and confirmed it. So I don't go to church. I'm here waiting on them to come and it's 4 and all call like, "Where are you guys?" And this lady on the phone tells me that it has been rescheduled for freaking Tuesday! I'm like WTF! Seriously! How the heck can you just do that?!! She said that after further checking for like 10 mins that the local office called to reschedule but no one picked up so we couldn't confirm. I was like, "But you just said it's scheduled for Tuesday so how the heck did you confirm that if no one picked up?" They didn't call by the way. So you just don't come?? You cancel it on your own and don't freaking show up?!! She said "yes ma'am that's correct..." So I'm pissed by now and then she says that someone will call me back by 6 with a rescheduled... No one has called!!! This isn't the first time something like this has happened... But I can guarantee it'll be the last... I'M GOING WITH DIRECT!!!

processed\_a 0 is:

internet week demand week second day work day schedule visit automate system keep say outage area resolve later afternoon tell try send signal modem work schedule visit mind option give follow freaking say way long business run guy come see pull sit like minute look freak go little hot ask go leave lady say outage area able come door tell later reschedule appointment confirm church wait come like guy lady phone tell reschedule freaking like seriously say check like min local office call reschedule pick confirm like say schedule confirm pick way come cancel freak say yes correct piss say rescheduled call time like happen guarantee go direct

split\_processed\_a 0 is of length < 108 > :

['internet', 'week', 'demand', 'week', 'second', 'day', 'work', 'day', 'schedule', 'visit', 'automate', 'system', 'keep', 'say', 'outage', 'area', 'resolve', 'later', 'afternoon', 'tell', 'try', 'send', 'signal', 'modem', 'work', 'schedule', 'visit', 'mind', 'option', 'give', 'follow', 'freaking', 'say', 'way', 'long', 'business', 'run', 'guy', 'come', 'see', 'pull', 'sit', 'like', 'minute', 'look', 'freak', 'go', 'little', 'hot', 'ask', 'go', 'leave', 'lady', 'say', 'outage', 'area', 'able', 'come', 'door', 'tell', 'later', 'reschedule', 'appointment', 'confirm', 'church', 'wait', 'come', 'like', 'guy', 'lady', 'phone', 'tell', 'reschedule', 'freaking', 'like', 'seriously', 'say', 'check', 'like', 'min', 'local', 'office', 'call', 'reschedule', 'pick', 'confirm', 'like', 'say', 'schedule', 'confirm', 'pick', 'way', 'c



ome', 'cancel', 'freak', 'say', 'yes', 'correct', 'piss', 'say', 'rescheduled', 'call', 'time', 'like', 'happen', 'guarantee', 'go', 'direct']

Removing unnecessary words ...

Updated list of length < 93 > : ['internet', 'week', 'demand', 'week', 'second', 'day', 'work', 'day', 'schedule', 'visit', 'automate', 'system', 'outage', 'area', 'resolve', 'later', 'afternoon', 'tell', 'try', 'send', 'signal', 'mode', 'm', 'work', 'schedule', 'visit', 'mind', 'option', 'follow', 'freaking', 'way', 'long', 'business', 'run', 'guy', 'come', 'pull', 'sit', 'like', 'minute', 'look', 'freak', 'little', 'hot', 'ask', 'leave', 'lady', 'outage', 'area', 'able', 'come', 'door', 'tell', 'later', 'reschedule', 'appointment', 'confirm', 'church', 'wait', 'come', 'like', 'guy', 'lady', 'phone', 'tell', 'reschedule', 'freaking', 'like', 'seriously', 'check', 'like', 'min', 'local', 'office', 'reschedule', 'pick', 'confirm', 'like', 'schedule', 'confirm', 'pick', 'way', 'come', 'cancel', 'freak', 'yes', 'correct', 'piss', 'rescheduled', 'time', 'like', 'happen', 'guarantee', 'direct']

Unnecessary words removed!

processed\_a 1 is:

having go comcast measly data cap year cancel transfer customer retention explain problem sign unlimited internet change unlimited limited like people stream netflix download video game know reason people internet wonderful customer retention specialist tell data cap free hbo year wow month call get high package tell high limit residential customer maybe change mind take month problem second month bill come sure charge datum overage call comcast minute wait time tell sign data cap plan month charge overage month give month allot customer datum allotment go data plan year straight month month begin institute datum cap liar people phone let deal later record thieving liar urge catch post people

split\_processed\_a 1 is of length < 109 > :

['having', 'go', 'comcast', 'measly', 'data', 'cap', 'year', 'cancel', 'transfer', 'customer', 'retention', 'explain', 'problem', 'sign', 'unlimited', 'internet', 'change', 'unlimited', 'limited', 'like', 'people', 'stream', 'netflix', 'download', 'video', 'game', 'know', 'reason', 'people', 'internet', 'wonderful', 'customer', 'retention', 'specialist', 'tell', 'data', 'cap', 'free', 'hbo', 'year', 'wow', 'month', 'call', 'get', 'high', 'package', 'tell', 'high', 'limit', 'residential', 'customer', 'maybe', 'change', 'mind', 'take', 'month', 'problem', 'second', 'month', 'bill', 'come', 'sure', 'charge', 'datum', 'overage', 'call', 'comcast', 'minute', 'wait', 'time', 'tell', 'sign', 'data', 'cap', 'plan', 'month', 'charge', 'overage', 'month', 'give', 'month', 'allot', 'customer', 'datum', 'allotment', 'go', 'data', 'plan', 'year', 'straight', 'month', 'month', 'begin', 'institute', 'datum', 'cap', 'liar', 'people', 'phone', 'let', 'deal', 'later', 'record', 'thieving', 'liar', 'urge', 'catch', 'post', 'people']

Removing unnecessary words ...

Updated list of length < 102 > : ['having', 'comcast', 'measly', 'data', 'cap', 'year', 'cancel', 'transfer', 'customer', 'retention', 'explain', 'problem', 'sign', 'unlimited', 'internet', 'change', 'unlimited', 'limited', 'like', 'people', 'stream', 'netflix', 'download', 'video', 'game', 'know', 'reason', 'people', 'internet', 'wonderful', 'customer', 'retention', 'specialist', 'tell', 'data', 'cap', 'free', 'hbo', 'year', 'wow', 'month', 'high', 'package', 'tell', 'high', 'limit', 'residential', 'customer', 'maybe', 'change', 'mind', 'month', 'problem', 'second', 'month', 'bill', 'come', 'sure', 'charge', 'datum', 'overage', 'comcast', 'minute', 'wait', 'time', 'tell', 'sign', 'data', 'cap', 'plan', 'month', 'charge', 'overage', 'month', 'month', 'allot', 'customer', 'datum', 'allotment', 'data', 'plan', 'year', 'straight', 'month', 'month', 'begin', 'institute', 'datum', 'cap', 'liar', 'people', 'phone', 'let', 'deal', 'later', 'record', 'thieving', 'liar', 'urge', 'catch', 'post', 'people']

Unnecessary words removed!

processed\_a 2 is:

year disappointed recent experience comcast xfinity contact company transfer service commercial assure move easy false advertisement despite contact xfinity advance receive different appointment require present day day arrive show give courtesy call day service personnel hour late arrive tell need additional help available week take like company treat big concern

split\_processed\_a 2 is of length < 50 > :

['year', 'disappointed', 'recent', 'experience', 'comcast', 'xfinity', 'contact', 'company', 'transfer', 'service', 'commercial', 'assure', 'move', 'easy', 'false', 'advertisement', 'despite', 'contact', 'xfinity', 'advance', 'receive', 'different', 'appointment', 'require', 'present', 'day', 'day', 'arrive', 'show', 'give', 'courtesy', 'call', 'day', 'service', 'personnel', 'hour', 'late', 'arrive', 'tell', 'need', 'additional', 'help', 'available', 'week', 'take', 'like', 'company', 'treat', 'big', 'concern']

Removing unnecessary words ...

Updated list of length < 45 > : ['year', 'disappointed', 'recent', 'experience', 'comcast', 'xfinity', 'contact', 'company', 'transfer', 'service', 'commercial', 'assure', 'easy', 'false', 'advertisement', 'despite', 'contact', 'xfinity', 'advance', 'receive', 'different', 'appointment', 'require', 'present', 'day', 'day', 'arrive', 'courtesy', 'day', 'service', 'personnel', 'hour', 'late', 'arrive', 'tell', 'need', 'additional', 'help', 'available', 'week', 'like', 'company', 'treat', 'big', 'concern']

Unnecessary words removed!

processed\_a 3 is:

company want deal get comcast middle bill come extra charge person talk lie cable shut twice agree pay tell pay time talk tell different ask listen conversation will company crap unbelievable like say person work comcast lie look honest reputable company comcast comcast crooked company meet

split\_processed\_a 3 is of length < 46 > :

```
['company', 'want', 'deal', 'get', 'comcast', 'middle', 'bill', 'come', 'extra', 'charge', 'person', 'talk', 'lie', 'cable', 'shut', 'twice', 'agree', 'pay', 'tell', 'pay', 'time', 'talk', 'tell', 'different', 'ask', 'listen', 'conversation', 'will', 'company', 'crap', 'unbelievable', 'like', 'say', 'person', 'work', 'comcast', 'lie', 'look', 'honest', 'reputable', 'company', 'comcast', 'comcast', 'crooked', 'company', 'meet']
```

Removing unnecessary words ...

Updated list of length < 43 > : ['company', 'want', 'deal', 'comcast', 'middle', 'bill', 'come', 'extra', 'charge', 'person', 'talk', 'lie', 'cable', 'shut', 'twice', 'agree', 'pay', 'tell', 'pay', 'time', 'talk', 'tell', 'different', 'ask', 'listen', 'conversation', 'company', 'crap', 'unbelievable', 'like', 'person', 'work', 'comcast', 'lie', 'look', 'honest', 'reputable', 'company', 'comcast', 'comcast', 'crooked', 'company', 'meet']

Unnecessary words removed!

processed\_a 4 is:

okay technician come week ago hook xfinity voice internet service go see small garden block area work instead avoid plant fool pull wooden border toss yard stomp plant like wooden border heavy large nail stick thing yard nail come step trip log son find inform leave finish work house son discover mess outside leave say finish job come house leave come minute later nerve sit couch minute say wait certain time clock go to sit house watch tv time work call comcast file complaint tell hear memorial day think damn bill post account day later

split\_processed\_a 4 is of length < 95 > :

```
['okay', 'technician', 'come', 'week', 'ago', 'hook', 'xfinity', 'voice', 'internet', 'service', 'go', 'see', 'small', 'garden', 'block', 'area', 'work', 'instead', 'avoid', 'plant', 'fool', 'pull', 'wooden', 'border', 'toss', 'yard', 'stomp', 'plant', 'like', 'wooden', 'border', 'heavy', 'large', 'nail', 'stick', 'thing', 'yard', 'nail', 'come', 'step',
```

```
'trip', 'log', 'son', 'find', 'inform', 'leave', 'finish', 'work', 'house', 'son', 'discover', 'mess', 'outside', 'leave', 'say', 'finish', 'job', 'come', 'house', 'leave', 'come', 'minute', 'later', 'nerve', 'sit', 'couch', 'minute', 'say', 'wait', 'certain', 'time', 'clock', 'go', 'to', 'sit', 'house', 'watch', 'tv', 'time', 'work', 'call', 'comcast', 'file', 'complaint', 'tell', 'hear', 'memorial', 'day', 'think', 'damn', 'bill', 'post', 'account', 'day', 'later']
```

Removing unnecessary words ...

```
Updated list of length < 88 > : ['okay', 'technician', 'come', 'week', 'ago', 'hook', 'xfinity', 'voice', 'internet', 'service', 'small', 'garden', 'block', 'area', 'work', 'instead', 'avoid', 'plant', 'fool', 'pull', 'wooden', 'border', 'toss', 'yard', 'stomp', 'plant', 'like', 'wooden', 'border', 'heavy', 'large', 'nail', 'stick', 'thing', 'yard', 'nail', 'come', 'step', 'trip', 'log', 'son', 'find', 'inform', 'leave', 'finish', 'work', 'house', 'son', 'discover', 'mess', 'outside', 'leave', 'finish', 'job', 'come', 'house', 'leave', 'come', 'minute', 'later', 'nerve', 'sit', 'couch', 'minute', 'wait', 'certain', 'time', 'clock', 'sit', 'house', 'watch', 'tv', 'time', 'work', 'comcast', 'file', 'complaint', 'tell', 'hear', 'memorial', 'day', 'think', 'damn', 'bill', 'post', 'account', 'day', 'later']
```

Unnecessary words removed!

processed\_a 5 is:

```
comcast customer service train people read require system require phone hand time person make promise package deliver people believe citizens accent language barrier lack respect interrupt rude undertone read polite scripted word untrue demeanor obvious care hand million time hope frustrated hang lie meet quota hope area cable option future
```

split\_processed\_a 5 is of length < 50 > :

```
['comcast', 'customer', 'service', 'train', 'people', 'read', 'require', 'system', 'require', 'phone', 'hand', 'time', 'person', 'make', 'promise', 'package', 'deliver', 'people', 'believe', 'citizens', 'accent', 'language', 'barrier', 'lack', 'respect', 'interrupt', 'rude', 'undertone', 'read', 'polite', 'scripted', 'word', 'untrue', 'demeanor', 'obvious', 'care', 'hand', 'million', 'time', 'hope', 'frustrated', 'hang', 'lie', 'meet', 'quota', 'hope', 'area', 'cable', 'option', 'future']
```

Removing unnecessary words ...

```
Updated list of length < 49 > : ['comcast', 'customer', 'service', 'train', 'people', 'read', 'require', 'system', 'require', 'phone', 'hand', 'time', 'person', 'promise', 'package', 'deliver', 'people', 'believe', 'citizens', 'accent', 'language', 'barrier', 'lack', 'respect', 'interrupt', 'rude', 'undertone', 'read', 'polite', 'scripted', 'word', 'untrue', 'demeanor', 'obvious', 'care', 'hand', 'million', 'time', 'hope', 'frustrated', 'hang', 'lie', 'meet', 'quota', 'h
```

ope', 'area', 'cable', 'option', 'future']

Unnecessary words removed!

processed\_a 6 is:

comcast service rep say schedule appointment tech come morning get automate confirm appt minute later say appointment complete tech come sit living room hour wait knock door report run tell reschedule available online college course assignment midnight grade go drop inefficient worker comcast thank allow pay service future fail grade comcast

split\_processed\_a 6 is of length < 51 > :

['comcast', 'service', 'rep', 'say', 'schedule', 'appointment', 'tech', 'come', 'morning', 'get', 'automate', 'confirm', 'appt', 'minute', 'later', 'say', 'appointment', 'complete', 'tech', 'come', 'sit', 'living', 'room', 'hour', 'wait', 'knock', 'door', 'report', 'run', 'tell', 'reschedule', 'available', 'online', 'college', 'course', 'assignment', 'midnight', 'grade', 'go', 'drop', 'inefficient', 'worker', 'comcast', 'thank', 'allow', 'pay', 'service', 'future', 'fail', 'grade', 'comcast']

Removing unnecessary words ...

Updated list of length < 47 > : ['comcast', 'service', 'rep', 'schedule', 'appointment', 'tech', 'come', 'morning', 'automate', 'confirm', 'appt', 'minute', 'later', 'appointment', 'complete', 'tech', 'come', 'sit', 'living', 'room', 'hour', 'wait', 'knock', 'door', 'report', 'run', 'tell', 'reschedule', 'available', 'online', 'college', 'course', 'assignment', 'midnight', 'grade', 'drop', 'inefficient', 'worker', 'comcast', 'thank', 'allow', 'pay', 'service', 'future', 'fail', 'grade', 'comcast']

Unnecessary words removed!

processed\_a 7 is:

problem exist month sign comcast internet phone cable tv service go week time service drive local retailer report outage usually rep end read script fail sense urgency will info internet go time time phone system terrible usually popping crackling line answer phone hear people call hear technician week month multiple time week treat rudely customer support staff person local office identify problem tell wrong go state attorney general office register complaint past year garner response company follow phone call receive phone call pay customer year problem multiply large corporate entity service issue buy new phone suggestion customer rep technician check phone say equipment problem waste money appreciate

attention matter

split\_processed\_a 7 is of length < 109 > :

```
['problem', 'exist', 'month', 'sign', 'comcast', 'internet', 'phone', 'cable', 'tv', 'service', 'go', 'week', 'time',
'service', 'drive', 'local', 'retailer', 'report', 'outage', 'usually', 'rep', 'end', 'read', 'script', 'fail', 'sense',
'urgency', 'will', 'info', 'internet', 'go', 'time', 'time', 'phone', 'system', 'terrible', 'usually', 'popping',
'crackling', 'line', 'answer', 'phone', 'hear', 'people', 'call', 'hear', 'technician', 'week', 'month', 'multiple', 'time',
'week', 'treat', 'rudely', 'customer', 'support', 'staff', 'person', 'local', 'office', 'identify', 'problem', 'tell',
'wrong', 'go', 'state', 'attorney', 'general', 'office', 'register', 'complaint', 'past', 'year', 'garner', 'response',
'company', 'follow', 'phone', 'call', 'receive', 'phone', 'call', 'pay', 'customer', 'year', 'problem', 'multiply',
'large', 'corporate', 'entity', 'service', 'issue', 'buy', 'new', 'phone', 'suggestion', 'customer', 'rep', 'technician',
'check', 'phone', 'say', 'equipment', 'problem', 'waste', 'money', 'appreciate', 'attention', 'matter']
```

Removing unnecessary words ...

```
Updated list of length < 101 > : ['problem', 'exist', 'month', 'sign', 'comcast', 'internet', 'phone', 'cable', 'tv',
'service', 'week', 'time', 'service', 'drive', 'local', 'retailer', 'report', 'outage', 'usually', 'rep', 'end', 'read',
'd', 'script', 'fail', 'sense', 'urgency', 'info', 'internet', 'time', 'time', 'phone', 'system', 'terrible', 'usually',
'popping', 'crackling', 'line', 'answer', 'phone', 'hear', 'people', 'hear', 'technician', 'week', 'month', 'multiple',
'time', 'week', 'treat', 'rudely', 'customer', 'support', 'staff', 'person', 'local', 'office', 'identify', 'problem',
'tell', 'wrong', 'state', 'attorney', 'general', 'office', 'register', 'complaint', 'past', 'year', 'garner', 'response',
'company', 'follow', 'phone', 'receive', 'phone', 'pay', 'customer', 'year', 'problem', 'multiply', 'large', 'corporate',
'entity', 'service', 'issue', 'buy', 'new', 'phone', 'suggestion', 'customer', 'rep', 'technician', 'check', 'phone',
'equipment', 'problem', 'waste', 'money', 'appreciate', 'attention', 'matter']
```

Unnecessary words removed!

processed\_a 8 is:

```
decide comcast second chance believe well customer service know wrong order service headache place order online go ok
receive welcome comcast email hour later receive email state need set installation order fully process call set appointment
time hour call minute finally get installation date able access account online second tell package come dvr receive
dvr box instead receive hd box hd tv spend hour chat representative dvr box order properly sit system limbo receive bill
additional installation charge tell authorize tell install fee technician come install charge install fee additional
outlet
```

split\_processed\_a 8 is of length < 91 > :

```
['decide', 'comcast', 'second', 'chance', 'believe', 'well', 'customer', 'service', 'know', 'wrong', 'order', 'service', 'headache', 'place', 'order', 'online', 'go', 'ok', 'receive', 'welcome', 'comcast', 'email', 'hour', 'later', 'receive', 'email', 'state', 'need', 'set', 'installation', 'order', 'fully', 'process', 'call', 'set', 'appointment', 'time', 'hour', 'call', 'minute', 'finally', 'get', 'installation', 'date', 'able', 'access', 'account', 'online', 'second', 'tell', 'package', 'come', 'dvr', 'receive', 'dvr', 'box', 'instead', 'receive', 'hd', 'box', 'hd', 'tv', 'spend', 'hour', 'chat', 'representative', 'dvr', 'box', 'order', 'properly', 'sit', 'system', 'limbo', 'receive', 'bill', 'additional', 'installation', 'charge', 'tell', 'authorize', 'tell', 'install', 'fee', 'technician', 'come', 'install', 'charge', 'install', 'fee', 'additional', 'outlet']
```

Removing unnecessary words ...

```
Updated list of length < 86 > : ['decide', 'comcast', 'second', 'chance', 'believe', 'customer', 'service', 'know', 'wrong', 'order', 'service', 'headache', 'place', 'order', 'online', 'ok', 'receive', 'welcome', 'comcast', 'email', 'hour', 'later', 'receive', 'email', 'state', 'need', 'set', 'installation', 'order', 'fully', 'process', 'set', 'appointment', 'time', 'hour', 'minute', 'finally', 'installation', 'date', 'able', 'access', 'account', 'online', 'second', 'tell', 'package', 'come', 'dvr', 'receive', 'dvr', 'box', 'instead', 'receive', 'hd', 'box', 'hd', 'tv', 'spend', 'hour', 'chat', 'representative', 'dvr', 'box', 'order', 'properly', 'sit', 'system', 'limbo', 'receive', 'bill', 'additional', 'installation', 'charge', 'tell', 'authorize', 'tell', 'install', 'fee', 'technician', 'come', 'install', 'charge', 'install', 'fee', 'additional', 'outlet']
```

Unnecessary words removed!

processed\_a 9 is:

```
comcast year bad cable company customer service terrible employee incompetent issue box approximately month technician come replace hd cable temporary fix problem come speak manager problem resolve schedule technician find schedule discover technician show schedule appointment rep mix schedule time consecutive day technician finally able technician call wrong phone number continue sit outside residence approximately minute cable internet deal comcast
```

split\_processed\_a 9 is of length < 60 > :

```
['comcast', 'year', 'bad', 'cable', 'company', 'customer', 'service', 'terrible', 'employee', 'incompetent', 'issue', 'box', 'approximately', 'month', 'technician', 'come', 'replace', 'hd', 'cable', 'temporary', 'fix', 'problem', 'come', 'speak', 'manager', 'problem', 'resolve', 'schedule', 'technician', 'find', 'schedule', 'discover', 'technician', 'show', 'schedule', 'appointment', 'rep', 'mix', 'schedule', 'time', 'consecutive', 'day', 'technician', 'finally', 'able', 'technician', 'call', 'wrong', 'phone', 'number', 'continue', 'sit', 'outside', 'residence', 'approximately', 'minute', 'cable', 'internet', 'deal', 'comcast']
```

Removing unnecessary words ...

Updated list of length < 58 > : ['comcast', 'year', 'bad', 'cable', 'company', 'customer', 'service', 'terrible', 'employee', 'incompetent', 'issue', 'box', 'approximately', 'month', 'technician', 'come', 'replace', 'hd', 'cable', 'temporary', 'fix', 'problem', 'come', 'speak', 'manager', 'problem', 'resolve', 'schedule', 'technician', 'find', 'schedule', 'discover', 'technician', 'schedule', 'appointment', 'rep', 'mix', 'schedule', 'time', 'consecutive', 'day', 'technician', 'finally', 'able', 'technician', 'wrong', 'phone', 'number', 'continue', 'sit', 'outside', 'residence', 'approximately', 'minute', 'cable', 'internet', 'deal', 'comcast']

Unnecessary words removed!

processed\_a 10 is:

call upgrade service different box find charge equipment know research find previous technician come house leave equipment call new box day tech suppose come run late send tech tech come leave extra box house wall unit look extra equipment leave know cable work notice extra equipment leave bring equipment home know suppose leave box leave unnoticed add box leave bill hook home monkey call day technician advise getting bill equipment know house advise worry account credit call concern get account credit receive line tell installment ask credit advise year time frame ask speak management advise bank credit money pay cash pay bill technician show day hold responsible come comcast pick equipment leave home hook speak furious advise cancel service keep run end bill collector call phone say owe advise owe dollar willing pay owe come find equipment show account equipment pick technician leave ask right mind pay owe call comcast morning tell need correct send technician home collect equipment sign tell dollar worth equipment advise day try handle ask mean time tell creditor threaten bill credit advise handle hear displeased service bill continuously rise type excuse raise recommended company bad enemy pay bill try stay good credit stand people business care pay owe pay year realize believe right fee huge corporation mean treat people want god sit high look low thank listen

split\_processed\_a 10 is of length < 222 > :

['call', 'upgrade', 'service', 'different', 'box', 'find', 'charge', 'equipment', 'know', 'research', 'find', 'previous', 'technician', 'come', 'house', 'leave', 'equipment', 'call', 'new', 'box', 'day', 'tech', 'suppose', 'come', 'run', 'late', 'send', 'tech', 'tech', 'come', 'leave', 'extra', 'box', 'house', 'wall', 'unit', 'look', 'extra', 'equipment', 'leave', 'know', 'cable', 'work', 'notice', 'extra', 'equipment', 'leave', 'bring', 'equipment', 'home', 'know', 'suppose', 'leave', 'box', 'leave', 'unnoticed', 'add', 'box', 'leave', 'bill', 'hook', 'home', 'monkey', 'call', 'day', 'technician', 'advise', 'getting', 'bill', 'equipment', 'know', 'house', 'advise', 'worry', 'account', 'credit', 'call', 'concern', 'get', 'account', 'credit', 'receive', 'line', 'tell', 'installment', 'ask', 'credit', 'advise', 'year', 'time', 'frame', 'ask', 'speak', 'management', 'advise', 'bank', 'credit', 'money', 'pay', 'cash', 'pay', 'bill', 'technician', 'show', 'day', 'hold', 'responsible', 'come', 'comcast', 'pick', 'equipment', 'leave', 'home', 'hook', 'speak', 'furious', 'advise', 'cancel', 'service', 'keep', 'run', 'end', 'bill', 'collector', 'call', 'phone', 'say', 'owe', 'advise', 'owe', 'dollar', 'willing', 'pay', 'owe', 'come', 'find', 'equipment', 'show', 'account', 'equipment', 'pick', 'te



chnician', 'leave', 'ask', 'right', 'mind', 'pay', 'owe', 'call', 'comcast', 'morning', 'tell', 'need', 'correct', 'send', 'technician', 'home', 'collect', 'equipment', 'sign', 'tell', 'dollar', 'worth', 'equipment', 'advise', 'day', 'try', 'handle', 'ask', 'mean', 'time', 'tell', 'creditor', 'threaten', 'bill', 'credit', 'advise', 'handle', 'hear', 'displeased', 'service', 'bill', 'continuously', 'rise', 'type', 'excuse', 'raise', 'recommend', 'company', 'bad', 'enemy', 'pay', 'bill', 'try', 'stay', 'good', 'credit', 'stand', 'people', 'business', 'care', 'pay', 'owe', 'pay', 'year', 'realize', 'believe', 'right', 'feel', 'huge', 'corporation', 'mean', 'treat', 'people', 'want', 'god', 'sit', 'high', 'look', 'low', 'thank', 'listen']

Removing unnecessary words ...

Updated list of length < 211 > : ['upgrade', 'service', 'different', 'box', 'find', 'charge', 'equipment', 'know', 'research', 'find', 'previous', 'technician', 'come', 'house', 'leave', 'equipment', 'new', 'box', 'day', 'tech', 'suppose', 'come', 'run', 'late', 'send', 'tech', 'tech', 'come', 'leave', 'extra', 'box', 'house', 'wall', 'unit', 'look', 'extra', 'equipment', 'leave', 'know', 'cable', 'work', 'notice', 'extra', 'equipment', 'leave', 'bring', 'equipment', 'home', 'know', 'suppose', 'leave', 'box', 'leave', 'unnoticed', 'add', 'box', 'leave', 'bill', 'hook', 'home', 'monkey', 'day', 'technician', 'advise', 'getting', 'bill', 'equipment', 'know', 'house', 'advise', 'worry', 'account', 'credit', 'concern', 'account', 'credit', 'receive', 'line', 'tell', 'installment', 'ask', 'credit', 'advise', 'year', 'time', 'frame', 'ask', 'speak', 'management', 'advise', 'bank', 'credit', 'money', 'pay', 'cash', 'pay', 'bill', 'technician', 'day', 'hold', 'responsible', 'come', 'comcast', 'pick', 'equipment', 'leave', 'home', 'hook', 'speak', 'furious', 'advise', 'cancel', 'service', 'run', 'end', 'bill', 'collector', 'phone', 'owe', 'advise', 'owe', 'dollar', 'willing', 'pay', 'owe', 'come', 'find', 'equipment', 'account', 'equipment', 'pick', 'technician', 'leave', 'ask', 'right', 'mind', 'pay', 'owe', 'comcast', 'morning', 'tell', 'need', 'correct', 'send', 'technician', 'home', 'collect', 'equipment', 'sign', 'tell', 'dollar', 'worth', 'equipment', 'advise', 'day', 'try', 'handle', 'ask', 'mean', 'time', 'tell', 'creditor', 'threaten', 'bill', 'credit', 'advise', 'handle', 'hear', 'displeased', 'service', 'bill', 'continuously', 'rise', 'type', 'excuse', 'raise', 'recommend', 'company', 'bad', 'enemy', 'pay', 'bill', 'try', 'stay', 'good', 'credit', 'stand', 'people', 'business', 'care', 'pay', 'owe', 'pay', 'year', 'realize', 'believe', 'right', 'feel', 'huge', 'corporation', 'mean', 'treat', 'people', 'want', 'god', 'sit', 'high', 'look', 'low', 'thank', 'listen']

Unnecessary words removed!

processed\_a 11 is:

absolute bad experience comcast yesterday call simple transfer service guess simple young lady nice screw account transfer suppose service current location suspend yesterday time end concerned set account talk deadbeat baby daddy thirty minute maybe turn service day soon call pm cst issue resolve hell break loose talk shay tell turn service disconnect day transfer stupid right tell go turn place ask speak supervisor purposely transfer different department sale department hold minute andrew answer rude refuse transfer supervisor instead purposely transfer wrong department billing hold minute billing department mind balance account set auto pay account set auto pay cancel rep billing department speak understand english ask transfer supervisor refuse give access account refuse help hang pm cst resolve ask supervisor corey rude help put hold repeatedly tell want place hold help finally say forget cancel account disconnect service corey transfer

er customer solutions speak christy deserve raise promotion comcast employee speak yesterday space ear admit time speak  
 pissed irritated yes bad attitude conversation professional helpful lose patience able service restart able set transfe  
 r correctly time get phone christy pm cst hour minute fix issue rep cause ridiculous rep nerve attitude demand quality  
 customer service like demand time payment slap face comcast guarantee lie guarantee promise feed bunch lie time place h  
 old long like forever resolve issue refuse right speak management bill extremely high price

split\_processed\_a 11 is of length < 223 > :

```
['absolute', 'bad', 'experience', 'comcast', 'yesterday', 'call', 'simple', 'transfer', 'service', 'guess', 'simple',
'young', 'lady', 'nice', 'screw', 'account', 'transfer', 'suppose', 'service', 'current', 'location', 'suspend', 'yeste
rday', 'time', 'end', 'concerned', 'set', 'account', 'talk', 'deadbeat', 'baby', 'daddy', 'thirty', 'minute', 'maybe',
'turn', 'service', 'day', 'soon', 'call', 'pm', 'cst', 'issue', 'resolve', 'hell', 'break', 'loose', 'talk', 'shay', 't
ell', 'turn', 'service', 'disconnect', 'day', 'transfer', 'stupid', 'right', 'tell', 'go', 'turn', 'place', 'ask', 'spe
ak', 'supervisor', 'purposely', 'transfer', 'different', 'department', 'sale', 'department', 'hold', 'minute', 'andre
w', 'answer', 'rude', 'refuse', 'transfer', 'supervisor', 'instead', 'purposely', 'transfer', 'wrong', 'department', 'b
illing', 'hold', 'minute', 'billing', 'department', 'mind', 'balance', 'account', 'set', 'auto', 'pay', 'account', 'se
t', 'auto', 'pay', 'cancel', 'rep', 'billing', 'department', 'speak', 'understand', 'english', 'ask', 'transfer', 'supe
rvisor', 'refuse', 'give', 'access', 'account', 'refuse', 'help', 'hang', 'pm', 'cst', 'resolve', 'ask', 'supervisor',
'corey', 'rude', 'help', 'put', 'hold', 'repeatedly', 'tell', 'want', 'place', 'hold', 'help', 'finally', 'say', 'forge
t', 'cancel', 'account', 'disconnect', 'service', 'corey', 'transfer', 'customer', 'solutions', 'speak', 'christy', 'de
serve', 'raise', 'promotion', 'comcast', 'employee', 'speak', 'yesterday', 'space', 'ear', 'admit', 'time', 'speak', 'p
issed', 'irritated', 'yes', 'bad', 'attitude', 'conversation', 'professional', 'helpful', 'lose', 'patience', 'able',
'service', 'restart', 'able', 'set', 'transfer', 'correctly', 'time', 'get', 'phone', 'christy', 'pm', 'cst', 'hour',
'minute', 'fix', 'issue', 'rep', 'cause', 'ridiculous', 'rep', 'nerve', 'attitude', 'demand', 'quality', 'customer', 's
ervice', 'like', 'demand', 'time', 'payment', 'slap', 'face', 'comcast', 'guarantee', 'lie', 'guarantee', 'promise', 'f
eed', 'bunch', 'lie', 'time', 'place', 'hold', 'long', 'like', 'forever', 'resolve', 'issue', 'refuse', 'right', 'speak',
'management', 'bill', 'extremely', 'high', 'price']
```

Removing unnecessary words ...

```
Updated list of length < 216 > : ['absolute', 'bad', 'experience', 'comcast', 'yesterday', 'simple', 'transfer', 'serv
ice', 'guess', 'simple', 'young', 'lady', 'nice', 'screw', 'account', 'transfer', 'suppose', 'service', 'current', 'loc
ation', 'suspend', 'yesterday', 'time', 'end', 'concerned', 'set', 'account', 'talk', 'deadbeat', 'baby', 'daddy', 'thi
rty', 'minute', 'maybe', 'turn', 'service', 'day', 'soon', 'pm', 'cst', 'issue', 'resolve', 'hell', 'break', 'loose',
'talk', 'shay', 'tell', 'turn', 'service', 'disconnect', 'day', 'transfer', 'stupid', 'right', 'tell', 'turn', 'place',
'ask', 'speak', 'supervisor', 'purposely', 'transfer', 'different', 'department', 'sale', 'department', 'hold', 'minut
e', 'andrew', 'answer', 'rude', 'refuse', 'transfer', 'supervisor', 'instead', 'purposely', 'transfer', 'wrong', 'depar
tment', 'billing', 'hold', 'minute', 'billing', 'department', 'mind', 'balance', 'account', 'set', 'auto', 'pay', 'acco
unt', 'set', 'auto', 'pay', 'cancel', 'rep', 'billing', 'department', 'speak', 'understand', 'english', 'ask', 'transfe
r', 'supervisor', 'refuse', 'access', 'account', 'refuse', 'help', 'hang', 'pm', 'cst', 'resolve', 'ask', 'supervisor',
'corey', 'rude', 'help', 'hold', 'repeatedly', 'tell', 'want', 'place', 'hold', 'help', 'finally', 'forget', 'cancel',
'account', 'disconnect', 'service', 'corey', 'transfer', 'customer', 'solutions', 'speak', 'christy', 'deserve', 'rais
```

e', 'promotion', 'comcast', 'employee', 'speak', 'yesterday', 'space', 'ear', 'admit', 'time', 'speak', 'pissed', 'irritated', 'yes', 'bad', 'attitude', 'conversation', 'professional', 'helpful', 'lose', 'patience', 'able', 'service', 'restart', 'able', 'set', 'transfer', 'correctly', 'time', 'phone', 'christy', 'pm', 'cst', 'hour', 'minute', 'fix', 'issue', 'rep', 'cause', 'ridiculous', 'rep', 'nerve', 'attitude', 'demand', 'quality', 'customer', 'service', 'like', 'demand', 'time', 'payment', 'slap', 'face', 'comcast', 'guarantee', 'lie', 'guarantee', 'promise', 'feed', 'bunch', 'lie', 'time', 'place', 'hold', 'long', 'like', 'forever', 'resolve', 'issue', 'refuse', 'right', 'speak', 'management', 'bill', 'extremely', 'high', 'price']

Unnecessary words removed!

processed\_a 12 is:

time comcast nightmare can response fix problem disconnect talk customer service day know somebody need start new internet cable company seriously comcast need competition eventually thing decide live internet cable tv house year get expensive worth

split\_processed\_a 12 is of length < 36 > :

['time', 'comcast', 'nightmare', 'can', 'response', 'fix', 'problem', 'disconnect', 'talk', 'customer', 'service', 'day', 'know', 'somebody', 'need', 'start', 'new', 'internet', 'cable', 'company', 'seriously', 'comcast', 'need', 'competition', 'eventually', 'thing', 'decide', 'live', 'internet', 'cable', 'tv', 'house', 'year', 'get', 'expensive', 'worth']

Removing unnecessary words ...

Updated list of length < 34 > : ['time', 'comcast', 'nightmare', 'response', 'fix', 'problem', 'disconnect', 'talk', 'customer', 'service', 'day', 'know', 'somebody', 'need', 'start', 'new', 'internet', 'cable', 'company', 'seriously', 'comcast', 'need', 'competition', 'eventually', 'thing', 'decide', 'live', 'internet', 'cable', 'tv', 'house', 'year', 'expensive', 'worth']

Unnecessary words removed!

processed\_a 13 is:

comcast decade ago nightmare try stop charge cancel service return equipment try charge equipment return thankfully keep receipt handy send copy time stop charge have issue tell well day charge service cancel claim receive cancel service

play stupid game plead ignorance need sue complaint class action comcast

split\_processed\_a 13 is of length < 47 > :

```
['comcast', 'decade', 'ago', 'nightmare', 'try', 'stop', 'charge', 'cancel', 'service', 'return', 'equipment', 'try',
'charge', 'equipment', 'return', 'thankfully', 'keep', 'receipt', 'handy', 'send', 'copy', 'time', 'stop', 'charge', 'h
ave', 'issue', 'tell', 'well', 'day', 'charge', 'service', 'cancel', 'claim', 'receive', 'cancel', 'service', 'play',
'stupid', 'game', 'plead', 'ignorance', 'need', 'sue', 'complaint', 'class', 'action', 'comcast']
```

Removing unnecessary words ...

Updated list of length < 44 > : ['comcast', 'decade', 'ago', 'nightmare', 'try', 'stop', 'charge', 'cancel', 'servic  
e', 'return', 'equipment', 'try', 'charge', 'equipment', 'return', 'thankfully', 'receipt', 'handy', 'send', 'copy', 't  
ime', 'stop', 'charge', 'issue', 'tell', 'day', 'charge', 'service', 'cancel', 'claim', 'receive', 'cancel', 'service',  
'play', 'stupid', 'game', 'plead', 'ignorance', 'need', 'sue', 'complaint', 'class', 'action', 'comcast']

Unnecessary words removed!

processed\_a 14 is:

call internet cable service pay month bill equipment ship equipment date order service equipment receive short adapter  
box receive additional remote call ship adapter box immediately tiny box come package shipping charge adapter apply acc  
ount adapter box include original box original shipping charge contact customer service time receive charge twice final  
ly today fourth time time representative agree charge credit apply pm allen employee number inform credit bill shipping  
fee charge review supervisor explain tell twice past month ask speak supervisor place hold return say supervisor busy a  
ble discuss matter account specialist say ahead apply credit account phone explain past rep submit credit supervisor as  
sure credit bill service interruption charge contact customer service shut service past go pay bill online pay month al  
low submit include pay contact account rep online chat discuss credit joancien type fully apply shipping fee credit acc  
ount service restore past credit state previous credit quote previous rep post account previous rep submit credit requ  
st supervisor credit apply restore let hope issue credit pay bill hope bill afraid addition internet service work compl  
ete reset time work technician look repair problem fail spend countless hour phone support issue mind service middle sp  
end time devote try decent service comcast poor equipment poor customer service sadly want satellite service comcast op  
tion

split\_processed\_a 14 is of length < 210 > :

```
['call', 'internet', 'cable', 'service', 'pay', 'month', 'bill', 'equipment', 'ship', 'equipment', 'date', 'order', 's
ervice', 'equipment', 'receive', 'short', 'adapter', 'box', 'receive', 'additional', 'remote', 'call', 'ship', 'adapte
```

r', 'box', 'immediately', 'tiny', 'box', 'come', 'package', 'shipping', 'charge', 'adapter', 'apply', 'account', 'adapt  
er', 'box', 'include', 'original', 'box', 'original', 'shipping', 'charge', 'contact', 'customer', 'service', 'time',  
'receive', 'charge', 'twice', 'finally', 'today', 'fourth', 'time', 'time', 'representative', 'agree', 'charge', 'credi  
t', 'apply', 'pm', 'allen', 'employee', 'number', 'inform', 'credit', 'bill', 'shipping', 'fee', 'charge', 'review', 's  
upervisor', 'explain', 'tell', 'twice', 'past', 'month', 'ask', 'speak', 'supervisor', 'place', 'hold', 'return', 'sa  
y', 'supervisor', 'busy', 'able', 'discuss', 'matter', 'account', 'specialist', 'say', 'ahead', 'apply', 'credit', 'acc  
ount', 'phone', 'explain', 'past', 'rep', 'submit', 'credit', 'supervisor', 'assure', 'credit', 'bill', 'service', 'int  
erruption', 'charge', 'contact', 'customer', 'service', 'shut', 'service', 'past', 'go', 'pay', 'bill', 'online', 'pa  
y', 'month', 'allow', 'submit', 'include', 'pay', 'contact', 'account', 'rep', 'online', 'chat', 'discuss', 'credit',  
'joancien', 'type', 'fully', 'apply', 'shipping', 'fee', 'credit', 'account', 'service', 'restore', 'past', 'credit',  
'state', 'previous', 'credit', 'quote', 'previous', 'rep', 'post', 'account', 'previous', 'rep', 'submit', 'credit', 'r  
equest', 'supervisor', 'credit', 'apply', 'restore', 'let', 'hope', 'issue', 'credit', 'pay', 'bill', 'hope', 'bill',  
'afraid', 'addition', 'internet', 'service', 'work', 'complete', 'reset', 'time', 'work', 'technician', 'look', 'repai  
r', 'problem', 'fail', 'spend', 'countless', 'hour', 'phone', 'support', 'issue', 'mind', 'service', 'middle', 'spend',  
'time', 'devote', 'try', 'decent', 'service', 'comcast', 'poor', 'equipment', 'poor', 'customer', 'service', 'sadly',  
'want', 'satellite', 'service', 'comcast', 'option']

Removing unnecessary words ...

Updated list of length < 205 > : ['internet', 'cable', 'service', 'pay', 'month', 'bill', 'equipment', 'ship', 'equipm  
ent', 'date', 'order', 'service', 'equipment', 'receive', 'short', 'adapter', 'box', 'receive', 'additional', 'remote',  
'ship', 'adapter', 'box', 'immediately', 'tiny', 'box', 'come', 'package', 'shipping', 'charge', 'adapter', 'apply', 'a  
ccount', 'adapter', 'box', 'include', 'original', 'box', 'original', 'shipping', 'charge', 'contact', 'customer', 'serv  
ice', 'time', 'receive', 'charge', 'twice', 'finally', 'today', 'fourth', 'time', 'time', 'representative', 'agree', 'c  
harge', 'credit', 'apply', 'pm', 'allen', 'employee', 'number', 'inform', 'credit', 'bill', 'shipping', 'fee', 'charg  
e', 'review', 'supervisor', 'explain', 'tell', 'twice', 'past', 'month', 'ask', 'speak', 'supervisor', 'place', 'hold',  
'return', 'supervisor', 'busy', 'able', 'discuss', 'matter', 'account', 'specialist', 'ahead', 'apply', 'credit', 'acco  
unt', 'phone', 'explain', 'past', 'rep', 'submit', 'credit', 'supervisor', 'assure', 'credit', 'bill', 'service', 'inte  
rruption', 'charge', 'contact', 'customer', 'service', 'shut', 'service', 'past', 'pay', 'bill', 'online', 'pay', 'mont  
h', 'allow', 'submit', 'include', 'pay', 'contact', 'account', 'rep', 'online', 'chat', 'discuss', 'credit', 'joancie  
n', 'type', 'fully', 'apply', 'shipping', 'fee', 'credit', 'account', 'service', 'restore', 'past', 'credit', 'state',  
'previous', 'credit', 'quote', 'previous', 'rep', 'post', 'account', 'previous', 'rep', 'submit', 'credit', 'request',  
'supervisor', 'credit', 'apply', 'restore', 'let', 'hope', 'issue', 'credit', 'pay', 'bill', 'hope', 'bill', 'afraid',  
'addition', 'internet', 'service', 'work', 'complete', 'reset', 'time', 'work', 'technician', 'look', 'repair', 'proble  
m', 'fail', 'spend', 'countless', 'hour', 'phone', 'support', 'issue', 'mind', 'service', 'middle', 'spend', 'time', 'd  
evote', 'try', 'decent', 'service', 'comcast', 'poor', 'equipment', 'poor', 'customer', 'service', 'sadly', 'want', 'sa  
tellite', 'service', 'comcast', 'option']

Unnecessary words removed!

processed\_a 15 is:

comcast xfinity steal catch money address reinstall comcast new home pay comcast bill advance pay month bill owe zero balance soon new home week later new bill charge add excuse forget credit bill pay deposit instead bill previous month current month charge month advance new bill bill pay month previous address bill instead include cable tv check bill comcast money send correct bill claim bill come new address twice demand speak supervisor threaten contact consumer fraud state attorney general office correct bill tell yes adjust bill credit payment previous month bill pay advance date angry defraud comcast sign cable dsl company save month check bill especially comcast service provider contract know figure people trust pay bill pay bill million comcast provider move month comcast collect million dollar money know comcast thief watch bill month especially

split\_processed\_a 15 is of length < 135 > :

```
['comcast', 'xfinity', 'steal', 'catch', 'money', 'address', 'reinstall', 'comcast', 'new', 'home', 'pay', 'comcast', 'bill', 'advance', 'pay', 'month', 'bill', 'owe', 'zero', 'balance', 'soon', 'new', 'home', 'week', 'later', 'new', 'bill', 'charge', 'add', 'excuse', 'forget', 'credit', 'bill', 'pay', 'deposit', 'instead', 'bill', 'previous', 'month', 'current', 'month', 'charge', 'month', 'advance', 'new', 'bill', 'bill', 'pay', 'month', 'previous', 'address', 'bill', 'instead', 'include', 'cable', 'tv', 'check', 'bill', 'comcast', 'money', 'send', 'correct', 'bill', 'claim', 'bill', 'come', 'new', 'address', 'twice', 'demand', 'speak', 'supervisor', 'threaten', 'contact', 'consumer', 'fraud', 'state', 'attorney', 'general', 'office', 'correct', 'bill', 'tell', 'yes', 'adjust', 'bill', 'credit', 'payment', 'previous', 'month', 'bill', 'pay', 'advance', 'date', 'angry', 'defraud', 'comcast', 'sign', 'cable', 'dsl', 'company', 'save', 'month', 'check', 'bill', 'especially', 'comcast', 'service', 'provider', 'contract', 'know', 'figure', 'people', 'trust', 'pay', 'bill', 'pay', 'bill', 'million', 'comcast', 'provider', 'move', 'month', 'comcast', 'collect', 'million', 'dollar', 'money', 'know', 'comcast', 'thief', 'watch', 'bill', 'month', 'especially']
```

Removing unnecessary words ...

```
Updated list of length < 134 > : ['comcast', 'xfinity', 'steal', 'catch', 'money', 'address', 'reinstall', 'comcast', 'new', 'home', 'pay', 'comcast', 'bill', 'advance', 'pay', 'month', 'bill', 'owe', 'zero', 'balance', 'soon', 'new', 'home', 'week', 'later', 'new', 'bill', 'charge', 'add', 'excuse', 'forget', 'credit', 'bill', 'pay', 'deposit', 'instead', 'bill', 'previous', 'month', 'current', 'month', 'charge', 'month', 'advance', 'new', 'bill', 'bill', 'pay', 'month', 'previous', 'address', 'bill', 'instead', 'include', 'cable', 'tv', 'check', 'bill', 'comcast', 'money', 'send', 'correct', 'bill', 'claim', 'bill', 'come', 'new', 'address', 'twice', 'demand', 'speak', 'supervisor', 'threaten', 'contact', 'consumer', 'fraud', 'state', 'attorney', 'general', 'office', 'correct', 'bill', 'tell', 'yes', 'adjust', 'bill', 'credit', 'payment', 'previous', 'month', 'bill', 'pay', 'advance', 'date', 'angry', 'defraud', 'comcast', 'sign', 'cable', 'dsl', 'company', 'save', 'month', 'check', 'bill', 'especially', 'comcast', 'service', 'provider', 'contract', 'know', 'figure', 'people', 'trust', 'pay', 'bill', 'pay', 'bill', 'million', 'comcast', 'provider', 'month', 'comcast', 'collect', 'million', 'dollar', 'money', 'know', 'comcast', 'thief', 'watch', 'bill', 'month', 'especially']
```

Unnecessary words removed!

processed\_a 16 is:

contact comcast inquire service available area new area year tell representative let know future neighbor service ask phone internet big tv person tell yes service place address mention safe week walk verify decide bit time call speak matt inspection set give code tell check likely get let know call morning actually demand number give person speak todd believe say order give want set get number say check service today tomorrow call morning day force employee time hear order right place matt person talk actually note survey complete wait new address add system long week tell enter new address sorry different department okay suppose wait sadly wait phone line instal lose discount new home owner insurance call tell go tell wait week address enter week come house think reason delay get house place comcast hit water line trash line put equipment check builder course builder fight pay damage state tell week check address enter service send instal tell sorry tomorrow system call day day day exclude call talk tell week address process ask speak manager tell note meeting hour late actually allow hour call tell new person talk happen want speak manager tell give numbered code happen use hold manager apologize say expedite manager actually transfer guy name chris tell chris go far include damage water line have change alarm company comcast drag foot mention confusion take care give direct line tell contact contractor expedite address system visit come say today late tomorrow status update hour get phone contact number ask try patient man rubbish read review actually cringe wonder bother company know personally damage wiring friend apartment service go fix issue issue fix friend question cancel service know thing will contract manager chris people order

split\_processed\_a 16 is of length < 285 > :

['contact', 'comcast', 'inquire', 'service', 'available', 'area', 'new', 'area', 'year', 'tell', 'representative', 'let', 'know', 'future', 'neighbor', 'service', 'ask', 'phone', 'internet', 'big', 'tv', 'person', 'tell', 'yes', 'service', 'place', 'address', 'mention', 'safe', 'week', 'walk', 'verify', 'decide', 'bit', 'time', 'call', 'speak', 'matt', 'inspection', 'set', 'give', 'code', 'tell', 'check', 'likely', 'get', 'let', 'know', 'call', 'morning', 'actually', 'demand', 'number', 'give', 'person', 'speak', 'todd', 'believe', 'say', 'order', 'give', 'want', 'set', 'get', 'number', 'say', 'check', 'service', 'today', 'tomorrow', 'call', 'morning', 'day', 'force', 'employee', 'time', 'hear', 'order', 'right', 'place', 'matt', 'person', 'talk', 'actually', 'note', 'survey', 'complete', 'wait', 'new', 'address', 'add', 'system', 'long', 'week', 'tell', 'enter', 'new', 'address', 'sorry', 'different', 'department', 'okay', 'suppose', 'wait', 'sadly', 'wait', 'phone', 'line', 'instal', 'lose', 'discount', 'new', 'home', 'owner', 'insurance', 'call', 'tell', 'go', 'tell', 'wait', 'week', 'address', 'enter', 'week', 'come', 'house', 'think', 'reason', 'delay', 'get', 'house', 'place', 'comcast', 'hit', 'water', 'line', 'trash', 'line', 'put', 'equipment', 'check', 'builder', 'course', 'builder', 'fight', 'pay', 'damage', 'state', 'tell', 'week', 'check', 'address', 'enter', 'service', 'send', 'instal', 'tell', 'sorry', 'tomorrow', 'system', 'call', 'day', 'day', 'day', 'exclude', 'call', 'talk', 'tell', 'week', 'address', 'process', 'ask', 'speak', 'manager', 'tell', 'note', 'meeting', 'hour', 'late', 'actually', 'allow', 'hour', 'call', 'tell', 'new', 'person', 'talk', 'happen', 'want', 'speak', 'manager', 'tell', 'give', 'numbered', 'code', 'happen', 'use', 'hold', 'manager', 'apologize', 'say', 'expedite', 'manager', 'actually', 'transfer', 'guy', 'name', 'chris', 'tell', 'chris', 'go', 'far', 'include', 'damage', 'water', 'line', 'have', 'change', 'alarm', 'company', 'comcast', 'drag', 'foot', 'mention', 'confusion', 'take', 'care', 'give', 'direct', 'line', 'tell', 'contact', 'contractor', 'expedite', 'address', 'system', 'visit', 'come', 'say', 'today', 'late', 'tomorrow', 'status', 'update', 'hour', 'get', 'phone', 'contact', 'number', 'ask', 'try', 'patient', 'man', 'rubbish', 'read', 'review', 'actually', 'cringe', 'wonder', 'bother', 'company', 'know', 'personally', 'damage', 'wiring', 'friend', 'apartment', 'service', 'go', 'fix', 'issue', 'issue', 'fix', 'friend', 'question', 'cancel', 'service', 'know', 'thing', 'will', 'contract', 'manager', 'chris', 'people', 'order']

```
ople', 'order']
```

Removing unnecessary words ...

```
Updated list of length < 257 > : ['contact', 'comcast', 'inquire', 'service', 'available', 'area', 'new', 'area', 'year', 'tell', 'representative', 'let', 'know', 'future', 'neighbor', 'service', 'ask', 'phone', 'internet', 'big', 'tv', 'person', 'tell', 'yes', 'service', 'place', 'address', 'mention', 'safe', 'week', 'walk', 'verify', 'decide', 'bit', 'time', 'speak', 'matt', 'inspection', 'set', 'code', 'tell', 'check', 'likely', 'let', 'know', 'morning', 'actually', 'demand', 'number', 'person', 'speak', 'todd', 'believe', 'order', 'want', 'set', 'number', 'check', 'service', 'today', 'tomorrow', 'morning', 'day', 'force', 'employee', 'time', 'hear', 'order', 'right', 'place', 'matt', 'person', 'talk', 'actually', 'note', 'survey', 'complete', 'wait', 'new', 'address', 'add', 'system', 'long', 'week', 'tell', 'enter', 'new', 'address', 'sorry', 'different', 'department', 'okay', 'suppose', 'wait', 'sadly', 'wait', 'phone', 'line', 'instal', 'lose', 'discount', 'new', 'home', 'owner', 'insurance', 'tell', 'tell', 'wait', 'week', 'address', 'enter', 'week', 'come', 'house', 'think', 'reason', 'delay', 'house', 'place', 'comcast', 'hit', 'water', 'line', 'trash', 'line', 'equipment', 'check', 'builder', 'course', 'builder', 'fight', 'pay', 'damage', 'state', 'tell', 'week', 'check', 'address', 'enter', 'service', 'send', 'instal', 'tell', 'sorry', 'tomorrow', 'system', 'day', 'day', 'day', 'exclude', 'talk', 'tell', 'week', 'address', 'process', 'ask', 'speak', 'manager', 'tell', 'note', 'meeting', 'hour', 'late', 'actually', 'allow', 'hour', 'tell', 'new', 'person', 'talk', 'happen', 'want', 'speak', 'manager', 'tell', 'numbered', 'code', 'happen', 'use', 'hold', 'manager', 'apologize', 'expedite', 'manager', 'actually', 'transfer', 'guy', 'chris', 'tell', 'chris', 'far', 'include', 'damage', 'water', 'line', 'change', 'alarm', 'company', 'comcast', 'drag', 'foot', 'mention', 'confusion', 'care', 'direct', 'line', 'tell', 'contact', 'contractor', 'expedite', 'address', 'system', 'visit', 'come', 'today', 'late', 'tomorrow', 'status', 'update', 'hour', 'phone', 'contact', 'number', 'ask', 'try', 'patient', 'man', 'rubbish', 'read', 'review', 'actually', 'cringe', 'wonder', 'bother', 'company', 'know', 'personally', 'damage', 'wiring', 'friend', 'apartment', 'service', 'fix', 'issue', 'issue', 'fix', 'friend', 'question', 'cancel', 'service', 'know', 'thing', 'contract', 'manager', 'chris', 'people', 'order']
```

Unnecessary words removed!

```
*****
```

The time taken to run this code is: 1.17 seconds

```
*****
```

```
In [11]: # Printing first 5 elements of list_of_complaints_a, plain_complaints_list_a, processed_tokens_list_a
# and entire vocabulary_a and words_removed_from_list_a lists
```



```
print("\nlist_of_complaints_a: \n\n",list_of_complaints_a[:5],
      "\n\nplain_complaints_list_a: \n\n", plain_complaints_list_a[:5],
      "\n\nprocessed_tokens_list_a: \n\n",processed_tokens_list_a[:5],
      "\n\nvocabulary_a is of length  : <",len(vocabulary_a),">\n\n", vocabulary_a,
      "\n\nwords_removed_from_list_a: \n\n", words_removed_from_list_a)
```

list\_of\_complaints\_a:

```
[['internet week demand week second day work day schedule visit automate system outage area resolve later afternoon tel
ll try send signal modem work schedule visit mind option follow freaking way long business run guy come pull sit like m
minute look freak little hot ask leave lady outage area able come door tell later reschedule appointment confirm church
wait come like guy lady phone tell reschedule freaking like seriously check like min local office reschedule pick confi
rm like schedule confirm pick way come cancel freak yes correct piss rescheduled time like happen guarantee direct'],
['having comcast measly data cap year cancel transfer customer retention explain problem sign unlimited internet change
unlimited limited like people stream netflix download video game know reason people internet wonderful customer retenti
on specialist tell data cap free hbo year wow month high package tell high limit residential customer maybe change mind
month problem second month bill come sure charge datum overage comcast minute wait time tell sign data cap plan month c
harge overage month month allot customer datum allotment data plan year straight month month begin institute datum cap
liar people phone let deal later record thieving liar urge catch post people'], ['year disappointed recent experience c
omcast xfinity contact company transfer service commercial assure easy false advertisement despite contact xfinity adva
nce receive different appointment require present day day arrive courtesy day service personnel hour late arrive tell n
eed additional help available week like company treat big concern'], ['company want deal comcast middle bill come extra
charge person talk lie cable shut twice agree pay tell pay time talk tell different ask listen conversation company cra
p unbelievable like person work comcast lie look honest reputable company comcast comcast crooked company meet'], ['oka
y technician come week ago hook xfinity voice internet service small garden block area work instead avoid plant fool pu
ll wooden border toss yard stomp plant like wooden border heavy large nail stick thing yard nail come step trip log son
find inform leave finish work house son discover mess outside leave finish job come house leave come minute later nerve
sit couch minute wait certain time clock sit house watch tv time work comcast file complaint tell hear memorial day thi
nk damn bill post account day later']]
```

plain\_complaints\_list\_a:

```
['internet week demand week second day work day schedule visit automate system outage area resolve later afternoon tel
l try send signal modem work schedule visit mind option follow freaking way long business run guy come pull sit like mi
nute look freak little hot ask leave lady outage area able come door tell later reschedule appointment confirm church w
ait come like guy lady phone tell reschedule freaking like seriously check like min local office reschedule pick confir
m like schedule confirm pick way come cancel freak yes correct piss rescheduled time like happen guarantee direct', 'ha
ving comcast measly data cap year cancel transfer customer retention explain problem sign unlimited internet change unl
imited limited like people stream netflix download video game know reason people internet wonderful customer retention
specialist tell data cap free hbo year wow month high package tell high limit residential customer maybe change mind mo
nth problem second month bill come sure charge datum overage comcast minute wait time tell sign data cap plan month cha
rge overage month month allot customer datum allotment data plan year straight month month begin institute datum cap li
ar people phone let deal later record thieving liar urge catch post people', 'year disappointed recent experience comca
st xfinity contact company transfer service commercial assure easy false advertisement despite contact xfinity advance
receive different appointment require present day day arrive courtesy day service personnel hour late arrive tell need
additional help available week like company treat big concern', 'company want deal comcast middle bill come extra charg
e person talk lie cable shut twice agree pay tell pay time talk tell different ask listen conversation company crap unb
elievable like person work comcast lie look honest reputable company comcast comcast crooked company meet', 'okay techn
ician come week ago hook xfinity voice internet service small garden block area work instead avoid plant fool pull wood
en border toss yard stomp plant like wooden border heavy large nail stick thing yard nail come step trip log son find i
nform leave finish work house son discover mess outside leave finish job come house leave come minute later nerve sit c
```

ouch minute wait certain time clock sit house watch tv time work comcast file complaint tell hear memorial day think damn bill post account day later']

processed\_tokens\_list\_a:

```
[['internet', 'week', 'demand', 'week', 'second', 'day', 'work', 'day', 'schedule', 'visit', 'automate', 'system', 'outage', 'area', 'resolve', 'later', 'afternoon', 'tell', 'try', 'send', 'signal', 'modem', 'work', 'schedule', 'visit', 'mind', 'option', 'follow', 'freaking', 'way', 'long', 'business', 'run', 'guy', 'come', 'pull', 'sit', 'like', 'minute', 'look', 'freak', 'little', 'hot', 'ask', 'leave', 'lady', 'outage', 'area', 'able', 'come', 'door', 'tell', 'later', 'reschedule', 'appointment', 'confirm', 'church', 'wait', 'come', 'like', 'guy', 'lady', 'phone', 'tell', 'reschedule', 'freaking', 'like', 'seriously', 'check', 'like', 'min', 'local', 'office', 'reschedule', 'pick', 'confirm', 'like', 'schedule', 'confirm', 'pick', 'way', 'come', 'cancel', 'freak', 'yes', 'correct', 'piss', 'rescheduled', 'time', 'like', 'happen', 'guarantee', 'direct'], ['having', 'comcast', 'measly', 'data', 'cap', 'year', 'cancel', 'transfer', 'customer', 'retention', 'explain', 'problem', 'sign', 'unlimited', 'internet', 'change', 'unlimited', 'limited', 'like', 'people', 'stream', 'netflix', 'download', 'video', 'game', 'know', 'reason', 'people', 'internet', 'wonderful', 'customer', 'retention', 'specialist', 'tell', 'data', 'cap', 'free', 'hbo', 'year', 'wow', 'month', 'high', 'package', 'tell', 'high', 'limit', 'residential', 'customer', 'maybe', 'change', 'mind', 'month', 'problem', 'second', 'month', 'bill', 'come', 'sure', 'charge', 'datum', 'overage', 'comcast', 'minute', 'wait', 'time', 'tell', 'sign', 'data', 'cap', 'plan', 'month', 'charge', 'overage', 'month', 'month', 'allot', 'customer', 'datum', 'allotment', 'data', 'plan', 'year', 'straight', 'month', 'month', 'begin', 'institute', 'datum', 'cap', 'liar', 'people', 'phone', 'let', 'deal', 'later', 'record', 'thieving', 'liar', 'urge', 'catch', 'post', 'people'], ['year', 'disappointed', 'recent', 'experience', 'comcast', 'xfinity', 'contact', 'company', 'transfer', 'service', 'commercial', 'assure', 'easy', 'false', 'advertisement', 'despite', 'contact', 'xfinity', 'advance', 'receive', 'different', 'appointment', 'require', 'present', 'day', 'day', 'arrive', 'courtesy', 'day', 'service', 'personnel', 'hour', 'late', 'arrive', 'tell', 'need', 'additional', 'help', 'available', 'week', 'like', 'company', 'treat', 'big', 'concern'], ['company', 'want', 'deal', 'comcast', 'middle', 'bill', 'come', 'extra', 'charge', 'person', 'talk', 'lie', 'cable', 'shut', 'twice', 'agree', 'pay', 'tell', 'pay', 'time', 'talk', 'tell', 'different', 'ask', 'listen', 'conversation', 'company', 'crap', 'unbelievable', 'like', 'person', 'work', 'comcast', 'lie', 'look', 'honest', 'reputable', 'company', 'comcast', 'comcast', 'crooked', 'company', 'meet'], ['okay', 'technician', 'come', 'week', 'ago', 'hook', 'xfinity', 'voice', 'internet', 'service', 'small', 'garden', 'block', 'area', 'work', 'instead', 'avoid', 'plant', 'fool', 'pull', 'wooden', 'border', 'toss', 'yard', 'stomp', 'plant', 'like', 'wooden', 'border', 'heavy', 'large', 'nail', 'stick', 'thing', 'yard', 'nail', 'come', 'step', 'trip', 'log', 'son', 'find', 'inform', 'leave', 'finish', 'work', 'house', 'son', 'discover', 'mess', 'outside', 'leave', 'finish', 'job', 'come', 'house', 'leave', 'come', 'minute', 'later', 'nerve', 'sit', 'couch', 'minute', 'wait', 'certain', 'time', 'clock', 'sit', 'house', 'watch', 'tv', 'time', 'work', 'comcast', 'file', 'complaint', 'tell', 'hear', 'memorial', 'day', 'think', 'damn', 'bill', 'post', 'account', 'day', 'later']]
```

vocabulary\_a is of length : < 589 >

```
['internet', 'week', 'demand', 'second', 'day', 'work', 'schedule', 'visit', 'automate', 'system', 'outage', 'area', 'resolve', 'later', 'afternoon', 'tell', 'try', 'send', 'signal', 'modem', 'mind', 'option', 'follow', 'freaking', 'way', 'long', 'business', 'run', 'guy', 'come', 'pull', 'sit', 'like', 'minute', 'look', 'freak', 'little', 'hot', 'ask', 'leave', 'lady', 'able', 'door', 'reschedule', 'appointment', 'confirm', 'church', 'wait', 'phone', 'seriously', 'check', 'min', 'local', 'office', 'pick', 'cancel', 'yes', 'correct', 'piss', 'rescheduled', 'time', 'happen', 'guarantee', 'direct', 'having', 'comcast', 'measly', 'data', 'cap', 'year', 'transfer', 'customer', 'retention', 'explain', 'problem', 'sign', 'unlimited', 'change', 'limited', 'people', 'stream', 'netflix', 'download', 'video', 'game', 'know', 'reason']
```

on', 'wonderful', 'specialist', 'free', 'hbo', 'wow', 'month', 'high', 'package', 'limit', 'residential', 'maybe', 'bill', 'sure', 'charge', 'datum', 'overage', 'plan', 'allot', 'allotment', 'straight', 'begin', 'institute', 'liar', 'let', 'deal', 'record', 'thieving', 'urge', 'catch', 'post', 'disappointed', 'recent', 'experience', 'xfinity', 'contact', 'company', 'service', 'commercial', 'assure', 'easy', 'false', 'advertisement', 'despite', 'advance', 'receive', 'different', 'require', 'present', 'arrive', 'courtesy', 'personnel', 'hour', 'late', 'need', 'additional', 'help', 'available', 'treat', 'big', 'concern', 'want', 'middle', 'extra', 'person', 'talk', 'lie', 'cable', 'shut', 'twice', 'agree', 'pay', 'listen', 'conversation', 'crap', 'unbelievable', 'honest', 'reputable', 'crooked', 'meet', 'okay', 'technician', 'ago', 'hook', 'voice', 'small', 'garden', 'block', 'instead', 'avoid', 'plant', 'fool', 'wooden', 'border', 'toss', 'yard', 'stomp', 'heavy', 'large', 'nail', 'stick', 'thing', 'step', 'trip', 'log', 'son', 'find', 'inform', 'finish', 'house', 'discover', 'mess', 'outside', 'job', 'nerve', 'couch', 'certain', 'clock', 'watch', 'tv', 'file', 'complaint', 'hear', 'memorial', 'think', 'damn', 'account', 'train', 'read', 'hand', 'promise', 'deliver', 'believe', 'citizens', 'accent', 'language', 'barrier', 'lack', 'respect', 'interrupt', 'rude', 'undertone', 'polite', 'scripted', 'word', 'untrue', 'demeanor', 'obvious', 'care', 'million', 'hope', 'frustrated', 'hang', 'quota', 'future', 'rep', 'tech', 'morning', 'appt', 'complete', 'living', 'room', 'knock', 'report', 'online', 'college', 'course', 'assignment', 'midnight', 'grade', 'drop', 'inefficient', 'worker', 'thank', 'allow', 'fail', 'exist', 'drive', 'retailer', 'usually', 'end', 'script', 'sense', 'urgency', 'info', 'terrible', 'popping', 'crackling', 'line', 'answer', 'multiple', 'rudely', 'support', 'staff', 'identify', 'wrong', 'state', 'attorney', 'general', 'register', 'past', 'garner', 'response', 'multiply', 'corporate', 'entity', 'issue', 'buy', 'new', 'suggestion', 'equipment', 'waste', 'money', 'appreciate', 'attention', 'matter', 'decide', 'chance', 'order', 'headache', 'place', 'ok', 'welcome', 'email', 'set', 'installation', 'fully', 'process', 'finally', 'date', 'access', 'dvr', 'box', 'hd', 'spend', 'chat', 'representative', 'properly', 'limbo', 'authorize', 'install', 'fee', 'outlet', 'bad', 'employee', 'incompetent', 'approximately', 'replace', 'temporary', 'fix', 'speak', 'manager', 'mix', 'consecutive', 'number', 'continue', 'residence', 'upgrade', 'research', 'previous', 'suppose', 'wall', 'unit', 'notice', 'bring', 'home', 'unnoticed', 'add', 'monkey', 'advise', 'getting', 'worry', 'credit', 'installment', 'frame', 'management', 'bank', 'cash', 'hold', 'responsible', 'furious', 'collector', 'owe', 'dollar', 'willing', 'right', 'collect', 'worth', 'handle', 'mean', 'creditor', 'threaten', 'displeased', 'continuously', 'rise', 'type', 'excuse', 'raise', 'recommend', 'enemy', 'stay', 'good', 'stand', 'realize', 'feel', 'huge', 'corporation', 'god', 'low', 'absolute', 'yesterday', 'simple', 'guess', 'young', 'nice', 'screw', 'current', 'location', 'suspend', 'concerned', 'deadbeat', 'baby', 'daddy', 'thirty', 'turn', 'soon', 'pm', 'cst', 'hell', 'break', 'loose', 'shay', 'disconnect', 'stupid', 'supervisor', 'purposely', 'department', 'sale', 'andrew', 'refuse', 'billing', 'balance', 'auto', 'understand', 'english', 'corey', 'repeatedly', 'forget', 'solutions', 'christy', 'deserve', 'promotion', 'space', 'ear', 'admit', 'pissed', 'irritated', 'attitude', 'professional', 'helpful', 'lose', 'patience', 'restart', 'correctly', 'cause', 'ridiculous', 'quality', 'payment', 'slap', 'face', 'feed', 'bunch', 'forever', 'extremely', 'price', 'nightmare', 'somebody', 'start', 'competition', 'eventually', 'live', 'expensive', 'decade', 'stop', 'return', 'thankfully', 'receipt', 'handy', 'copy', 'claim', 'play', 'plead', 'ignorance', 'sue', 'class', 'action', 'ship', 'short', 'adapter', 'remote', 'immediately', 'tiny', 'shipping', 'apply', 'include', 'original', 'today', 'fourth', 'allen', 'review', 'busy', 'discuss', 'ahead', 'submit', 'interruption', 'joancien', 'restore', 'quote', 'request', 'afraid', 'addition', 'reset', 'repair', 'countless', 'devote', 'decent', 'poor', 'sadly', 'satellite', 'steal', 'address', 'reinstall', 'zero', 'deposit', 'consumer', 'fraud', 'adjust', 'angry', 'defraud', 'dsl', 'save', 'especially', 'provider', 'contract', 'figure', 'trust', 'thief', 'inquire', 'neighbor', 'mention', 'safe', 'walk', 'verify', 'bit', 'matt', 'inspection', 'code', 'likely', 'actually', 'todd', 'tomorrow', 'force', 'note', 'survey', 'enter', 'sorry', 'instal', 'discount', 'owner', 'insurance', 'delay', 'hit', 'water', 'trash', 'builder', 'fight', 'damage', 'exclude', 'meeting', 'numbered', 'use', 'apologize', 'expedite', 'chris', 'far', 'alarm', 'drag', 'foot', 'confusion', 'contractor', 'status', 'update', 'patient', 'man', 'rubbish', 'cringe', 'wonder', 'bother', 'personally', 'wiring', 'friend', 'apartment', 'question']

words\_removed\_from\_list\_a:

```
['keep', 'say', 'give', 'see', 'go', 'call', 'get', 'take', 'move', 'show', 'will', 'to', 'make', 'well', 'put', 'can', 'have', 'name']
```

## Preprocessing complaints from Massachusetts

```
In [12]: start_time_spacy_mas = time.time()

list_of_complaints_m = []      # List of list of complaints, each element -> complaint as a list
plain_complaints_list_m = []  # List of complaints, each element -> complaint text
processed_tokens_list_m = []  # List of processed tokens in each text
vocabulary_m = []             # Empty list that will get appended with results i.e. unique words later in the code
words_removed_from_list_m = [] # List of words removed from processed text => remaining stopwords in processed tokens

# Index is a variable that will be used to iterate through the complaints text list
index_m = 0

# Using the while loop to iterate through the complaints_text_list
while len(massachusetts_complaints_list) > index_m:
    for individual_complaint in massachusetts_complaints_list:
        # Removing emojis so that they don't get tokenized
        if len(emoji.emoji_list(individual_complaint)) > 0:
            print(emoji.emoji_list(individual_complaint), "\n"*2)
            massachusetts_complaints_list[index_m] = emoji.replace_emoji(individual_complaint, replace="")
            print("The list has been updated.\n\n", index_m, ": ", massachusetts_complaints_list[index_m], "\n"*2)
            individual_complaint = massachusetts_complaints_list[index_m]

        # Text Preprocessing
        doc_m = nlp(individual_complaint)
        # Lemmatizing tokens, converting them to lowercase and omitting stopwords, punctuations and numbers
        # processed_m creates string objects
        processed_m = " ".join(token.lemma_.lower() for token in doc_m if not token.is_stop and not token.is_punct
                                and token.is_alpha)
        print("\nprocessed_m ", index_m, " is: \n\n", processed_m, "\n\n")
        split_processed_m = processed_m.split()
        print("split_processed_m ", index_m, " is of length <", len(split_processed_m), "> :\n\n", split_processed_m, "\n")
        print("Removing unnecessary words ...\n\n")
        remove_unnecessary_words(split_processed_m, stop_words_list, words_removed_from_list_m, processed_tokens_list_m,
                                   plain_complaints_list_m, list_of_complaints_m)
        print("\n\nUnnecessary words removed!\n\n")

    for word in split_processed_m:
        if word not in vocabulary_m:
```

```
        vocabulary_m.append(word)

    index_m += 1    # Incrementing index by 1

end_time_spacy_mas = time.time()
runtime_spacy_mas = round(end_time_spacy_mas - start_time_spacy_mas, 2)

print("\n\n ***** \n\n",
      "The time taken to run this code is: ", runtime_spacy_mas, "seconds",
      "\n\n ***** \n\n")
```

processed\_m 0 is:

comcast overall terrible experience describe provider area time deal ultimately move apartment area service provider call cancel account take forever finally hardware store receipt deal debt collector month claim owe money return hardware luckily physical proof honestly pay sure call deny liability kick different debt collection agency new month later finally go away use comcast good customer service accidentally disconnect hint want cancel service complain choose option customer service menu add service connect agent immediately ultimately connect right department directly probably disconnect time

split\_processed\_m 0 is of length < 83 > :

```
['comcast', 'overall', 'terrible', 'experience', 'describe', 'provider', 'area', 'time', 'deal', 'ultimately', 'move', 'apartment', 'area', 'service', 'provider', 'call', 'cancel', 'account', 'take', 'forever', 'finally', 'hardware', 'store', 'receipt', 'deal', 'debt', 'collector', 'month', 'claim', 'owe', 'money', 'return', 'hardware', 'luckily', 'physical', 'proof', 'honestly', 'pay', 'sure', 'call', 'deny', 'liability', 'kick', 'different', 'debt', 'collection', 'agency', 'new', 'month', 'later', 'finally', 'go', 'away', 'use', 'comcast', 'good', 'customer', 'service', 'accidentally', 'disconnect', 'hint', 'want', 'cancel', 'service', 'complain', 'choose', 'option', 'customer', 'service', 'menu', 'add', 'service', 'connect', 'agent', 'immediately', 'ultimately', 'connect', 'right', 'department', 'directly', 'probably', 'disconnect', 'time']
```

Removing unnecessary words ...

```
Updated list of length < 78 > : ['comcast', 'overall', 'terrible', 'experience', 'describe', 'provider', 'area', 'time', 'deal', 'ultimately', 'apartment', 'area', 'service', 'provider', 'cancel', 'account', 'forever', 'finally', 'hardware', 'store', 'receipt', 'deal', 'debt', 'collector', 'month', 'claim', 'owe', 'money', 'return', 'hardware', 'luckily', 'physical', 'proof', 'honestly', 'pay', 'sure', 'deny', 'liability', 'kick', 'different', 'debt', 'collection', 'agency', 'new', 'month', 'later', 'finally', 'away', 'use', 'comcast', 'good', 'customer', 'service', 'accidentally', 'disconnect', 'hint', 'want', 'cancel', 'service', 'complain', 'choose', 'option', 'customer', 'service', 'menu', 'add', 'service', 'connect', 'agent', 'immediately', 'ultimately', 'connect', 'right', 'department', 'directly', 'probably', 'disconnect', 'time']
```

Unnecessary words removed!

processed\_m 1 is:

experience technical difficulty demand service technical support solution problem reset box couple attempt system run support rep ask able access movie say yes say set problem happen redo previous process tell set fiance call entirely different issue go automate system tell account balance think mistake speak billing dept find demand movie order month confuse lock service code need purchase code apparently tech support reset box wipe parental setting old son able order w

ant watch little movie episode phone call issue follow day comcast xfinity refuse remove charge say movie episode watch supervisor request speak call finally speak rep review account get suppose supervisor approve credit account history show sort purchase incidence like go need split credit exceed credit apply limit thank loyal customer hang make payment early week come home find service interrupt late speak pm call following afternoon find hang call review lead determine credit apply account movie episode watch technical support wipe parental setting tell set dissatisfied experience return equipment comcast xfinity customer

split\_processed\_m 1 is of length < 165 > :

```
['experience', 'technical', 'difficulty', 'demand', 'service', 'technical', 'support', 'solution', 'problem', 'reset', 'box', 'couple', 'attempt', 'system', 'run', 'support', 'rep', 'ask', 'able', 'access', 'movie', 'say', 'yes', 'say', 'set', 'problem', 'happen', 'redo', 'previous', 'process', 'tell', 'set', 'fiance', 'call', 'entirely', 'different', 'issue', 'go', 'automate', 'system', 'tell', 'account', 'balance', 'think', 'mistake', 'speak', 'billing', 'dept', 'find', 'demand', 'movie', 'order', 'month', 'confuse', 'lock', 'service', 'code', 'need', 'purchase', 'code', 'apparently', 'tech', 'support', 'reset', 'box', 'wipe', 'parental', 'setting', 'old', 'son', 'able', 'order', 'want', 'watch', 'little', 'movie', 'episode', 'phone', 'call', 'issue', 'follow', 'day', 'comcast', 'xfinity', 'refuse', 'remove', 'charge', 'say', 'movie', 'episode', 'watch', 'supervisor', 'request', 'speak', 'call', 'finally', 'speak', 'rep', 'review', 'account', 'get', 'suppose', 'supervisor', 'approve', 'credit', 'account', 'history', 'show', 'sort', 'purchase', 'incidence', 'like', 'go', 'need', 'split', 'credit', 'exceed', 'credit', 'apply', 'limit', 'thank', 'loyal', 'customer', 'hang', 'make', 'payment', 'early', 'week', 'come', 'home', 'find', 'service', 'interrupt', 'late', 'speak', 'pm', 'call', 'following', 'afternoon', 'find', 'hang', 'call', 'review', 'lead', 'determine', 'credit', 'apply', 'account', 'movie', 'episode', 'watch', 'technical', 'support', 'wipe', 'parental', 'setting', 'tell', 'set', 'dissatisfied', 'experience', 'return', 'equipment', 'comcast', 'xfinity', 'customer']
```

Removing unnecessary words ...

```
Updated list of length < 152 > : ['experience', 'technical', 'difficulty', 'demand', 'service', 'technical', 'support', 'solution', 'problem', 'reset', 'box', 'couple', 'attempt', 'system', 'run', 'support', 'rep', 'ask', 'able', 'access', 'movie', 'yes', 'set', 'problem', 'happen', 'redo', 'previous', 'process', 'tell', 'set', 'fiance', 'entirely', 'different', 'issue', 'automate', 'system', 'tell', 'account', 'balance', 'think', 'mistake', 'speak', 'billing', 'dept', 'find', 'demand', 'movie', 'order', 'month', 'confuse', 'lock', 'service', 'code', 'need', 'purchase', 'code', 'apparently', 'tech', 'support', 'reset', 'box', 'wipe', 'parental', 'setting', 'old', 'son', 'able', 'order', 'want', 'watch', 'little', 'movie', 'episode', 'phone', 'issue', 'follow', 'day', 'comcast', 'xfinity', 'refuse', 'remove', 'charge', 'movie', 'episode', 'watch', 'supervisor', 'request', 'speak', 'finally', 'speak', 'rep', 'review', 'account', 'suppose', 'supervisor', 'approve', 'credit', 'account', 'history', 'sort', 'purchase', 'incidence', 'like', 'need', 'split', 'credit', 'exceed', 'credit', 'apply', 'limit', 'thank', 'loyal', 'customer', 'hang', 'payment', 'early', 'week', 'come', 'home', 'find', 'service', 'interrupt', 'late', 'speak', 'pm', 'following', 'afternoon', 'find', 'hang', 'review', 'lead', 'determine', 'credit', 'apply', 'account', 'movie', 'episode', 'watch', 'technical', 'support', 'wipe', 'parental', 'setting', 'tell', 'set', 'dissatisfied', 'experience', 'return', 'equipment', 'comcast', 'xfinity', 'customer']
```

Unnecessary words removed!



processed\_m 2 is:

consistently couple week slow web page loading download upload speed poor reliability packet datagram transmission fee  
l intentionally misrepresent operational product hold accountable patronize customer service apparently policy placate  
cover poor performance

split\_processed\_m 2 is of length < 31 > :

['consistently', 'couple', 'week', 'slow', 'web', 'page', 'loading', 'download', 'upload', 'speed', 'poor', 'reliability', 'packet', 'datagram', 'transmission', 'feel', 'intentionally', 'misrepresent', 'operational', 'product', 'hold', 'accountable', 'patronize', 'customer', 'service', 'apparently', 'policy', 'placate', 'cover', 'poor', 'performance']

Removing unnecessary words ...

Updated list of length < 31 > : ['consistently', 'couple', 'week', 'slow', 'web', 'page', 'loading', 'download', 'upload', 'speed', 'poor', 'reliability', 'packet', 'datagram', 'transmission', 'feel', 'intentionally', 'misrepresent', 'operational', 'product', 'hold', 'accountable', 'patronize', 'customer', 'service', 'apparently', 'policy', 'placate', 'cover', 'poor', 'performance']

Unnecessary words removed!

processed\_m 3 is:

deal nightmare comcast year pay month high speed internet receive half speed pay call turn internet speed service work  
good day right modem wireless internet box problem doubt mind throttle internet service

split\_processed\_m 3 is of length < 32 > :

['deal', 'nightmare', 'comcast', 'year', 'pay', 'month', 'high', 'speed', 'internet', 'receive', 'half', 'speed', 'pay', 'call', 'turn', 'internet', 'speed', 'service', 'work', 'good', 'day', 'right', 'modem', 'wireless', 'internet', 'box', 'problem', 'doubt', 'mind', 'throttle', 'internet', 'service']

Removing unnecessary words ...

Updated list of length < 31 > : ['deal', 'nightmare', 'comcast', 'year', 'pay', 'month', 'high', 'speed', 'internet', 'receive', 'half', 'speed', 'pay', 'turn', 'internet', 'speed', 'service', 'work', 'good', 'day', 'right', 'modem', 'wireless', 'internet', 'box', 'problem', 'doubt', 'mind', 'throttle', 'internet', 'service']

Unnecessary words removed!

processed\_m 4 is:

sign day pass xfinity boston password work reset call number email customer service person forward technical support person forward wi fi department forward suggest number call complain send circle guy try help call initial number get resolve suggest day service find carrier

split\_processed\_m 4 is of length < 42 > :

['sign', 'day', 'pass', 'xfinity', 'boston', 'password', 'work', 'reset', 'call', 'number', 'email', 'customer', 'service', 'person', 'forward', 'technical', 'support', 'person', 'forward', 'wi', 'fi', 'department', 'forward', 'suggest', 'number', 'call', 'complain', 'send', 'circle', 'guy', 'try', 'help', 'call', 'initial', 'number', 'get', 'resolve', 'suggest', 'day', 'service', 'find', 'carrier']

Removing unnecessary words ...

Updated list of length < 38 > : ['sign', 'day', 'pass', 'xfinity', 'boston', 'password', 'work', 'reset', 'number', 'email', 'customer', 'service', 'person', 'forward', 'technical', 'support', 'person', 'forward', 'wi', 'fi', 'department', 'forward', 'suggest', 'number', 'complain', 'send', 'circle', 'guy', 'try', 'help', 'initial', 'number', 'resolve', 'suggest', 'day', 'service', 'find', 'carrier']

Unnecessary words removed!

processed\_m 5 is:

plan get comcast internet provider cheat pricing package expensively horrible false advertisement claim fast internet provider imagine pay month average internet work thing like internet fluctuate like crazy slow phone internet service go customer support calling work tell darn thing time solution internet restart modem work try negotiate possibility fix issue curve direction try package make pay horrible service like go help go curve distract cheat pay request comcast take step create xfinity wifi modem consent start set create internet leave open people use internet pay single bill pay

heavy load honestly new tech let explain false marketing company bullshit company modem internet box inside modern stuff inside new plastic case state art modem pay provide internet box work way fact pay rent modem bull crap like call help far disrespect hang midway answer question company provide internet life falsely advertise suggest look different internet service comcast well save lot money good internet standing pay lot get internet slow sloth

split\_processed\_m 5 is of length < 160 > :

```
['plan', 'get', 'comcast', 'internet', 'provider', 'cheat', 'pricing', 'package', 'expensively', 'horrible', 'false', 'advertisement', 'claim', 'fast', 'internet', 'provider', 'imagine', 'pay', 'month', 'average', 'internet', 'work', 'thing', 'like', 'internet', 'fluctuate', 'like', 'crazy', 'slow', 'phone', 'internet', 'service', 'go', 'customer', 'support', 'calling', 'work', 'tell', 'darn', 'thing', 'time', 'solution', 'internet', 'restart', 'modem', 'work', 'try', 'negotiate', 'possibility', 'fix', 'issue', 'curve', 'direction', 'try', 'package', 'make', 'pay', 'horrible', 'service', 'like', 'go', 'help', 'go', 'curve', 'distract', 'cheat', 'pay', 'request', 'comcast', 'take', 'step', 'create', 'xfinity', 'wifi', 'modem', 'consent', 'start', 'set', 'create', 'internet', 'leave', 'open', 'people', 'use', 'internet', 'pay', 'single', 'bill', 'pay', 'heavy', 'load', 'honestly', 'new', 'tech', 'let', 'explain', 'false', 'marketing', 'company', 'bullshit', 'company', 'modem', 'internet', 'box', 'inside', 'modern', 'stuff', 'inside', 'new', 'plastic', 'case', 'state', 'art', 'modem', 'pay', 'provide', 'internet', 'box', 'work', 'way', 'fact', 'pay', 'rent', 'modem', 'bull', 'crap', 'like', 'call', 'help', 'far', 'disrespect', 'hang', 'midway', 'answer', 'question', 'company', 'provide', 'internet', 'life', 'falsely', 'advertise', 'suggest', 'look', 'different', 'internet', 'service', 'comcast', 'well', 'save', 'lot', 'money', 'good', 'internet', 'standing', 'pay', 'lot', 'get', 'internet', 'slow', 'sloth']
```

Removing unnecessary words ...

```
Updated list of length < 151 > : ['plan', 'comcast', 'internet', 'provider', 'cheat', 'pricing', 'package', 'expensively', 'horrible', 'false', 'advertisement', 'claim', 'fast', 'internet', 'provider', 'imagine', 'pay', 'month', 'average', 'internet', 'work', 'thing', 'like', 'internet', 'fluctuate', 'like', 'crazy', 'slow', 'phone', 'internet', 'service', 'customer', 'support', 'calling', 'work', 'tell', 'darn', 'thing', 'time', 'solution', 'internet', 'restart', 'modem', 'work', 'try', 'negotiate', 'possibility', 'fix', 'issue', 'curve', 'direction', 'try', 'package', 'pay', 'horrible', 'service', 'like', 'help', 'curve', 'distract', 'cheat', 'pay', 'request', 'comcast', 'step', 'create', 'xfinity', 'wifi', 'modem', 'consent', 'start', 'set', 'create', 'internet', 'leave', 'open', 'people', 'use', 'internet', 'pay', 'single', 'bill', 'pay', 'heavy', 'load', 'honestly', 'new', 'tech', 'let', 'explain', 'false', 'marketing', 'company', 'bullshit', 'company', 'modem', 'internet', 'box', 'inside', 'modern', 'stuff', 'inside', 'new', 'plastic', 'case', 'state', 'art', 'modem', 'pay', 'provide', 'internet', 'box', 'work', 'way', 'fact', 'pay', 'rent', 'modem', 'bull', 'crap', 'like', 'help', 'far', 'disrespect', 'hang', 'midway', 'answer', 'question', 'company', 'provide', 'internet', 'life', 'falsely', 'advertise', 'suggest', 'look', 'different', 'internet', 'service', 'comcast', 'save', 'lot', 'money', 'good', 'internet', 'standing', 'pay', 'lot', 'internet', 'slow', 'sloth']
```

Unnecessary words removed!

processed\_m 6 is:

promise m download blast service computer get peak hour dwindle m speed test excuse include blame laptop credit give service get transfer service billing cycle week early cause discrepancy normal monthly bill try explain happen simple math justify bill accurate getting rip week service change billing cycle charge month advance fios area wish mother fios well comcast well customer service comcast victim fios possible

split\_processed\_m 6 is of length < 64 > :

```
['promise', 'm', 'download', 'blast', 'service', 'computer', 'get', 'peak', 'hour', 'dwindle', 'm', 'speed', 'test', 'excuse', 'include', 'blame', 'laptop', 'credit', 'give', 'service', 'get', 'transfer', 'service', 'billing', 'cycle', 'week', 'early', 'cause', 'discrepancy', 'normal', 'monthly', 'bill', 'try', 'explain', 'happen', 'simple', 'math', 'justify', 'bill', 'accurate', 'getting', 'rip', 'week', 'service', 'change', 'billing', 'cycle', 'charge', 'month', 'advance', 'fios', 'area', 'wish', 'mother', 'fios', 'well', 'comcast', 'well', 'customer', 'service', 'comcast', 'victim', 'fios', 'possible']
```

Removing unnecessary words ...

Updated list of length < 57 > : ['promise', 'download', 'blast', 'service', 'computer', 'peak', 'hour', 'dwindle', 'speed', 'test', 'excuse', 'include', 'blame', 'laptop', 'credit', 'service', 'transfer', 'service', 'billing', 'cycle', 'week', 'early', 'cause', 'discrepancy', 'normal', 'monthly', 'bill', 'try', 'explain', 'happen', 'simple', 'math', 'justify', 'bill', 'accurate', 'getting', 'rip', 'week', 'service', 'change', 'billing', 'cycle', 'charge', 'month', 'advance', 'fios', 'area', 'wish', 'mother', 'fios', 'comcast', 'customer', 'service', 'comcast', 'victim', 'fios', 'possible']

Unnecessary words removed!

processed\_m 7 is:

call comcast house year time tell upgrade mbps lucky point get time month ago replace modem get mbps say pay mbps have code setup work fix try sort credit time ask credit amazing peak day sale system ask add package account work

split\_processed\_m 7 is of length < 42 > :

```
['call', 'comcast', 'house', 'year', 'time', 'tell', 'upgrade', 'mbps', 'lucky', 'point', 'get', 'time', 'month', 'ago', 'replace', 'modem', 'get', 'mbps', 'say', 'pay', 'mbps', 'have', 'code', 'setup', 'work', 'fix', 'try', 'sort', 'credit', 'time', 'ask', 'credit', 'amazing', 'peak', 'day', 'sale', 'system', 'ask', 'add', 'package', 'account', 'work']
```

Removing unnecessary words ...

Updated list of length < 37 > : ['comcast', 'house', 'year', 'time', 'tell', 'upgrade', 'mbps', 'lucky', 'point', 'time', 'month', 'ago', 'replace', 'modem', 'mbps', 'pay', 'mbps', 'code', 'setup', 'work', 'fix', 'try', 'sort', 'credit', 'time', 'ask', 'credit', 'amazing', 'peak', 'day', 'sale', 'system', 'ask', 'add', 'package', 'account', 'work']

Unnecessary words removed!

processed\_m 8 is:

pay month economy internet service suppose mbps family watch stream video roku night service slow load small business run entire office mbps internet service small family run usual technology device comcast week assistance issue spend hour phone get resolve reset modem try seek fast internet service pay zero option internet provider area feel comcast allow monopolize business continue provide horrible service

split\_processed\_m 8 is of length < 61 > :

['pay', 'month', 'economy', 'internet', 'service', 'suppose', 'mbps', 'family', 'watch', 'stream', 'video', 'roku', 'night', 'service', 'slow', 'load', 'small', 'business', 'run', 'entire', 'office', 'mbps', 'internet', 'service', 'small', 'family', 'run', 'usual', 'technology', 'device', 'comcast', 'week', 'assistance', 'issue', 'spend', 'hour', 'phone', 'get', 'resolve', 'reset', 'modem', 'try', 'seek', 'fast', 'internet', 'service', 'pay', 'zero', 'option', 'internet', 'provider', 'area', 'feel', 'comcast', 'allow', 'monopolize', 'business', 'continue', 'provide', 'horrible', 'service']

Removing unnecessary words ...

Updated list of length < 60 > : ['pay', 'month', 'economy', 'internet', 'service', 'suppose', 'mbps', 'family', 'watch', 'stream', 'video', 'roku', 'night', 'service', 'slow', 'load', 'small', 'business', 'run', 'entire', 'office', 'mbps', 'internet', 'service', 'small', 'family', 'run', 'usual', 'technology', 'device', 'comcast', 'week', 'assistance', 'issue', 'spend', 'hour', 'phone', 'resolve', 'reset', 'modem', 'try', 'seek', 'fast', 'internet', 'service', 'pay', 'zero', 'option', 'internet', 'provider', 'area', 'feel', 'comcast', 'allow', 'monopolize', 'business', 'continue', 'provide', 'horrible', 'service']

Unnecessary words removed!

processed\_m 9 is:

good experience customer service long wait time helpful customer choice provider city bad company

split\_processed\_m 9 is of length < 14 > :

```
['good', 'experience', 'customer', 'service', 'long', 'wait', 'time', 'helpful', 'customer', 'choice', 'provider', 'city', 'bad', 'company']
```

Removing unnecessary words ...

Updated list of length < 14 > : ['good', 'experience', 'customer', 'service', 'long', 'wait', 'time', 'helpful', 'customer', 'choice', 'provider', 'city', 'bad', 'company']

Unnecessary words removed!

processed\_m 10 is:

update comcast blast month ago wifi crawl say nicely way get promise speed dial fast course answer comcast soon figure service company sue false advertisement

split\_processed\_m 10 is of length < 25 > :

```
['update', 'comcast', 'blast', 'month', 'ago', 'wifi', 'crawl', 'say', 'nicely', 'way', 'get', 'promise', 'speed', 'dial', 'fast', 'course', 'answer', 'comcast', 'soon', 'figure', 'service', 'company', 'sue', 'false', 'advertisement']
```

Removing unnecessary words ...

Updated list of length < 23 > : ['update', 'comcast', 'blast', 'month', 'ago', 'wifi', 'crawl', 'nicely', 'way', 'promise', 'speed', 'dial', 'fast', 'course', 'answer', 'comcast', 'soon', 'figure', 'service', 'company', 'sue', 'false', 'advertisement']

Unnecessary words removed!

processed\_m 11 is:

comcast terrible usually review time feel potential comcast customer know get sign comcast service comcast past year see service bad sign triple play maximum mbps blast internet speed tell beginning go pretty till thing start awry speed come mbps complain good browse want watch cricket match world cup live streaming tv stream complain customer service day send technician comcast technician come fix problem bloody arrogant feel low typical attitude stupid able figure solution tell fine problem remain idea issue fix feel like bestow huge honor show door door minute max problem remain complain customer service week let know maybe problem router say come replace router fine technician come install new router place router actually online leave ask usb cable thing amazon speed service absolutely idea talk suppose wireless connection device small apartment device close router finally decide internet speed mbps cancel service call o schedule return equipment pay outstanding bill imagine consternation receive new bill service call customer service navigate way speak payment department tell problem ask cancellation department resolve request send note cancellation department maybe talk internally resolve problem flatly tell responsibility resolve cancellation department ridiculous internal communication follow guess order charge bill service receive shall sad comcast good company time choose small service provider attend need solve problem wish file class action suit hold company well standard pay lot return treat bad hurt

split\_processed\_m 11 is of length < 225 > :

```
['comcast', 'terrible', 'usually', 'review', 'time', 'feel', 'potential', 'comcast', 'customer', 'know', 'get', 'sign', 'comcast', 'service', 'comcast', 'past', 'year', 'see', 'service', 'bad', 'sign', 'triple', 'play', 'maximum', 'mbps', 'blast', 'internet', 'speed', 'tell', 'beginning', 'go', 'pretty', 'till', 'thing', 'start', 'awry', 'speed', 'come', 'mbps', 'complain', 'good', 'browse', 'want', 'watch', 'cricket', 'match', 'world', 'cup', 'live', 'streaming', 'tv', 'stream', 'complain', 'customer', 'service', 'day', 'send', 'technician', 'comcast', 'technician', 'come', 'fix', 'problem', 'bloody', 'arrogant', 'feel', 'low', 'typical', 'attitude', 'stupid', 'able', 'figure', 'solution', 'tell', 'fine', 'problem', 'remain', 'idea', 'issue', 'fix', 'feel', 'like', 'bestow', 'huge', 'honor', 'show', 'door', 'door', 'minute', 'max', 'problem', 'remain', 'complain', 'customer', 'service', 'week', 'let', 'know', 'maybe', 'problem', 'router', 'say', 'come', 'replace', 'router', 'fine', 'technician', 'come', 'install', 'new', 'router', 'place', 'router', 'actually', 'online', 'leave', 'ask', 'usb', 'cable', 'thing', 'amazon', 'speed', 'service', 'absolutely', 'idea', 'talk', 'suppose', 'wireless', 'connection', 'device', 'small', 'apartment', 'device', 'close', 'router', 'finally', 'decide', 'internet', 'speed', 'mbps', 'cancel', 'service', 'call', 'o', 'schedule', 'return', 'equipment', 'pay', 'outstanding', 'bill', 'imagine', 'consternation', 'receive', 'new', 'bill', 'service', 'call', 'customer', 'service', 'navigate', 'way', 'speak', 'payment', 'department', 'tell', 'problem', 'ask', 'cancellation', 'department', 'resolve', 'request', 'send', 'note', 'cancellation', 'department', 'maybe', 'talk', 'internally', 'resolve', 'problem', 'flatly', 'tell', 'responsibility', 'resolve', 'cancellation', 'department', 'ridiculous', 'internal', 'communication', 'follow', 'guess', 'order', 'charge', 'bill', 'service', 'receive', 'shall', 'sad', 'comcast', 'good', 'company', 'time', 'choose', 'small', 'service', 'provider', 'attend', 'need', 'solve', 'problem', 'wish', 'file', 'class', 'action', 'suit', 'hold', 'company', 'well', 'standard', 'pay', 'lot', 'return', 'treat', 'bad', 'hurt']
```

Removing unnecessary words ...

Updated list of length < 216 > : ['comcast', 'terrible', 'usually', 'review', 'time', 'feel', 'potential', 'comcast', 'customer', 'know', 'sign', 'comcast', 'service', 'comcast', 'past', 'year', 'service', 'bad', 'sign', 'triple', 'play', 'maximum', 'mbps', 'blast', 'internet', 'speed', 'tell', 'beginning', 'pretty', 'till', 'thing', 'start', 'awry', 'speed', 'come', 'mbps', 'complain', 'good', 'browse', 'want', 'watch', 'cricket', 'match', 'world', 'cup', 'live', 'streaming', 'tv', 'stream', 'complain', 'customer', 'service', 'day', 'send', 'technician', 'comcast', 'technician', 'come', 'fix', 'problem', 'bloody', 'arrogant', 'feel', 'low', 'typical', 'attitude', 'stupid', 'able', 'figure', 'solution', 'tell', 'fine', 'problem', 'remain', 'idea', 'issue', 'fix', 'feel', 'like', 'bestow', 'huge', 'honor', 'door', 'door', 'minute', 'max', 'problem', 'remain', 'complain', 'customer', 'service', 'week', 'let', 'know', 'maybe', 'problem', 'router', 'come', 'replace', 'router', 'fine', 'technician', 'come', 'install', 'new', 'router', 'place', 'router', 'actually', 'online', 'leave', 'ask', 'usb', 'cable', 'thing', 'amazon', 'speed', 'service', 'absolutely', 'idea', 'talk', 'suppose', 'wireless', 'connection', 'device', 'small', 'apartment', 'device', 'close', 'router', 'finally', 'decide', 'internet', 'speed', 'mbps', 'cancel', 'service', 'schedule', 'return', 'equipment', 'pay', 'outstanding', 'bill', 'imagine', 'consternation', 'receive', 'new', 'bill', 'service', 'customer', 'service', 'navigate', 'way', 'speak', 'payment', 'department', 'tell', 'problem', 'ask', 'cancellation', 'department', 'resolve', 'request', 'send', 'note', 'cancellation', 'department', 'maybe', 'talk', 'internally', 'resolve', 'problem', 'flatly', 'tell', 'responsibility', 'resolve', 'cancellation', 'department', 'ridiculous', 'internal', 'communication', 'follow', 'guess', 'order', 'charge', 'bill', 'service', 'receive', 'shall', 'sad', 'comcast', 'good', 'company', 'time', 'choose', 'small', 'service', 'provider', 'attend', 'need', 'solve', 'problem', 'wish', 'file', 'class', 'action', 'suit', 'hold', 'company', 'standard', 'pay', 'lot', 'return', 'treat', 'bad', 'hurt']

Unnecessary words removed!

processed\_m 12 is:

call comcast internet speed tell pay month mp know get mp regular service test upload download speed utility get well mp call support spend total hour call tech support second transfer time tech keep say device online connect internet tell voip line impossible connect internet conversation go min day trial new contract customer yr go send technician insist charge visit matter outcome commit cancel visit day visit suppose cancel guy show door say xfinity home security explain travel hour house paperwork say call tell security package sit hour agree major blunder say ahead new product installation drop comcast want come personally handle contract say fine follow week major competitor install install consistently mp internet laptop ipad phone addition competitor bundle internet tv phone cheap pay hd come tv comcast admit new service channel price service worth watch lot tv

split\_processed\_m 12 is of length < 139 > :

['call', 'comcast', 'internet', 'speed', 'tell', 'pay', 'month', 'mp', 'know', 'get', 'mp', 'regular', 'service', 'test', 'upload', 'download', 'speed', 'utility', 'get', 'well', 'mp', 'call', 'support', 'spend', 'total', 'hour', 'call', 'tech', 'support', 'second', 'transfer', 'time', 'tech', 'keep', 'say', 'device', 'online', 'connect', 'internet', 'tell', 'voip', 'line', 'impossible', 'connect', 'internet', 'conversation', 'go', 'min', 'day', 'trial', 'new', 'contract', 'customer', 'yr', 'go', 'send', 'technician', 'insist', 'charge', 'visit', 'matter', 'outcome', 'commit', 'cancel', 'visit', 'day', 'visit', 'suppose', 'cancel', 'guy', 'show', 'door', 'say', 'xfinity', 'home', 'security', 'explain',



```
'travel', 'hour', 'house', 'paperwork', 'say', 'call', 'tell', 'security', 'package', 'sit', 'hour', 'agree', 'major',
'blunder', 'say', 'ahead', 'new', 'product', 'installation', 'drop', 'comcast', 'want', 'come', 'personally', 'handle',
'contract', 'say', 'fine', 'follow', 'week', 'major', 'competitor', 'instal', 'install', 'consistently', 'mp', 'internet',
'laptop', 'ipad', 'phone', 'addition', 'competitor', 'bundle', 'internet', 'tv', 'phone', 'cheap', 'pay', 'hd', 'come', 'tv', 'comcast', 'admit', 'new', 'service', 'channel', 'price', 'service', 'worth', 'watch', 'lot', 'tv']
```

Removing unnecessary words ...

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Updated list of length < 118 > : ['comcast', 'internet', 'speed', 'tell', 'pay', 'month', 'know', 'regular', 'service',
'test', 'upload', 'download', 'speed', 'utility', 'support', 'spend', 'total', 'hour', 'tech', 'support', 'second',
'transfer', 'time', 'tech', 'device', 'online', 'connect', 'internet', 'tell', 'voip', 'line', 'impossible', 'connect',
'internet', 'conversation', 'min', 'day', 'trial', 'new', 'contract', 'customer', 'send', 'technician', 'insist', 'charge',
'visit', 'matter', 'outcome', 'commit', 'cancel', 'visit', 'day', 'visit', 'suppose', 'cancel', 'guy', 'door', 'infinity',
'home', 'security', 'explain', 'travel', 'hour', 'house', 'paperwork', 'tell', 'security', 'package', 'sit', 'hour', 'agree',
'major', 'blunder', 'ahead', 'new', 'product', 'installation', 'drop', 'comcast', 'want', 'come', 'personally', 'handle',
'contract', 'fine', 'follow', 'week', 'major', 'competitor', 'instal', 'install', 'consistently', 'internet', 'laptop',
'ipad', 'phone', 'addition', 'competitor', 'bundle', 'internet', 'tv', 'phone', 'cheap', 'pay', 'hd', 'come', 'tv', 'comcast',
'admit', 'new', 'service', 'channel', 'price', 'service', 'worth', 'watch', 'lot', 'tv']
```

Unnecessary words removed!

processed\_m 13 is:

fact product work properly bad start secondly terrible customer service ruin mood happen internet work properly call customer service absolutely wonderful treat respect come bad direct advanced wireless department whacko pick phone half awake answer phone dreadful hello professional sarcasm tell happen internet halfway hear guy yawn hang phone bad guy customer punishment whatsoever go comcast hire bad worker disappointed

split\_processed\_m 13 is of length < 60 > :

```
['fact', 'product', 'work', 'properly', 'bad', 'start', 'secondly', 'terrible', 'customer', 'service', 'ruin', 'mood',
'happen', 'internet', 'work', 'properly', 'call', 'customer', 'service', 'absolutely', 'wonderful', 'treat', 'respect',
'come', 'bad', 'direct', 'advanced', 'wireless', 'department', 'whacko', 'pick', 'phone', 'half', 'awake', 'answer', 'phone',
'dreadful', 'hello', 'professional', 'sarcasm', 'tell', 'happen', 'internet', 'halfway', 'hear', 'guy', 'yawn', 'hang',
'phone', 'bad', 'guy', 'customer', 'punishment', 'whatsoever', 'go', 'comcast', 'hire', 'bad', 'worker', 'disappointed']
```

Removing unnecessary words ...

Updated list of length < 58 > : ['fact', 'product', 'work', 'properly', 'bad', 'start', 'secondly', 'terrible', 'customer', 'service', 'ruin', 'mood', 'happen', 'internet', 'work', 'properly', 'customer', 'service', 'absolutely', 'wonderful', 'treat', 'respect', 'come', 'bad', 'direct', 'advanced', 'wireless', 'department', 'whacko', 'pick', 'phone', 'half', 'awake', 'answer', 'phone', 'dreadful', 'hello', 'professional', 'sarcasm', 'tell', 'happen', 'internet', 'halfway', 'hear', 'guy', 'yawn', 'hang', 'phone', 'bad', 'guy', 'customer', 'punishment', 'whatsoever', 'comcast', 'hire', 'bad', 'worker', 'disappointed']

Unnecessary words removed!

processed\_m 14 is:

numerous occasion wifi disable cause contact company huge deal pay numerous amount fee charge service actually work know people issue wifi surprise comcast amend overcharge unfair practice

split\_processed\_m 14 is of length < 27 > :

['numerous', 'occasion', 'wifi', 'disable', 'cause', 'contact', 'company', 'huge', 'deal', 'pay', 'numerous', 'amount', 'fee', 'charge', 'service', 'actually', 'work', 'know', 'people', 'issue', 'wifi', 'surprise', 'comcast', 'amend', 'overcharge', 'unfair', 'practice']

Removing unnecessary words ...

Updated list of length < 26 > : ['numerous', 'occasion', 'wifi', 'disable', 'cause', 'contact', 'company', 'huge', 'deal', 'pay', 'numerous', 'fee', 'charge', 'service', 'actually', 'work', 'know', 'people', 'issue', 'wifi', 'surprise', 'comcast', 'amend', 'overcharge', 'unfair', 'practice']

Unnecessary words removed!

processed\_m 15 is:

receive say upgrade modem tell site depend item pick allow click buy straight exactly buy unfortunately hour phone hour customer service office register modem legit modem buy amazon reseller online advice buy new pay price buy honey give link buy option patronize pay bill time let register online regionalization buy modem monopolize market frustrating consumer

split\_processed\_m 15 is of length < 55 > :

```
['receive', 'say', 'upgrade', 'modem', 'tell', 'site', 'depend', 'item', 'pick', 'allow', 'click', 'buy', 'straight', 'exactly', 'buy', 'unfortunately', 'hour', 'phone', 'hour', 'customer', 'service', 'office', 'register', 'modem', 'legit', 'modem', 'buy', 'amazon', 'reseller', 'online', 'advice', 'buy', 'new', 'pay', 'price', 'buy', 'honey', 'give', 'link', 'buy', 'option', 'patronize', 'pay', 'bill', 'time', 'let', 'register', 'online', 'regionalization', 'buy', 'modem', 'monopolize', 'market', 'frustrating', 'consumer']
```

Removing unnecessary words ...

Updated list of length < 53 > : ['receive', 'upgrade', 'modem', 'tell', 'site', 'depend', 'item', 'pick', 'allow', 'click', 'buy', 'straight', 'exactly', 'buy', 'unfortunately', 'hour', 'phone', 'hour', 'customer', 'service', 'office', 'register', 'modem', 'legit', 'modem', 'buy', 'amazon', 'reseller', 'online', 'advice', 'buy', 'new', 'pay', 'price', 'buy', 'honey', 'link', 'buy', 'option', 'patronize', 'pay', 'bill', 'time', 'let', 'register', 'online', 'regionalization', 'buy', 'modem', 'monopolize', 'market', 'frustrating', 'consumer']

Unnecessary words removed!

processed\_m 16 is:

```
get new comcast internet connection internet cut work time speak comcast time week run comcast bad cable internet service choice use
```

split\_processed\_m 16 is of length < 21 > :

```
['get', 'new', 'comcast', 'internet', 'connection', 'internet', 'cut', 'work', 'time', 'speak', 'comcast', 'time', 'week', 'run', 'comcast', 'bad', 'cable', 'internet', 'service', 'choice', 'use']
```

Removing unnecessary words ...

Updated list of length < 20 > : ['new', 'comcast', 'internet', 'connection', 'internet', 'cut', 'work', 'time', 'speak', 'comcast', 'time', 'week', 'run', 'comcast', 'bad', 'cable', 'internet', 'service', 'choice', 'use']

Unnecessary words removed!

processed\_m 17 is:

bad customer service spend hour phone people continent course day try fix internet problem turn cause spend hour people try worth fee land problem cause remove bill rep laughably name account executive bad useless speak suggestion unplug plug hear people coach background flat lie phone answer rep turn answer give right comcast allow merge time warner kick face customer country far tell reason people sign comcast option certainly case leave heartbeat service provider area

split\_processed\_m 17 is of length < 74 > :

```
['bad', 'customer', 'service', 'spend', 'hour', 'phone', 'people', 'continent', 'course', 'day', 'try', 'fix', 'internet', 'problem', 'turn', 'cause', 'spend', 'hour', 'people', 'try', 'worth', 'fee', 'land', 'problem', 'cause', 'remove', 'bill', 'rep', 'laughably', 'name', 'account', 'executive', 'bad', 'useless', 'speak', 'suggestion', 'unplug', 'plug', 'hear', 'people', 'coach', 'background', 'flat', 'lie', 'phone', 'answer', 'rep', 'turn', 'answer', 'give', 'right', 'comcast', 'allow', 'merge', 'time', 'warner', 'kick', 'face', 'customer', 'country', 'far', 'tell', 'reason', 'people', 'sign', 'comcast', 'option', 'certainly', 'case', 'leave', 'heartbeat', 'service', 'provider', 'area']
```

Removing unnecessary words ...

```
Updated list of length < 72 > : ['bad', 'customer', 'service', 'spend', 'hour', 'phone', 'people', 'continent', 'course', 'day', 'try', 'fix', 'internet', 'problem', 'turn', 'cause', 'spend', 'hour', 'people', 'try', 'worth', 'fee', 'land', 'problem', 'cause', 'remove', 'bill', 'rep', 'laughably', 'account', 'executive', 'bad', 'useless', 'speak', 'suggestion', 'unplug', 'plug', 'hear', 'people', 'coach', 'background', 'flat', 'lie', 'phone', 'answer', 'rep', 'turn', 'answer', 'right', 'comcast', 'allow', 'merge', 'time', 'warner', 'kick', 'face', 'customer', 'country', 'far', 'tell', 'reason', 'people', 'sign', 'comcast', 'option', 'certainly', 'case', 'leave', 'heartbeat', 'service', 'provider', 'area']
```

Unnecessary words removed!

processed\_m 18 is:

smile late public exposure comcast attitude customer viral bit customer try cancel account actually smile come read comcast public statement late fiasco response supposedly write tom karinshak senior vp customer experience hear numerous people say feel sorry agent involve debacle likely tell superior suspect truth assumption problem comcast begin year ago tv internet month try comcast care problem contact corporate assign senior level employee word help year ago numerous tech come fix problem tech find s say cause issue fix tech leave hour later issue reoccur comcast keep send senior tech find new problem fix point replace system service issue remain get company respond email telephone call take day week

mind deal people corporate level low level field rep frustrated fed month bill pay care lose channel mid program intern et connection slow old fashioned dial month ago send letter karinshak explain frustration hear talk friend online resea rch understand karinshak charge customer experience see negative feedback insulated customer little idea poorly company fulfil term customer guarantee sure mere word guarantee karinshak want know company perform suggest accessible read for um post allow customer e mail directly spend time field listen customer crank people bent drag company mud muck simply frustrated desperate hear effect meaningful change

split\_processed\_m 18 is of length < 204 > :

```
['smile', 'late', 'public', 'exposure', 'comcast', 'attitude', 'customer', 'viral', 'bit', 'customer', 'try', 'cance
l', 'account', 'actually', 'smile', 'come', 'read', 'comcast', 'public', 'statement', 'late', 'fiasco', 'response', 'su
pposedly', 'write', 'tom', 'karinshak', 'senior', 'vp', 'customer', 'experience', 'hear', 'numerous', 'people', 'say',
'feel', 'sorry', 'agent', 'involve', 'debacle', 'likely', 'tell', 'superior', 'suspect', 'truth', 'assumption', 'proble
m', 'comcast', 'begin', 'year', 'ago', 'tv', 'internet', 'month', 'try', 'comcast', 'care', 'problem', 'contact', 'corp
orate', 'assign', 'senior', 'level', 'employee', 'word', 'help', 'year', 'ago', 'numerous', 'tech', 'come', 'fix', 'pro
blem', 'tech', 'find', 's', 'say', 'cause', 'issue', 'fix', 'tech', 'leave', 'hour', 'later', 'issue', 'reoccur', 'comc
ast', 'keep', 'send', 'senior', 'tech', 'find', 'new', 'problem', 'fix', 'point', 'replace', 'system', 'service', 'issu
e', 'remain', 'get', 'company', 'respond', 'e', 'mail', 'telephone', 'call', 'take', 'day', 'week', 'mind', 'deal', 'pe
ople', 'corporate', 'level', 'low', 'level', 'field', 'rep', 'frustrated', 'fed', 'month', 'bill', 'pay', 'care', 'los
e', 'channel', 'mid', 'program', 'internet', 'connection', 'slow', 'old', 'fashioned', 'dial', 'month', 'ago', 'send',
'letter', 'karinshak', 'explain', 'frustration', 'hear', 'talk', 'friend', 'online', 'research', 'understand', 'karinsh
ak', 'charge', 'customer', 'experience', 'see', 'negative', 'feedback', 'insulated', 'customer', 'little', 'idea', 'poo
rly', 'company', 'fulfil', 'term', 'customer', 'guarantee', 'sure', 'mere', 'word', 'guarantee', 'karinshak', 'want',
'know', 'company', 'perform', 'suggest', 'accessible', 'read', 'forum', 'post', 'allow', 'customer', 'e', 'mail', 'dire
ctly', 'spend', 'time', 'field', 'listen', 'customer', 'crank', 'people', 'bent', 'drag', 'company', 'mud', 'muck', 'si
mply', 'frustrated', 'desperate', 'hear', 'effect', 'meaningful', 'change']
```

Removing unnecessary words ...

```
Updated list of length < 194 > : ['smile', 'late', 'public', 'exposure', 'comcast', 'attitude', 'customer', 'viral',
'bit', 'customer', 'try', 'cancel', 'account', 'actually', 'smile', 'come', 'read', 'comcast', 'public', 'statement',
'late', 'fiasco', 'response', 'supposedly', 'write', 'tom', 'karinshak', 'senior', 'vp', 'customer', 'experience', 'hea
r', 'numerous', 'people', 'feel', 'sorry', 'agent', 'involve', 'debacle', 'likely', 'tell', 'superior', 'suspect', 'tru
th', 'assumption', 'problem', 'comcast', 'begin', 'year', 'ago', 'tv', 'internet', 'month', 'try', 'comcast', 'care',
'problem', 'contact', 'corporate', 'assign', 'senior', 'level', 'employee', 'word', 'help', 'year', 'ago', 'numerous',
'tech', 'come', 'fix', 'problem', 'tech', 'find', 'cause', 'issue', 'fix', 'tech', 'leave', 'hour', 'later', 'issue',
'reoccur', 'comcast', 'send', 'senior', 'tech', 'find', 'new', 'problem', 'fix', 'point', 'replace', 'system', 'servic
e', 'issue', 'remain', 'company', 'respond', 'mail', 'telephone', 'day', 'week', 'mind', 'deal', 'people', 'corporate',
'level', 'low', 'level', 'field', 'rep', 'frustrated', 'fed', 'month', 'bill', 'pay', 'care', 'lose', 'channel', 'mid',
'program', 'internet', 'connection', 'slow', 'old', 'fashioned', 'dial', 'month', 'ago', 'send', 'letter', 'karinshak',
'explain', 'frustration', 'hear', 'talk', 'friend', 'online', 'research', 'understand', 'karinshak', 'charge', 'custome
r', 'experience', 'negative', 'feedback', 'insulated', 'customer', 'little', 'idea', 'poorly', 'company', 'fulfil', 'te
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rm', 'customer', 'guarantee', 'sure', 'mere', 'word', 'guarantee', 'karinshak', 'want', 'know', 'company', 'perform', 'suggest', 'accessible', 'read', 'forum', 'post', 'allow', 'customer', 'mail', 'directly', 'spend', 'time', 'field', 'listen', 'customer', 'crank', 'people', 'bent', 'drag', 'company', 'mud', 'muck', 'simply', 'frustrated', 'desperate', 'hear', 'effect', 'meaningful', 'change']

Unnecessary words removed!

processed\_m 19 is:

happen receive letter urge upgrade modem letter state fourth paragraph protect environment properly recycle old modem note unreturned equipment fee old modem late bill receive monthly charge modem call essentially tell bad return face monthly charge

split\_processed\_m 19 is of length < 36 > :

['happen', 'receive', 'letter', 'urge', 'upgrade', 'modem', 'letter', 'state', 'fourth', 'paragraph', 'protect', 'environment', 'properly', 'recycle', 'old', 'modem', 'note', 'unreturned', 'equipment', 'fee', 'old', 'modem', 'late', 'bill', 'receive', 'monthly', 'charge', 'modem', 'call', 'essentially', 'tell', 'bad', 'return', 'face', 'monthly', 'charge']

Removing unnecessary words ...

Updated list of length < 35 > : ['happen', 'receive', 'letter', 'urge', 'upgrade', 'modem', 'letter', 'state', 'fourth', 'paragraph', 'protect', 'environment', 'properly', 'recycle', 'old', 'modem', 'note', 'unreturned', 'equipment', 'fee', 'old', 'modem', 'late', 'bill', 'receive', 'monthly', 'charge', 'modem', 'essentially', 'tell', 'bad', 'return', 'face', 'monthly', 'charge']

Unnecessary words removed!

processed\_m 20 is:

client comcast business internet past year couple day ago perform migration microsoft exchange microsoft exchange send email state migration perform sat night pm sun time internet service interrupt service resume night later say email find change server address end change server address drastic effect business contact manager ms outlook literally impossible access list business contact information past year build list email subscriber business dependent list call technical support list time rep say pass ticket tier tech call hear word comcast tier tech support feel sideline abandon create

big problem migration want assist resolve matter comcast rep speak pass buck claim problem microsoft wish tech rep comcast stop dilly dally promptly resolve huge problem create negligence fail consider consequence change server setting business contact manager ms outlook client frustrating tier tech support call today day wait keep wait like care hand anxious desperate restraint go bathroom want miss eat meal computer table miss stress past day like care

split\_processed\_m 20 is of length < 157 > :

```
['client', 'comcast', 'business', 'internet', 'past', 'year', 'couple', 'day', 'ago', 'perform', 'migration', 'microsoft', 'exchange', 'microsoft', 'exchange', 'send', 'email', 'state', 'migration', 'perform', 'sat', 'night', 'pm', 'sun', 'time', 'internet', 'service', 'interrupt', 'service', 'resume', 'night', 'later', 'say', 'email', 'find', 'change', 'server', 'address', 'end', 'change', 'server', 'address', 'drastic', 'effect', 'business', 'contact', 'manager', 'ms', 'outlook', 'literally', 'impossible', 'access', 'list', 'business', 'contact', 'information', 'past', 'year', 'build', 'list', 'email', 'subscriber', 'business', 'dependent', 'list', 'call', 'technical', 'support', 'list', 'time', 'rep', 'say', 'pass', 'ticket', 'tier', 'tech', 'call', 'hear', 'word', 'comcast', 'tier', 'tech', 'support', 'feel', 'sideline', 'abandon', 'create', 'big', 'problem', 'migration', 'want', 'assist', 'resolve', 'matter', 'comcast', 'rep', 'speak', 'pass', 'buck', 'claim', 'problem', 'microsoft', 'wish', 'tech', 'rep', 'comcast', 'stop', 'dilly', 'dally', 'promptly', 'resolve', 'huge', 'problem', 'create', 'negligence', 'fail', 'consider', 'consequence', 'change', 'server', 'setting', 'business', 'contact', 'manager', 'ms', 'outlook', 'client', 'frustrating', 'tier', 'tech', 'support', 'call', 'today', 'day', 'wait', 'keep', 'wait', 'like', 'care', 'hand', 'anxious', 'desperate', 'restraint', 'go', 'bathroom', 'want', 'miss', 'eat', 'meal', 'computer', 'table', 'miss', 'stress', 'past', 'day', 'like', 'care']
```

Removing unnecessary words ...

```
Updated list of length < 150 > : ['client', 'comcast', 'business', 'internet', 'past', 'year', 'couple', 'day', 'ago', 'perform', 'migration', 'microsoft', 'exchange', 'microsoft', 'exchange', 'send', 'email', 'state', 'migration', 'perform', 'sat', 'night', 'pm', 'sun', 'time', 'internet', 'service', 'interrupt', 'service', 'resume', 'night', 'later', 'email', 'find', 'change', 'server', 'address', 'end', 'change', 'server', 'address', 'drastic', 'effect', 'business', 'contact', 'manager', 'ms', 'outlook', 'literally', 'impossible', 'access', 'list', 'business', 'contact', 'information', 'past', 'year', 'build', 'list', 'email', 'subscriber', 'business', 'dependent', 'list', 'technical', 'support', 'list', 'time', 'rep', 'pass', 'ticket', 'tier', 'tech', 'hear', 'word', 'comcast', 'tier', 'tech', 'support', 'feel', 'sideline', 'abandon', 'create', 'big', 'problem', 'migration', 'want', 'assist', 'resolve', 'matter', 'comcast', 'rep', 'speak', 'pass', 'buck', 'claim', 'problem', 'microsoft', 'wish', 'tech', 'rep', 'comcast', 'stop', 'dilly', 'dally', 'promptly', 'resolve', 'huge', 'problem', 'create', 'negligence', 'fail', 'consider', 'consequence', 'change', 'server', 'setting', 'business', 'contact', 'manager', 'ms', 'outlook', 'client', 'frustrating', 'tier', 'tech', 'support', 'today', 'day', 'wait', 'wait', 'like', 'care', 'hand', 'anxious', 'desperate', 'restraint', 'bathroom', 'want', 'miss', 'eat', 'meal', 'computer', 'table', 'miss', 'stress', 'past', 'day', 'like', 'care']
```

Unnecessary words removed!

processed\_m 21 is:

tv comcast provide internet charge fix problem fault send adapter remote new router order tiny writing possible flap box say return product day begin start charge product crap time day post office find ups store find parking wait line drop product use order charge illegal cancel service

split\_processed\_m 21 is of length < 47 > :

```
['tv', 'comcast', 'provide', 'internet', 'charge', 'fix', 'problem', 'fault', 'send', 'adapter', 'remote', 'new', 'router', 'order', 'tiny', 'writing', 'possible', 'flap', 'box', 'say', 'return', 'product', 'day', 'begin', 'start', 'charge', 'product', 'crap', 'time', 'day', 'post', 'office', 'find', 'ups', 'store', 'find', 'parking', 'wait', 'line', 'drop', 'product', 'use', 'order', 'charge', 'illegal', 'cancel', 'service']
```

Removing unnecessary words ...

Updated list of length < 46 > : ['tv', 'comcast', 'provide', 'internet', 'charge', 'fix', 'problem', 'fault', 'send', 'adapter', 'remote', 'new', 'router', 'order', 'tiny', 'writing', 'possible', 'flap', 'box', 'return', 'product', 'day', 'begin', 'start', 'charge', 'product', 'crap', 'time', 'day', 'post', 'office', 'find', 'ups', 'store', 'find', 'parking', 'wait', 'line', 'drop', 'product', 'use', 'order', 'charge', 'illegal', 'cancel', 'service']

Unnecessary words removed!

processed\_m 22 is:

loyal comcast customer year financial incentive go verizon month return comcast box modem service center day year ago router provide fail comcast tell new expense claim want defective router return idea happen verizon provide modem router unit comcast try charge old router ask think comcast customer will tell experience

split\_processed\_m 22 is of length < 49 > :

```
['loyal', 'comcast', 'customer', 'year', 'financial', 'incentive', 'go', 'verizon', 'month', 'return', 'comcast', 'box', 'modem', 'service', 'center', 'day', 'year', 'ago', 'router', 'provide', 'fail', 'comcast', 'tell', 'new', 'expense', 'claim', 'want', 'defective', 'router', 'return', 'idea', 'happen', 'verizon', 'provide', 'modem', 'router', 'unit', 'comcast', 'try', 'charge', 'old', 'router', 'ask', 'think', 'comcast', 'customer', 'will', 'tell', 'experience']
```

Removing unnecessary words ...



Updated list of length < 47 > : ['loyal', 'comcast', 'customer', 'year', 'financial', 'incentive', 'verizon', 'month', 'return', 'comcast', 'box', 'modem', 'service', 'center', 'day', 'year', 'ago', 'router', 'provide', 'fail', 'comcast', 'tell', 'new', 'expense', 'claim', 'want', 'defective', 'router', 'return', 'idea', 'happen', 'verizon', 'provide', 'modem', 'router', 'unit', 'comcast', 'try', 'charge', 'old', 'router', 'ask', 'think', 'comcast', 'customer', 'tell', 'experience']

Unnecessary words removed!

processed\_m 23 is:

actual download speed house somerville consistently mbps measure fcc speed test comcast speed test consistently return download speed mbps fcc number confer dead water download speed experience deliver close rate plan sell tired complain start class action suit comcast start deliver commitment stop falsify speed test result

split\_processed\_m 23 is of length < 47 > :

['actual', 'download', 'speed', 'house', 'somerville', 'consistently', 'mbps', 'measure', 'fcc', 'speed', 'test', 'comcast', 'speed', 'test', 'consistently', 'return', 'download', 'speed', 'mbps', 'fcc', 'number', 'confer', 'dead', 'water', 'download', 'speed', 'experience', 'deliver', 'close', 'rate', 'plan', 'sell', 'tired', 'complain', 'start', 'class', 'action', 'suit', 'comcast', 'start', 'deliver', 'commitment', 'stop', 'falsify', 'speed', 'test', 'result']

Removing unnecessary words ...

Updated list of length < 47 > : ['actual', 'download', 'speed', 'house', 'somerville', 'consistently', 'mbps', 'measure', 'fcc', 'speed', 'test', 'comcast', 'speed', 'test', 'consistently', 'return', 'download', 'speed', 'mbps', 'fcc', 'number', 'confer', 'dead', 'water', 'download', 'speed', 'experience', 'deliver', 'close', 'rate', 'plan', 'sell', 'tired', 'complain', 'start', 'class', 'action', 'suit', 'comcast', 'start', 'deliver', 'commitment', 'stop', 'falsify', 'speed', 'test', 'result']

Unnecessary words removed!

processed\_m 24 is:

see promotion visa gift card bundled service decide try comcast service instal mid day installation receive rep tell installation need reschedule service contract file receive promotion connect department answer question record verbal agreement

reement year contract tell month receive gift card arrive receive card call inquire tell come call second time tell time come furious call tell personally call man give word look personally day end guess happen morning speak rep hold brief period time come tell contract file insist conversation record verbal contract look say contract qualify gift card give number extension week get angry point word send visa card service shove sun shine problem rcn stay definitely return

split\_processed\_m 24 is of length < 109 > :

```
['see', 'promotion', 'visa', 'gift', 'card', 'bundled', 'service', 'decide', 'try', 'comcast', 'service', 'instal', 'mid', 'day', 'installation', 'receive', 'rep', 'tell', 'installation', 'need', 'reschedule', 'service', 'contract', 'file', 'receive', 'promotion', 'connect', 'department', 'answer', 'question', 'record', 'verbal', 'agreement', 'year', 'contract', 'tell', 'month', 'receive', 'gift', 'card', 'arrive', 'receive', 'card', 'call', 'inquire', 'tell', 'come', 'call', 'second', 'time', 'tell', 'time', 'come', 'furious', 'call', 'tell', 'personally', 'call', 'man', 'give', 'word', 'look', 'personally', 'day', 'end', 'guess', 'happen', 'morning', 'speak', 'rep', 'hold', 'brief', 'period', 'time', 'come', 'tell', 'contract', 'file', 'insist', 'conversation', 'record', 'verbal', 'contract', 'look', 'say', 'contract', 'qualify', 'gift', 'card', 'give', 'number', 'extension', 'week', 'get', 'angry', 'point', 'word', 'send', 'visa', 'card', 'service', 'shove', 'sun', 'shine', 'problem', 'rcn', 'stay', 'definitely', 'return']
```

Removing unnecessary words ...

```
Updated list of length < 100 > : ['promotion', 'visa', 'gift', 'card', 'bundled', 'service', 'decide', 'try', 'comcast', 'service', 'instal', 'mid', 'day', 'installation', 'receive', 'rep', 'tell', 'installation', 'need', 'reschedule', 'service', 'contract', 'file', 'receive', 'promotion', 'connect', 'department', 'answer', 'question', 'record', 'verbal', 'agreement', 'year', 'contract', 'tell', 'month', 'receive', 'gift', 'card', 'arrive', 'receive', 'card', 'inquire', 'tell', 'come', 'second', 'time', 'tell', 'time', 'come', 'furious', 'tell', 'personally', 'man', 'word', 'look', 'personally', 'day', 'end', 'guess', 'happen', 'morning', 'speak', 'rep', 'hold', 'brief', 'period', 'time', 'come', 'tell', 'contract', 'file', 'insist', 'conversation', 'record', 'verbal', 'contract', 'look', 'contract', 'qualify', 'gift', 'card', 'number', 'extension', 'week', 'angry', 'point', 'word', 'send', 'visa', 'card', 'service', 'shove', 'sun', 'shine', 'problem', 'rcn', 'stay', 'definitely', 'return']
```

Unnecessary words removed!

processed\_m 25 is:

manage husband solo pediatric practice reliable phone internet service critical patient comcast responsible phone internet unreliable busy morning like morning phone minute comcast tell bad happen pay service want comcast fix problem phone internet reliable

split\_processed\_m 25 is of length < 35 > :

```
['manage', 'husband', 'solo', 'pediatric', 'practice', 'reliable', 'phone', 'internet', 'service', 'critical', 'patient', 'comcast', 'responsible', 'phone', 'internet', 'unreliable', 'busy', 'morning', 'like', 'morning', 'phone', 'minute', 'comcast', 'tell', 'bad', 'happen', 'pay', 'service', 'want', 'comcast', 'fix', 'problem', 'phone', 'internet', 'reliable']
```

Removing unnecessary words ...

```
Updated list of length < 35 > : ['manage', 'husband', 'solo', 'pediatric', 'practice', 'reliable', 'phone', 'internet', 'service', 'critical', 'patient', 'comcast', 'responsible', 'phone', 'internet', 'unreliable', 'busy', 'morning', 'like', 'morning', 'phone', 'minute', 'comcast', 'tell', 'bad', 'happen', 'pay', 'service', 'want', 'comcast', 'fix', 'problem', 'phone', 'internet', 'reliable']
```

Unnecessary words removed!

processed\_m 26 is:

write let know issue have comcast customer service bear mind customer day roughly hour install service intermittent phone support folk able help suggest send home appointment schedule today feb pm tech claim home demonstrably false sit pm wait phone door bell ring upsetting leave work early home appointment easy depend service moment work tech lie boss expect high level service disappointed

split\_processed\_m 26 is of length < 61 > :

```
['write', 'let', 'know', 'issue', 'have', 'comcast', 'customer', 'service', 'bear', 'mind', 'customer', 'day', 'roughly', 'hour', 'install', 'service', 'intermittent', 'phone', 'support', 'folk', 'able', 'help', 'suggest', 'send', 'home', 'appointment', 'schedule', 'today', 'feb', 'pm', 'tech', 'claim', 'home', 'demonstrably', 'false', 'sit', 'pm', 'wait', 'phone', 'door', 'bell', 'ring', 'upsetting', 'leave', 'work', 'early', 'home', 'appointment', 'easy', 'depend', 'service', 'moment', 'work', 'tech', 'lie', 'boss', 'expect', 'high', 'level', 'service', 'disappointed']
```

Removing unnecessary words ...

```
Updated list of length < 60 > : ['write', 'let', 'know', 'issue', 'comcast', 'customer', 'service', 'bear', 'mind', 'customer', 'day', 'roughly', 'hour', 'install', 'service', 'intermittent', 'phone', 'support', 'folk', 'able', 'help', 'suggest', 'send', 'home', 'appointment', 'schedule', 'today', 'feb', 'pm', 'tech', 'claim', 'home', 'demonstrably', 'false', 'sit', 'pm', 'wait', 'phone', 'door', 'bell', 'ring', 'upsetting', 'leave', 'work', 'early', 'home', 'appointment', 'easy', 'depend', 'service', 'moment', 'work', 'tech', 'lie', 'boss', 'expect', 'high', 'level', 'service', 'disappointed']
```

ointed']

Unnecessary words removed!

processed\_m 27 is:

use comcast internet connection choice whatsoever pay monthly curiosity check cost internet connection london pond sterling paris euros berlin euros wonder internet connection far expensive

split\_processed\_m 27 is of length < 25 > :

['use', 'comcast', 'internet', 'connection', 'choice', 'whatsoever', 'pay', 'monthly', 'curiosity', 'check', 'cost', 'internet', 'connection', 'london', 'pond', 'sterling', 'paris', 'euros', 'berlin', 'euros', 'wonder', 'internet', 'connection', 'far', 'expensive']

Removing unnecessary words ...

Updated list of length < 25 > : ['use', 'comcast', 'internet', 'connection', 'choice', 'whatsoever', 'pay', 'monthly', 'curiosity', 'check', 'cost', 'internet', 'connection', 'london', 'pond', 'sterling', 'paris', 'euros', 'berlin', 'euro', 's', 'wonder', 'internet', 'connection', 'far', 'expensive']

Unnecessary words removed!

processed\_m 28 is:

comcast cable provider servicing address home purchase force attempt set service phone local rep call previous owner get okay terminate service ensue madness set installation appointment multiple cancel comcast service exist address lie like phone call later achieve installation despite bill send wrong address call bill pay inform fact pay bill phone check sure payment actually deduct bank account month second month service receive bill state account past service shut customer service india meet robotic scripted response question ask inform payment misapply like pull tooth india transfer supervisor billing rep inform payment remove account credit account happen account holder call give number debit card pay state payment comcast verify look payment date question cc number true cia level security measure suggest monitor card fraud bad idea suggest ramp billing security

split\_processed\_m 28 is of length < 130 > :

```
['comcast', 'cable', 'provider', 'servicing', 'address', 'home', 'purchase', 'force', 'attempt', 'set', 'service', 'phone', 'local', 'rep', 'call', 'previous', 'owner', 'get', 'okay', 'terminate', 'service', 'ensue', 'madness', 'set', 'installation', 'appointment', 'multiple', 'cancel', 'comcast', 'service', 'exist', 'address', 'lie', 'like', 'phone', 'call', 'later', 'achieve', 'installation', 'despite', 'bill', 'send', 'wrong', 'address', 'bill', 'pay', 'inform', 'fact', 'pay', 'bill', 'phone', 'check', 'sure', 'payment', 'actually', 'deduct', 'bank', 'account', 'month', 'second', 'month', 'service', 'receive', 'bill', 'state', 'account', 'past', 'service', 'shut', 'customer', 'service', 'india', 'meet', 'robotic', 'scripted', 'response', 'question', 'ask', 'inform', 'payment', 'misapply', 'like', 'pull', 'too', 'th', 'india', 'transfer', 'supervisor', 'billing', 'rep', 'inform', 'payment', 'remove', 'account', 'credit', 'account', 't', 'happen', 'account', 'holder', 'call', 'give', 'number', 'debit', 'card', 'pay', 'state', 'payment', 'comcast', 'verify', 'look', 'payment', 'date', 'question', 'cc', 'number', 'true', 'cia', 'level', 'security', 'measure', 'suggest', 'monitor', 'card', 'fraud', 'bad', 'idea', 'suggest', 'ramp', 'billing', 'security']
```

Removing unnecessary words ...

```
Updated list of length < 124 > : ['comcast', 'cable', 'provider', 'servicing', 'address', 'home', 'purchase', 'force', 'attempt', 'set', 'service', 'phone', 'local', 'rep', 'previous', 'owner', 'okay', 'terminate', 'service', 'ensue', 'madness', 'set', 'installation', 'appointment', 'multiple', 'cancel', 'comcast', 'service', 'exist', 'address', 'lie', 'like', 'phone', 'later', 'achieve', 'installation', 'despite', 'bill', 'send', 'wrong', 'address', 'bill', 'pay', 'inform', 'fact', 'pay', 'bill', 'phone', 'check', 'sure', 'payment', 'actually', 'deduct', 'bank', 'account', 'month', 'second', 'month', 'service', 'receive', 'bill', 'state', 'account', 'past', 'service', 'shut', 'customer', 'service', 'india', 'meet', 'robotic', 'scripted', 'response', 'question', 'ask', 'inform', 'payment', 'misapply', 'like', 'pull', 'too', 'th', 'india', 'transfer', 'supervisor', 'billing', 'rep', 'inform', 'payment', 'remove', 'account', 'credit', 'account', 't', 'happen', 'account', 'holder', 'number', 'debit', 'card', 'pay', 'state', 'payment', 'comcast', 'verify', 'look', 'payment', 'date', 'question', 'cc', 'number', 'true', 'cia', 'level', 'security', 'measure', 'suggest', 'monitor', 'card', 'fraud', 'bad', 'idea', 'suggest', 'ramp', 'billing', 'security']
```

Unnecessary words removed!

processed\_m 29 is:

appointment comcast technician come install internet write appointment date time sure appointment work get cellphone work comcast technician tell door surprised sure appointment day guy bad attitude impatient check schedule request admit wrong day hang day afternoon stay home entire afternoon show call technician get number display early call time pick grumble hang call pick hear hang furious call comcast customer service customer service representative bad attitude tell appointment want appal bad customer service experience life

split\_processed\_m 29 is of length < 76 > :

```
['appointment', 'comcast', 'technician', 'come', 'install', 'internet', 'write', 'appointment', 'date', 'time', 'sure', 'appointment', 'work', 'get', 'cellphone', 'work', 'comcast', 'technician', 'tell', 'door', 'surprised', 'sure', 'appointment', 'day', 'guy', 'bad', 'attitude', 'impatient', 'check', 'schedule', 'request', 'admit', 'wrong', 'day', 'hang', 'day', 'afternoon', 'stay', 'home', 'entire', 'afternoon', 'show', 'call', 'technician', 'get', 'number', 'display', 'early', 'call', 'time', 'pick', 'grumble', 'hang', 'call', 'pick', 'hear', 'hang', 'furious', 'call', 'comcast', 'customer', 'service', 'customer', 'service', 'representative', 'bad', 'attitude', 'tell', 'appointment', 'want', 'appal', 'bad', 'customer', 'service', 'experience', 'life']
```

Removing unnecessary words ...

```
Updated list of length < 69 > : ['appointment', 'comcast', 'technician', 'come', 'install', 'internet', 'write', 'appointment', 'date', 'time', 'sure', 'appointment', 'work', 'cellphone', 'work', 'comcast', 'technician', 'tell', 'door', 'surprised', 'sure', 'appointment', 'day', 'guy', 'bad', 'attitude', 'impatient', 'check', 'schedule', 'request', 'admit', 'wrong', 'day', 'hang', 'day', 'afternoon', 'stay', 'home', 'entire', 'afternoon', 'technician', 'number', 'display', 'early', 'time', 'pick', 'grumble', 'hang', 'pick', 'hear', 'hang', 'furious', 'comcast', 'customer', 'service', 'customer', 'service', 'representative', 'bad', 'attitude', 'tell', 'appointment', 'want', 'appal', 'bad', 'customer', 'service', 'experience', 'life']
```

Unnecessary words removed!

processed\_m 30 is:

call comcast order new internet say order item till call ask tracking number say ship today call admit ship new item area try figure look like ship know ship pm guess call nice apology let hold talk supervisor hold minute come say work early day ask ship red ship guess wanna look early day tell know ship say hum new job know training say day customer service industry big bell whistle go training high turn script shame handicapped go to use technology life easier away home maybe comcast start listen customer verizon fios well lose time wage plus stress

split\_processed\_m 30 is of length < 99 > :

```
['call', 'comcast', 'order', 'new', 'internet', 'say', 'order', 'item', 'till', 'call', 'ask', 'tracking', 'number', 'say', 'ship', 'today', 'call', 'admit', 'ship', 'new', 'item', 'area', 'try', 'figure', 'look', 'like', 'ship', 'know', 'ship', 'pm', 'guess', 'call', 'nice', 'apology', 'let', 'hold', 'talk', 'supervisor', 'hold', 'minute', 'come', 'say', 'work', 'early', 'day', 'ask', 'ship', 'red', 'ship', 'guess', 'wanna', 'look', 'early', 'day', 'tell', 'know', 'ship', 'say', 'hum', 'new', 'job', 'know', 'training', 'say', 'day', 'customer', 'service', 'industry', 'big', 'bell', 'whistle', 'go', 'training', 'high', 'turn', 'script', 'shame', 'handicapped', 'go', 'to', 'use', 'technology', 'life', 'easier', 'away', 'home', 'maybe', 'comcast', 'start', 'listen', 'customer', 'verizon', 'fios', 'well', 'lose', 'time', 'wage', 'plus', 'stress']
```

Removing unnecessary words ...

Updated list of length < 86 > : ['comcast', 'order', 'new', 'internet', 'order', 'item', 'till', 'ask', 'tracking', 'number', 'ship', 'today', 'admit', 'ship', 'new', 'item', 'area', 'try', 'figure', 'look', 'like', 'ship', 'know', 'ship', 'pm', 'guess', 'nice', 'apology', 'let', 'hold', 'talk', 'supervisor', 'hold', 'minute', 'come', 'work', 'early', 'day', 'ask', 'ship', 'red', 'ship', 'guess', 'wanna', 'look', 'early', 'day', 'tell', 'know', 'ship', 'hum', 'new', 'job', 'know', 'training', 'day', 'customer', 'service', 'industry', 'big', 'bell', 'whistle', 'training', 'high', 'turn', 'script', 'shame', 'handicapped', 'use', 'technology', 'life', 'easier', 'away', 'home', 'maybe', 'comcast', 'start', 'listen', 'customer', 'verizon', 'fios', 'lose', 'time', 'wage', 'plus', 'stress']

Unnecessary words removed!

processed\_m 31 is:

pay month service include internet constantly email issue comcast ip issue try filter spam outbound email get bounce spend hour phone internet try fix keep come choice feel stick choice bad thing notify issue want help usually

split\_processed\_m 31 is of length < 37 > :

['pay', 'month', 'service', 'include', 'internet', 'constantly', 'email', 'issue', 'comcast', 'ip', 'issue', 'try', 'filter', 'spam', 'outbound', 'email', 'get', 'bounce', 'spend', 'hour', 'phone', 'internet', 'try', 'fix', 'keep', 'come', 'choice', 'feel', 'stick', 'choice', 'bad', 'thing', 'notify', 'issue', 'want', 'help', 'usually']

Removing unnecessary words ...

Updated list of length < 35 > : ['pay', 'month', 'service', 'include', 'internet', 'constantly', 'email', 'issue', 'comcast', 'ip', 'issue', 'try', 'filter', 'spam', 'outbound', 'email', 'bounce', 'spend', 'hour', 'phone', 'internet', 'try', 'fix', 'come', 'choice', 'feel', 'stick', 'choice', 'bad', 'thing', 'notify', 'issue', 'want', 'help', 'usually']

Unnecessary words removed!

processed\_m 32 is:

absolutely awful constant problem watch lot tv time channel will subscribe say subscribe contact hassle ridiculous

```
split_processed_m 32 is of length < 16 > :
```

```
['absolutely', 'awful', 'constant', 'problem', 'watch', 'lot', 'tv', 'time', 'channel', 'will', 'subscribe', 'say', 'subscribe', 'contact', 'hassle', 'ridiculous']
```

Removing unnecessary words ...

```
Updated list of length < 14 > : ['absolutely', 'awful', 'constant', 'problem', 'watch', 'lot', 'tv', 'time', 'channel', 'subscribe', 'subscribe', 'contact', 'hassle', 'ridiculous']
```

Unnecessary words removed!

```
processed_m 33 is:
```

comcast terrible work turn time discuss charge bill rate increase slow internet cable issue spend half hour phone usually issue resolve company available use internet tv area immediately switch today fiancé want comcast bill move get turn enter new address website give listing package base address click add cart want bring high price package customer service say available area indicate screenshot image attach advertise available base address finally agree available area tell clear cookie clear cookie immediately disconnect problem continue literally exact conversation customer service rep refuse clear cookie tell help

```
split_processed_m 33 is of length < 91 > :
```

```
['comcast', 'terrible', 'work', 'turn', 'time', 'discuss', 'charge', 'bill', 'rate', 'increase', 'slow', 'internet', 'cable', 'issue', 'spend', 'half', 'hour', 'phone', 'usually', 'issue', 'resolve', 'company', 'available', 'use', 'internet', 'tv', 'area', 'immediately', 'switch', 'today', 'fiancé', 'want', 'comcast', 'bill', 'move', 'get', 'turn', 'enter', 'new', 'address', 'website', 'give', 'listing', 'package', 'base', 'address', 'click', 'add', 'cart', 'want', 'bring', 'high', 'price', 'package', 'customer', 'service', 'say', 'available', 'area', 'indicate', 'screenshot', 'image', 'attach', 'advertise', 'available', 'base', 'address', 'finally', 'agree', 'available', 'area', 'tell', 'clear', 'cookie', 'clear', 'cookie', 'immediately', 'disconnect', 'problem', 'continue', 'literally', 'exact', 'conversation', 'customer', 'service', 'rep', 'refuse', 'clear', 'cookie', 'tell', 'help']
```

Removing unnecessary words ...

```
Updated list of length < 87 > : ['comcast', 'terrible', 'work', 'turn', 'time', 'discuss', 'charge', 'bill', 'rate',
```



'increase', 'slow', 'internet', 'cable', 'issue', 'spend', 'half', 'hour', 'phone', 'usually', 'issue', 'resolve', 'company', 'available', 'use', 'internet', 'tv', 'area', 'immediately', 'switch', 'today', 'fianc  ', 'want', 'comcast', 'bill', 'turn', 'enter', 'new', 'address', 'website', 'listing', 'package', 'base', 'address', 'click', 'add', 'cart', 'want', 'bring', 'high', 'price', 'package', 'customer', 'service', 'available', 'area', 'indicate', 'screenshot', 'image', 'attach', 'advertise', 'available', 'base', 'address', 'finally', 'agree', 'available', 'area', 'tell', 'clear', 'cookie', 'clear', 'cookie', 'immediately', 'disconnect', 'problem', 'continue', 'literally', 'exact', 'conversation', 'customer', 'service', 'rep', 'refuse', 'clear', 'cookie', 'tell', 'help']

Unnecessary words removed!

processed\_m 34 is:

sign comcast tell visa card get charge entire bundle get basic month later box box register phone day wait month visa card threaten lawsuit gift card call high rep go record call restart bundle give low rate box credit final year quote pay month shut time month individually charge kristin believe executive customer relation fix comcast tell honor deal overcharge plus shut yr later wait leave owe visa card past deal get visa scam

split\_processed\_m 34 is of length < 74 > :

['sign', 'comcast', 'tell', 'visa', 'card', 'get', 'charge', 'entire', 'bundle', 'get', 'basic', 'month', 'later', 'box', 'box', 'register', 'phone', 'day', 'wait', 'month', 'visa', 'card', 'threaten', 'lawsuit', 'gift', 'card', 'call', 'high', 'rep', 'go', 'record', 'call', 'restart', 'bundle', 'give', 'low', 'rate', 'box', 'credit', 'final', 'year', 'quote', 'pay', 'month', 'shut', 'time', 'month', 'individually', 'charge', 'kristin', 'believe', 'executive', 'customer', 'relation', 'fix', 'comcast', 'tell', 'honor', 'deal', 'overcharge', 'plus', 'shut', 'yr', 'later', 'wait', 'leave', 'owe', 'visa', 'card', 'past', 'deal', 'get', 'visa', 'scam']

Removing unnecessary words ...

Updated list of length < 66 > : ['sign', 'comcast', 'tell', 'visa', 'card', 'charge', 'entire', 'bundle', 'basic', 'month', 'later', 'box', 'box', 'register', 'phone', 'day', 'wait', 'month', 'visa', 'card', 'threaten', 'lawsuit', 'gift', 'card', 'high', 'rep', 'record', 'restart', 'bundle', 'low', 'rate', 'box', 'credit', 'final', 'year', 'quote', 'pay', 'month', 'shut', 'time', 'month', 'individually', 'charge', 'kristin', 'believe', 'executive', 'customer', 'relation', 'fix', 'comcast', 'tell', 'honor', 'deal', 'overcharge', 'plus', 'shut', 'later', 'wait', 'leave', 'owe', 'visa', 'card', 'past', 'deal', 'visa', 'scam']

Unnecessary words removed!

processed\_m 35 is:

settle new home fiance year decide finally cable work day cable like necessity location cable provider available comcast dish network call comcast hear deal sale rep tell deal run want channel sale rep ask channel want match package name hgtv travel channel food network child channel name package mbps internet channel name include package sound like perfect get phone fiance ask price include taxis sale rep say plus extra month router modem decide buy router modem avoid month know give price roughly month perfect today come install excite come home settle work flip channel find channel promise available immediately call comcast customer service state economy plan apart include channel name inform pay extra month hd agree original sale rep yesse okay ask completely misinterpret deal buy product fair ok know channel want include get cable necessity luxury sale rep falsely advertise sell customer service rep waive installation fee read complaint online people go thing comcast sale rep need honest upfront consumer

split\_processed\_m 35 is of length < 161 > :

```
['settle', 'new', 'home', 'fiance', 'year', 'decide', 'finally', 'cable', 'work', 'day', 'cable', 'like', 'necessity', 'location', 'cable', 'provider', 'available', 'comcast', 'dish', 'network', 'call', 'comcast', 'hear', 'deal', 'sale', 'rep', 'tell', 'deal', 'run', 'want', 'channel', 'sale', 'rep', 'ask', 'channel', 'want', 'match', 'package', 'name', 'hgtv', 'travel', 'channel', 'food', 'network', 'child', 'channel', 'name', 'package', 'mbps', 'internet', 'channel', 'name', 'include', 'package', 'sound', 'like', 'perfect', 'get', 'phone', 'fiance', 'ask', 'price', 'include', 'taxis', 'sale', 'rep', 'say', 'plus', 'extra', 'month', 'router', 'modem', 'decide', 'buy', 'router', 'modem', 'avoid', 'month', 'know', 'give', 'price', 'roughly', 'month', 'perfect', 'today', 'come', 'install', 'excite', 'come', 'home', 'settle', 'work', 'flip', 'channel', 'find', 'channel', 'promise', 'available', 'immediately', 'call', 'comcast', 'customer', 'service', 'state', 'economy', 'plan', 'apart', 'include', 'channel', 'name', 'inform', 'pay', 'extra', 'month', 'hd', 'agree', 'original', 'sale', 'rep', 'yesse', 'okay', 'ask', 'completely', 'misinterpret', 'deal', 'buy', 'product', 'fair', 'ok', 'know', 'channel', 'want', 'include', 'get', 'cable', 'necessity', 'luxury', 'sale', 'rep', 'falsely', 'advertise', 'sell', 'customer', 'service', 'rep', 'waive', 'installation', 'fee', 'read', 'complaint', 'online', 'people', 'go', 'thing', 'comcast', 'sale', 'rep', 'need', 'honest', 'upfront', 'consumer']
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Removing unnecessary words ...

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Updated list of length < 150 > : ['settle', 'new', 'home', 'fiance', 'year', 'decide', 'finally', 'cable', 'work', 'day', 'cable', 'like', 'necessity', 'location', 'cable', 'provider', 'available', 'comcast', 'dish', 'network', 'comcast', 'hear', 'deal', 'sale', 'rep', 'tell', 'deal', 'run', 'want', 'channel', 'sale', 'rep', 'ask', 'channel', 'want', 'match', 'package', 'hgtv', 'travel', 'channel', 'food', 'network', 'child', 'channel', 'package', 'mbps', 'internet', 'channel', 'include', 'package', 'sound', 'like', 'perfect', 'phone', 'fiance', 'ask', 'price', 'include', 'taxis', 'sale', 'rep', 'plus', 'extra', 'month', 'router', 'modem', 'decide', 'buy', 'router', 'modem', 'avoid', 'month', 'know', 'price', 'roughly', 'month', 'perfect', 'today', 'come', 'install', 'excite', 'come', 'home', 'settle', 'work', 'flip', 'channel', 'find', 'channel', 'promise', 'available', 'immediately', 'comcast', 'customer', 'service', 'state', 'economy', 'plan', 'apart', 'include', 'channel', 'inform', 'pay', 'extra', 'month', 'hd', 'agree', 'original', 'sale', 'rep', 'yesse', 'okay', 'ask', 'completely', 'misinterpret', 'deal', 'buy', 'product', 'fair', 'ok', 'know', 'channel', 'want', 'include', 'cable', 'necessity', 'luxury', 'sale', 'rep', 'falsely', 'advertise', 'sell', 'customer', 'service', 'r
```

ep', 'waive', 'installation', 'fee', 'read', 'complaint', 'online', 'people', 'thing', 'comcast', 'sale', 'rep', 'need', 'honest', 'upfront', 'consumer']

Unnecessary words removed!

processed\_m 36 is:

nice installer xfinity dvr service room house yesterday work great afternoon night recording show oddness stalling hard restart afternoon dvr box go reboot loop shut go boot process get bit reason review piece new computer hardware break usually soon turn go break call customer service tell customer hour box break say repair person available day day cheap crap box company know hire sufficient tech offer refund choice use

split\_processed\_m 36 is of length < 68 > :

['nice', 'installer', 'xfinity', 'dvr', 'service', 'room', 'house', 'yesterday', 'work', 'great', 'afternoon', 'night', 'recording', 'show', 'oddness', 'stalling', 'hard', 'restart', 'afternoon', 'dvr', 'box', 'go', 'reboot', 'loop', 'shut', 'go', 'boot', 'process', 'get', 'bit', 'reason', 'review', 'piece', 'new', 'computer', 'hardware', 'break', 'usually', 'soon', 'turn', 'go', 'break', 'call', 'customer', 'service', 'tell', 'customer', 'hour', 'box', 'break', 'say', 'repair', 'person', 'available', 'day', 'day', 'cheap', 'crap', 'box', 'company', 'know', 'hire', 'sufficient', 'tech', 'offer', 'refund', 'choice', 'use']

Removing unnecessary words ...

Updated list of length < 61 > : ['nice', 'installer', 'xfinity', 'dvr', 'service', 'room', 'house', 'yesterday', 'work', 'great', 'afternoon', 'night', 'recording', 'oddness', 'stalling', 'hard', 'restart', 'afternoon', 'dvr', 'box', 'reboot', 'loop', 'shut', 'boot', 'process', 'bit', 'reason', 'review', 'piece', 'new', 'computer', 'hardware', 'break', 'usually', 'soon', 'turn', 'break', 'customer', 'service', 'tell', 'customer', 'hour', 'box', 'break', 'repair', 'person', 'available', 'day', 'day', 'cheap', 'crap', 'box', 'company', 'know', 'hire', 'sufficient', 'tech', 'offer', 'refund', 'choice', 'use']

Unnecessary words removed!

processed\_m 37 is:

write day ago unbelievably poor customer service receive unwarranted charge account charge cost admit problem end day refund continue write internet change company business customer service satisfaction btw well customer service number p

hilippines speak country offer direct line problem outrageously unresolved service call cs yesterday tell thing day service give choice today choose call receive advance phone tell update say call tell reschedule expect arrival phone rescheduled arrival say make new time egregious wrong company stay business reschedule appointment tenant tv internet company care ticket number take time save call ask difference tell choice verizon fios company

split\_processed\_m 37 is of length < 97 > :

```
['write', 'day', 'ago', 'unbelievably', 'poor', 'customer', 'service', 'receive', 'unwarranted', 'charge', 'account', 'charge', 'cost', 'admit', 'problem', 'end', 'day', 'refund', 'continue', 'write', 'internet', 'change', 'company', 'business', 'customer', 'service', 'satisfaction', 'btw', 'well', 'customer', 'service', 'number', 'philippines', 'speak', 'country', 'offer', 'direct', 'line', 'problem', 'outrageously', 'unresolved', 'service', 'call', 'cs', 'yesterday', 'tell', 'thing', 'day', 'service', 'give', 'choice', 'today', 'choose', 'call', 'receive', 'advance', 'phone', 'tell', 'update', 'say', 'call', 'tell', 'reschedule', 'expect', 'arrival', 'phone', 'rescheduled', 'arrival', 'say', 'make', 'new', 'time', 'egregious', 'wrong', 'company', 'stay', 'business', 'reschedule', 'appointment', 'tenant', 'tv', 'internet', 'company', 'care', 'ticket', 'number', 'take', 'time', 'save', 'call', 'ask', 'difference', 'tell', 'choice', 'verizon', 'fios', 'company']
```

Removing unnecessary words ...

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Updated list of length < 87 > : ['write', 'day', 'ago', 'unbelievably', 'poor', 'customer', 'service', 'receive', 'unwarranted', 'charge', 'account', 'charge', 'cost', 'admit', 'problem', 'end', 'day', 'refund', 'continue', 'write', 'internet', 'change', 'company', 'business', 'customer', 'service', 'satisfaction', 'btw', 'customer', 'service', 'number', 'philippines', 'speak', 'country', 'offer', 'direct', 'line', 'problem', 'outrageously', 'unresolved', 'service', 'cs', 'yesterday', 'tell', 'thing', 'day', 'service', 'choice', 'today', 'choose', 'receive', 'advance', 'phone', 'tell', 'update', 'tell', 'reschedule', 'expect', 'arrival', 'phone', 'rescheduled', 'arrival', 'new', 'time', 'egregious', 'wrong', 'company', 'stay', 'business', 'reschedule', 'appointment', 'tenant', 'tv', 'internet', 'company', 'care', 'ticket', 'number', 'time', 'save', 'ask', 'difference', 'tell', 'choice', 'verizon', 'fios', 'company']
```

Unnecessary words removed!

processed\_m 38 is:

recently call comcast activate internet go directv rep tell pay bundle internet cable ask explain package tell mbps plus dvr cable box total include fee guess box come yesterday internet mbps bill call cs tell responsible rep discuss phone possible tell want mbps extra fee ask record conversation say know speak right satisfied reason day cancel

split\_processed\_m 38 is of length < 56 > :

```
['recently', 'call', 'comcast', 'activate', 'internet', 'go', 'directv', 'rep', 'tell', 'pay', 'bundle', 'internet',
'cable', 'ask', 'explain', 'package', 'tell', 'mbps', 'plus', 'dvr', 'cable', 'box', 'total', 'include', 'fee', 'gues
s', 'box', 'come', 'yesterday', 'internet', 'mbps', 'bill', 'call', 'cs', 'tell', 'responsible', 'rep', 'discuss', 'pho
ne', 'possible', 'tell', 'want', 'mbps', 'extra', 'fee', 'ask', 'record', 'conversation', 'say', 'know', 'speak', 'righ
t', 'satisfied', 'reason', 'day', 'cancel']
```

Removing unnecessary words ...

```
Updated list of length < 52 > : ['recently', 'comcast', 'activate', 'internet', 'directv', 'rep', 'tell', 'pay', 'bund
le', 'internet', 'cable', 'ask', 'explain', 'package', 'tell', 'mbps', 'plus', 'dvr', 'cable', 'box', 'total', 'includ
e', 'fee', 'guess', 'box', 'come', 'yesterday', 'internet', 'mbps', 'bill', 'cs', 'tell', 'responsible', 'rep', 'discus
s', 'phone', 'possible', 'tell', 'want', 'mbps', 'extra', 'fee', 'ask', 'record', 'conversation', 'know', 'speak', 'righ
t', 'satisfied', 'reason', 'day', 'cancel']
```

Unnecessary words removed!

processed\_m 39 is:

mother phone call service say year old need phone time service people check connection say need technician emergency b  
asis day go home retirement community wait couple hour decide sure know update get automate service give phone number t  
ell half hour great think automate service say want cancel appointment say automated voice come say appointment cancel  
needless upset take minute real person say send technician tomorrow totally unacceptable unbelievable close far away ca  
ll customer service morning recompense day service service day previous count call complain feel violate hour time

split\_processed\_m 39 is of length < 88 > :

```
['mother', 'phone', 'call', 'service', 'say', 'year', 'old', 'need', 'phone', 'time', 'service', 'people', 'check', 'c
onnection', 'say', 'need', 'technician', 'emergency', 'basis', 'day', 'go', 'home', 'retirement', 'community', 'wait',
'couple', 'hour', 'decide', 'sure', 'know', 'update', 'get', 'automate', 'service', 'give', 'phone', 'number', 'tell',
'half', 'hour', 'great', 'think', 'automate', 'service', 'say', 'want', 'cancel', 'appointment', 'say', 'automated', 'v
oice', 'come', 'say', 'appointment', 'cancel', 'needless', 'upset', 'take', 'minute', 'real', 'person', 'say', 'send',
'technician', 'tomorrow', 'totally', 'unacceptable', 'unbelievable', 'close', 'far', 'away', 'call', 'customer', 'servi
ce', 'morning', 'recompense', 'day', 'service', 'service', 'day', 'previous', 'count', 'call', 'complain', 'feel', 'vio
late', 'hour', 'time']
```

Removing unnecessary words ...

Updated list of length < 75 > : ['mother', 'phone', 'service', 'year', 'old', 'need', 'phone', 'time', 'service', 'people', 'check', 'connection', 'need', 'technician', 'emergency', 'basis', 'day', 'home', 'retirement', 'community', 'wait', 'couple', 'hour', 'decide', 'sure', 'know', 'update', 'automate', 'service', 'phone', 'number', 'tell', 'half', 'hour', 'great', 'think', 'automate', 'service', 'want', 'cancel', 'appointment', 'automated', 'voice', 'come', 'appointment', 'cancel', 'needless', 'upset', 'minute', 'real', 'person', 'send', 'technician', 'tomorrow', 'totally', 'unacceptable', 'unbelievable', 'close', 'far', 'away', 'customer', 'service', 'morning', 'recompense', 'day', 'service', 'service', 'day', 'previous', 'count', 'complain', 'feel', 'violate', 'hour', 'time']

Unnecessary words removed!

processed\_m 40 is:

comcast reason credit account month time receive bill say payment reverse credit bill month sure legal contact customer service keep say idea happen bill correct contact corporate office state end day call today get woman say issue resolve credit error fix account owe month bill ask mess fair say bill owe mistake deal error know doubt bad company deal investigate thing illegal call leave lengthy message overdue bill state owe happen pay overdue call complain tell fine list phone get shut blame dial tone rude illegal leave personal information answer machine call corporate state mass laws guess special

split\_processed\_m 40 is of length < 98 > :

['comcast', 'reason', 'credit', 'account', 'month', 'time', 'receive', 'bill', 'say', 'payment', 'reverse', 'credit', 'bill', 'month', 'sure', 'legal', 'contact', 'customer', 'service', 'keep', 'say', 'idea', 'happen', 'bill', 'correct', 'contact', 'corporate', 'office', 'state', 'end', 'day', 'call', 'today', 'get', 'woman', 'say', 'issue', 'resolve', 'credit', 'error', 'fix', 'account', 'owe', 'month', 'bill', 'ask', 'mess', 'fair', 'say', 'bill', 'owe', 'mistake', 'deal', 'error', 'know', 'doubt', 'bad', 'company', 'deal', 'investigate', 'thing', 'illegal', 'call', 'leave', 'lengthy', 'message', 'overdue', 'bill', 'state', 'owe', 'happen', 'pay', 'overdue', 'call', 'complain', 'tell', 'fine', 'list', 'phone', 'get', 'shut', 'blame', 'dial', 'tone', 'rude', 'illegal', 'leave', 'personal', 'information', 'answer', 'machine', 'call', 'corporate', 'state', 'mass', 'laws', 'guess', 'special']

Removing unnecessary words ...

Updated list of length < 87 > : ['comcast', 'reason', 'credit', 'account', 'month', 'time', 'receive', 'bill', 'payment', 'reverse', 'credit', 'bill', 'month', 'sure', 'legal', 'contact', 'customer', 'service', 'idea', 'happen', 'bill', 'correct', 'contact', 'corporate', 'office', 'state', 'end', 'day', 'today', 'woman', 'issue', 'resolve', 'credit', 'error', 'fix', 'account', 'owe', 'month', 'bill', 'ask', 'mess', 'fair', 'bill', 'owe', 'mistake', 'deal', 'error', 'know', 'doubt', 'bad', 'company', 'deal', 'investigate', 'thing', 'illegal', 'leave', 'lengthy', 'message', 'overdue', 'bill', 'state', 'owe', 'happen', 'pay', 'overdue', 'complain', 'tell', 'fine', 'list', 'phone', 'shut', 'blame', 'dial', 'tone', 'rude', 'illegal', 'leave', 'personal', 'information', 'answer', 'machine', 'corporate', 'state', 'mass', 'law']

s', 'guess', 'special']

Unnecessary words removed!

processed\_m 41 is:

customer nearly year company time good price initial time period contract shake begin service horrendous intermittent level promise charge brag ad matter deliver beat submission alternative block plus hour day incompetent technician basically change know people comcast choice way like mafia company mark territory shakedown thing rely service shake period service suck advisable creative search service get involve headache wish avoid time wait line complaint long way majority hang accountable like technician get clue visit house reminder charge long get service basic service affordable supposedly discount service year high begin trump ridiculous level contract run promise get try explain credit home visit incompetent tech talk business rely have backup plan ability switch company try creative start want money creative mean service suck rely like advertise

split\_processed\_m 41 is of length < 125 > :

['customer', 'nearly', 'year', 'company', 'time', 'good', 'price', 'initial', 'time', 'period', 'contract', 'shake', 'begin', 'service', 'horrendous', 'intermittent', 'level', 'promise', 'charge', 'brag', 'ad', 'matter', 'deliver', 'beat', 'submission', 'alternative', 'block', 'plus', 'hour', 'day', 'incompetent', 'technician', 'basically', 'change', 'know', 'people', 'comcast', 'choice', 'way', 'like', 'mafia', 'company', 'mark', 'territory', 'shakedown', 'thing', 'rely', 'service', 'shake', 'period', 'service', 'suck', 'advisable', 'creative', 'search', 'service', 'get', 'involve', 'headache', 'wish', 'avoid', 'time', 'wait', 'line', 'complaint', 'long', 'way', 'majority', 'hang', 'accountable', 'like', 'technician', 'get', 'clue', 'visit', 'house', 'reminder', 'charge', 'long', 'get', 'service', 'basic', 'service', 'affordable', 'supposedly', 'discount', 'service', 'year', 'high', 'begin', 'trump', 'ridiculous', 'level', 'contract', 'run', 'promise', 'get', 'try', 'explain', 'credit', 'home', 'visit', 'incompetent', 'tech', 'talk', 'business', 'rely', 'have', 'backup', 'plan', 'ability', 'switch', 'company', 'try', 'creative', 'start', 'want', 'money', 'creative', 'mean', 'service', 'suck', 'rely', 'like', 'advertise']

Removing unnecessary words ...

Updated list of length < 120 > : ['customer', 'nearly', 'year', 'company', 'time', 'good', 'price', 'initial', 'time', 'period', 'contract', 'shake', 'begin', 'service', 'horrendous', 'intermittent', 'level', 'promise', 'charge', 'brag', 'ad', 'matter', 'deliver', 'beat', 'submission', 'alternative', 'block', 'plus', 'hour', 'day', 'incompetent', 'technician', 'basically', 'change', 'know', 'people', 'comcast', 'choice', 'way', 'like', 'mafia', 'company', 'mark', 'territory', 'shakedown', 'thing', 'rely', 'service', 'shake', 'period', 'service', 'suck', 'advisable', 'creative', 'search', 'service', 'involve', 'headache', 'wish', 'avoid', 'time', 'wait', 'line', 'complaint', 'long', 'way', 'majority', 'hang', 'accountable', 'like', 'technician', 'clue', 'visit', 'house', 'reminder', 'charge', 'long', 'service', 'basic', 'service', 'affordable', 'supposedly', 'discount', 'service', 'year', 'high', 'begin', 'trump', 'ridiculous', 'level', 'c

ontract', 'run', 'promise', 'try', 'explain', 'credit', 'home', 'visit', 'incompetent', 'tech', 'talk', 'business', 'rely', 'backup', 'plan', 'ability', 'switch', 'company', 'try', 'creative', 'start', 'want', 'money', 'creative', 'mean', 'service', 'suck', 'rely', 'like', 'advertise']

Unnecessary words removed!

processed\_m 42 is:

read review write run problem comcast month want simple address change begin comcast random number account ask say try contact multiple time request change address receive lady name andrea activation team state past account cable barely month switch account pay recollection let remind service month pay time pay previously owe bill long story short andrea lady block apartment roommate cable comcast cable service available area smh thing receive letter credit report owe comcast continue use internet demand service free charge will let pay service

split\_processed\_m 42 is of length < 84 > :

['read', 'review', 'write', 'run', 'problem', 'comcast', 'month', 'want', 'simple', 'address', 'change', 'begin', 'comcast', 'random', 'number', 'account', 'ask', 'say', 'try', 'contact', 'multiple', 'time', 'request', 'change', 'address', 'receive', 'lady', 'name', 'andrea', 'activation', 'team', 'state', 'past', 'account', 'cable', 'barely', 'month', 'switch', 'account', 'pay', 'recollection', 'let', 'remind', 'service', 'month', 'pay', 'time', 'pay', 'previously', 'owe', 'bill', 'long', 'story', 'short', 'andrea', 'lady', 'block', 'apartment', 'roommate', 'cable', 'comcast', 'cable', 'service', 'available', 'area', 'smh', 'thing', 'receive', 'letter', 'credit', 'report', 'owe', 'comcast', 'continue', 'use', 'internet', 'demand', 'service', 'free', 'charge', 'will', 'let', 'pay', 'service']

Removing unnecessary words ...

Updated list of length < 81 > : ['read', 'review', 'write', 'run', 'problem', 'comcast', 'month', 'want', 'simple', 'address', 'change', 'begin', 'comcast', 'random', 'number', 'account', 'ask', 'try', 'contact', 'multiple', 'time', 'request', 'change', 'address', 'receive', 'lady', 'andrea', 'activation', 'team', 'state', 'past', 'account', 'cable', 'barely', 'month', 'switch', 'account', 'pay', 'recollection', 'let', 'remind', 'service', 'month', 'pay', 'time', 'pay', 'previously', 'owe', 'bill', 'long', 'story', 'short', 'andrea', 'lady', 'block', 'apartment', 'roommate', 'cable', 'comcast', 'cable', 'service', 'available', 'area', 'smh', 'thing', 'receive', 'letter', 'credit', 'report', 'owe', 'comcast', 'continue', 'use', 'internet', 'demand', 'service', 'free', 'charge', 'let', 'pay', 'service']

Unnecessary words removed!



processed\_m 43 is:

matter customer consumer consumer affairs website complain extremely bad expensive service comcast provide comcast government bed happen comcast answer problem comcast unresolved new xfinity probably bad experience tv watch switch force modem router damn thing keep disconnect wireless printer think update wee hour morning treat reset printer tv reset phone service step soup can string voice mail dump week old message delete message mailbox day later supervisor phone number directly joke answer definitely return phone dvr record schedule recording series record show selective recording ns a get dvr box decide record watch

split\_processed\_m 43 is of length < 91 > :

```
['matter', 'customer', 'consumer', 'consumer', 'affairs', 'website', 'complain', 'extremely', 'bad', 'expensive', 'service', 'comcast', 'provide', 'comcast', 'government', 'bed', 'happen', 'comcast', 'answer', 'problem', 'comcast', 'unresolved', 'new', 'xfinity', 'probably', 'bad', 'experience', 'tv', 'watch', 'switch', 'force', 'modem', 'router', 'damn', 'thing', 'keep', 'disconnect', 'wireless', 'printer', 'think', 'update', 'wee', 'hour', 'morning', 'treat', 'reset', 'printer', 'tv', 'reset', 'phone', 'service', 'step', 'soup', 'can', 'string', 'voice', 'mail', 'dump', 'week', 'old', 'message', 'delete', 'message', 'mailbox', 'day', 'later', 'supervisor', 'phone', 'number', 'directly', 'joke', 'answer', 'definitely', 'return', 'phone', 'dvr', 'record', 'schedule', 'recording', 'series', 'record', 'show', 'selective', 'recording', 'nsa', 'get', 'dvr', 'box', 'decide', 'record', 'watch']
```

Removing unnecessary words ...

```
Updated list of length < 87 > : ['matter', 'customer', 'consumer', 'consumer', 'affairs', 'website', 'complain', 'extremely', 'bad', 'expensive', 'service', 'comcast', 'provide', 'comcast', 'government', 'bed', 'happen', 'comcast', 'answer', 'problem', 'comcast', 'unresolved', 'new', 'xfinity', 'probably', 'bad', 'experience', 'tv', 'watch', 'switch', 'force', 'modem', 'router', 'damn', 'thing', 'disconnect', 'wireless', 'printer', 'think', 'update', 'wee', 'hour', 'morning', 'treat', 'reset', 'printer', 'tv', 'reset', 'phone', 'service', 'step', 'soup', 'string', 'voice', 'mail', 'dump', 'week', 'old', 'message', 'delete', 'message', 'mailbox', 'day', 'later', 'supervisor', 'phone', 'number', 'directly', 'joke', 'answer', 'definitely', 'return', 'phone', 'dvr', 'record', 'schedule', 'recording', 'series', 'record', 'selective', 'recording', 'nsa', 'dvr', 'box', 'decide', 'record', 'watch']
```

Unnecessary words removed!

processed\_m 44 is:

experience comcast stressful hardly sleep bill overcharge privacy violate let access account permission number call numerous time try answer happen speak numerous people lady laugh extremely rude man tell person try access account give number time different answer clue talk place need shut sort investigation hide cost add month time come house take line phone pole disconnect reason service day company make sick add time write novel

split\_processed\_m 44 is of length < 67 > :

```
['experience', 'comcast', 'stressful', 'hardly', 'sleep', 'bill', 'overcharge', 'privacy', 'violate', 'let', 'access',
'account', 'permission', 'number', 'call', 'numerous', 'time', 'try', 'answer', 'happen', 'speak', 'numerous', 'peopl
e', 'lady', 'laugh', 'extremely', 'rude', 'man', 'tell', 'person', 'try', 'access', 'account', 'give', 'number', 'tim
e', 'different', 'answer', 'clue', 'talk', 'place', 'need', 'shut', 'sort', 'investigation', 'hide', 'cost', 'add', 'mo
nth', 'time', 'come', 'house', 'take', 'line', 'phone', 'pole', 'disconnect', 'reason', 'service', 'day', 'company', 'm
ake', 'sick', 'add', 'time', 'write', 'novel']
```

Removing unnecessary words ...

Updated list of length < 63 > : ['experience', 'comcast', 'stressful', 'hardly', 'sleep', 'bill', 'overcharge', 'privacy', 'violate', 'let', 'access', 'account', 'permission', 'number', 'numerous', 'time', 'try', 'answer', 'happen', 'speak', 'numerous', 'people', 'lady', 'laugh', 'extremely', 'rude', 'man', 'tell', 'person', 'try', 'access', 'account', 'number', 'time', 'different', 'answer', 'clue', 'talk', 'place', 'need', 'shut', 'sort', 'investigation', 'hide', 'cost', 'add', 'month', 'time', 'come', 'house', 'line', 'phone', 'pole', 'disconnect', 'reason', 'service', 'day', 'company', 'sick', 'add', 'time', 'write', 'novel']

Unnecessary words removed!

processed\_m 45 is:

issue speed mbps comcast rep tell buy router month fix lose salvage value high quality router best buy pay month addition damage incur hear comcast fix issue provide recourse require upgrade month service work bait switch sale practice easy regulation company people sampling obtain far pay million attorney note news quickly well gobble firm process file promptly incentive stop client exclude antitrust problem

split\_processed\_m 45 is of length < 63 > :

```
['issue', 'speed', 'mbps', 'comcast', 'rep', 'tell', 'buy', 'router', 'month', 'fix', 'lose', 'salvage', 'value', 'high',
'quality', 'router', 'best', 'buy', 'pay', 'month', 'addition', 'damage', 'incur', 'hear', 'comcast', 'fix', 'issue',
'provide', 'recourse', 'require', 'upgrade', 'month', 'service', 'work', 'bait', 'switch', 'sale', 'practice', 'easy',
'regulation', 'company', 'people', 'sampling', 'obtain', 'far', 'pay', 'million', 'attorney', 'note', 'news', 'quickly',
'well', 'gobble', 'firm', 'process', 'file', 'promptly', 'incentive', 'stop', 'client', 'exclude', 'antitrust',
'problem']
```

Removing unnecessary words ...

Updated list of length < 62 > : ['issue', 'speed', 'mbps', 'comcast', 'rep', 'tell', 'buy', 'router', 'month', 'fix', 'lose', 'salvage', 'value', 'high', 'quality', 'router', 'best', 'buy', 'pay', 'month', 'addition', 'damage', 'incur', 'hear', 'comcast', 'fix', 'issue', 'provide', 'recourse', 'require', 'upgrade', 'month', 'service', 'work', 'bait', 'switch', 'sale', 'practice', 'easy', 'regulation', 'company', 'people', 'sampling', 'obtain', 'far', 'pay', 'million', 'attorney', 'note', 'news', 'quickly', 'gobble', 'firm', 'process', 'file', 'promptly', 'incentive', 'stop', 'client', 'exclude', 'antitrust', 'problem']

Unnecessary words removed!

processed\_m 46 is:

need lot support recent confirm late cable box person speak pleasant helpful outage system restore reasonably quick manner year new contract lot channel reasonable price year reduce cable service maintain price close current price problem reliability service currently use like dvr channel watch pay retail service cable bill high

split\_processed\_m 46 is of length < 49 > :

['need', 'lot', 'support', 'recent', 'confirm', 'late', 'cable', 'box', 'person', 'speak', 'pleasant', 'helpful', 'outage', 'system', 'restore', 'reasonably', 'quick', 'manner', 'year', 'new', 'contract', 'lot', 'channel', 'reasonable', 'price', 'year', 'reduce', 'cable', 'service', 'maintain', 'price', 'close', 'current', 'price', 'problem', 'reliability', 'service', 'currently', 'use', 'like', 'dvr', 'channel', 'watch', 'pay', 'retail', 'service', 'cable', 'bill', 'high']

Removing unnecessary words ...

Updated list of length < 49 > : ['need', 'lot', 'support', 'recent', 'confirm', 'late', 'cable', 'box', 'person', 'speak', 'pleasant', 'helpful', 'outage', 'system', 'restore', 'reasonably', 'quick', 'manner', 'year', 'new', 'contract', 'lot', 'channel', 'reasonable', 'price', 'year', 'reduce', 'cable', 'service', 'maintain', 'price', 'close', 'current', 'price', 'problem', 'reliability', 'service', 'currently', 'use', 'like', 'dvr', 'channel', 'watch', 'pay', 'retail', 'service', 'cable', 'bill', 'high']

Unnecessary words removed!

processed\_m 47 is:

call multiple time problem like call record complaint call wait week down cable middle road fire dept finally come cut cable safety reason clueless care time call issue ripoff continue try find way pork customer raise internet price customer watch netflix cable go find way money way experience bad cable company comcast call multiple time recent down wire tell time customer service representative note system kid suck option internet local news sport cancel comcast heartbeats

split\_processed\_m 47 is of length < 75 > :

```
['call', 'multiple', 'time', 'problem', 'like', 'call', 'record', 'complaint', 'call', 'wait', 'week', 'down', 'cable', 'middle', 'road', 'fire', 'dept', 'finally', 'come', 'cut', 'cable', 'safety', 'reason', 'clueless', 'care', 'time', 'issue', 'ripoff', 'continue', 'try', 'find', 'way', 'pork', 'customer', 'raise', 'internet', 'price', 'customer', 'watch', 'netflix', 'cable', 'go', 'find', 'way', 'money', 'way', 'experience', 'bad', 'cable', 'company', 'comcast', 'call', 'multiple', 'time', 'recent', 'down', 'wire', 'tell', 'time', 'customer', 'service', 'representative', 'note', 'system', 'kid', 'suck', 'option', 'internet', 'local', 'news', 'sport', 'cancel', 'comcast', 'heartbeat']
```

Removing unnecessary words ...

```
Updated list of length < 67 > : ['multiple', 'time', 'problem', 'like', 'record', 'complaint', 'wait', 'week', 'cable', 'middle', 'road', 'fire', 'dept', 'finally', 'come', 'cut', 'cable', 'safety', 'reason', 'clueless', 'care', 'time', 'issue', 'ripoff', 'continue', 'try', 'find', 'way', 'pork', 'customer', 'raise', 'internet', 'price', 'customer', 'watch', 'netflix', 'cable', 'find', 'way', 'money', 'way', 'experience', 'bad', 'cable', 'company', 'comcast', 'multiple', 'time', 'recent', 'wire', 'tell', 'time', 'customer', 'service', 'representative', 'note', 'system', 'kid', 'suck', 'option', 'internet', 'local', 'news', 'sport', 'cancel', 'comcast', 'heartbeat']
```

Unnecessary words removed!

processed\_m 48 is:

try pay bill able access account online got message email address connect account call wait hour payment give payment bank online fast shut cable charge fee call today transfer min later get service ask time send money monopoly hate provider allow area horrible way treat customer

split\_processed\_m 48 is of length < 46 > :

```
['try', 'pay', 'bill', 'able', 'access', 'account', 'online', 'got', 'message', 'email', 'address', 'connect', 'account', 'call', 'wait', 'hour', 'payment', 'give', 'payment', 'bank', 'online', 'fast', 'shut', 'cable', 'charge', 'fee',
```

```
'call', 'today', 'transfer', 'min', 'later', 'get', 'service', 'ask', 'time', 'send', 'money', 'monopoly', 'hate', 'pro  
vider', 'allow', 'area', 'horrible', 'way', 'treat', 'customer']
```

Removing unnecessary words ...

```
Updated list of length < 42 > : ['try', 'pay', 'bill', 'able', 'access', 'account', 'online', 'got', 'message', 'emai  
l', 'address', 'connect', 'account', 'wait', 'hour', 'payment', 'payment', 'bank', 'online', 'fast', 'shut', 'cable',  
'charge', 'fee', 'today', 'transfer', 'min', 'later', 'service', 'ask', 'time', 'send', 'money', 'monopoly', 'hate', 'p  
rovider', 'allow', 'area', 'horrible', 'way', 'treat', 'customer']
```

Unnecessary words removed!

processed\_m 49 is:

```
change cable box bedroom call customer service help reprogram box surprise phone incompatible send representative char  
ge come program box notice fee charge customer service rep try tell change wire happen wire change representative basic  
ally call liar ask speak manager flat refuse get to suggestion
```

split\_processed\_m 49 is of length < 44 > :

```
['change', 'cable', 'box', 'bedroom', 'call', 'customer', 'service', 'help', 'reprogram', 'box', 'surprise', 'phone',  
'incompatible', 'send', 'representative', 'charge', 'come', 'program', 'box', 'notice', 'fee', 'charge', 'customer', 's  
ervice', 'rep', 'try', 'tell', 'change', 'wire', 'happen', 'wire', 'change', 'representative', 'basically', 'call', 'li  
ar', 'ask', 'speak', 'manager', 'flat', 'refuse', 'get', 'to', 'suggestion']
```

Removing unnecessary words ...

```
Updated list of length < 40 > : ['change', 'cable', 'box', 'bedroom', 'customer', 'service', 'help', 'reprogram', 'bo  
x', 'surprise', 'phone', 'incompatible', 'send', 'representative', 'charge', 'come', 'program', 'box', 'notice', 'fee',  
'charge', 'customer', 'service', 'rep', 'try', 'tell', 'change', 'wire', 'happen', 'wire', 'change', 'representative',  
'basically', 'liar', 'ask', 'speak', 'manager', 'flat', 'refuse', 'suggestion']
```

Unnecessary words removed!

processed\_m 50 is:

call reduce bill comcast increase fee bill get warning increase explanation increase new plan offer pay premium channel old movie run want channel hd service package pay high price fair take advantage competition area wish competition area switch heartbeat isolated complaint subscribe choice bill different month decrease get well result customer service joke read script

split\_processed\_m 50 is of length < 55 > :

```
['call', 'reduce', 'bill', 'comcast', 'increase', 'fee', 'bill', 'get', 'warning', 'increase', 'explanation', 'increase', 'new', 'plan', 'offer', 'pay', 'premium', 'channel', 'old', 'movie', 'run', 'want', 'channel', 'hd', 'service', 'package', 'pay', 'high', 'price', 'fair', 'take', 'advantage', 'competition', 'area', 'wish', 'competition', 'area', 'switch', 'heartbeat', 'isolated', 'complaint', 'subscribe', 'choice', 'bill', 'different', 'month', 'decrease', 'get', 'well', 'result', 'customer', 'service', 'joke', 'read', 'script']
```

Removing unnecessary words ...

Updated list of length < 50 > : ['reduce', 'bill', 'comcast', 'increase', 'fee', 'bill', 'warning', 'increase', 'explanation', 'increase', 'new', 'plan', 'offer', 'pay', 'premium', 'channel', 'old', 'movie', 'run', 'want', 'channel', 'hd', 'service', 'package', 'pay', 'high', 'price', 'fair', 'advantage', 'competition', 'area', 'wish', 'competition', 'area', 'switch', 'heartbeat', 'isolated', 'complaint', 'subscribe', 'choice', 'bill', 'different', 'month', 'decrease', 'result', 'customer', 'service', 'joke', 'read', 'script']

Unnecessary words removed!

processed\_m 51 is:

second time change programming like go comcast apartment complex live will let directv month live till lease directv comcast suck

split\_processed\_m 51 is of length < 20 > :

```
['second', 'time', 'change', 'programming', 'like', 'go', 'comcast', 'apartment', 'complex', 'live', 'will', 'let', 'directv', 'month', 'live', 'till', 'lease', 'directv', 'comcast', 'suck']
```

Removing unnecessary words ...

Updated list of length < 18 > : ['second', 'time', 'change', 'programming', 'like', 'comcast', 'apartment', 'complex', 'live', 'let', 'directv', 'month', 'live', 'till', 'lease', 'directv', 'comcast', 'suck']

Unnecessary words removed!

processed\_m 52 is:

force use comcast apartment building use service exclusively dvr work time record tv show set record display demand show big waste money use company

split\_processed\_m 52 is of length < 24 > :

['force', 'use', 'comcast', 'apartment', 'building', 'use', 'service', 'exclusively', 'dvr', 'work', 'time', 'record', 'tv', 'show', 'set', 'record', 'display', 'demand', 'show', 'big', 'waste', 'money', 'use', 'company']

Removing unnecessary words ...

Updated list of length < 22 > : ['force', 'use', 'comcast', 'apartment', 'building', 'use', 'service', 'exclusively', 'dvr', 'work', 'time', 'record', 'tv', 'set', 'record', 'display', 'demand', 'big', 'waste', 'money', 'use', 'company']

Unnecessary words removed!

processed\_m 53 is:

see horrible service like xfinity wish twc verizon place share experience week mistake click upgrade modem link docsis modem call customer support ask cancel order say take care day get equipment comcast call minute service desk tell return need find center return day see tv service add account call customer care tell need tv service cancel say tv service add account clue get add account say plan unchanged sure comcast charge extra interact xfinity customer care time aware thing mislead

split\_processed\_m 53 is of length < 80 > :

['see', 'horrible', 'service', 'like', 'xfinity', 'wish', 'twc', 'verizon', 'place', 'share', 'experience', 'week', 'mistake', 'click', 'upgrade', 'modem', 'link', 'docsis', 'modem', 'call', 'customer', 'support', 'ask', 'cancel', 'order', 'need', 'find', 'center', 'return', 'day', 'see', 'tv', 'service', 'add', 'account', 'call', 'customer', 'care', 'tell', 'need', 'tv', 'service', 'cancel', 'say', 'tv', 'service', 'add', 'account', 'clue', 'get', 'add', 'account', 'say', 'plan', 'unchanged', 'sure', 'comcast', 'charge', 'extra', 'interact', 'xfinity', 'customer', 'care', 'time', 'aware', 'thing', 'mislead']

```
r', 'say', 'take', 'care', 'day', 'get', 'equipment', 'comcast', 'call', 'minute', 'service', 'desk', 'tell', 'return',
'need', 'find', 'center', 'return', 'day', 'see', 'tv', 'service', 'add', 'account', 'call', 'customer', 'care', 'tel
l', 'need', 'tv', 'service', 'cancel', 'say', 'tv', 'service', 'add', 'account', 'clue', 'get', 'add', 'account', 'sa
y', 'plan', 'unchanged', 'sure', 'comcast', 'charge', 'extra', 'interact', 'xfinity', 'customer', 'care', 'time', 'awar
e', 'thing', 'mislead']
```

Removing unnecessary words ...

```
Updated list of length < 69 > : ['horrible', 'service', 'like', 'xfinity', 'wish', 'twc', 'verizon', 'place', 'share',
'experience', 'week', 'mistake', 'click', 'upgrade', 'modem', 'link', 'docsis', 'modem', 'customer', 'support', 'ask',
'cancel', 'order', 'care', 'day', 'equipment', 'comcast', 'minute', 'service', 'desk', 'tell', 'return', 'need', 'fin
d', 'center', 'return', 'day', 'tv', 'service', 'add', 'account', 'customer', 'care', 'tell', 'need', 'tv', 'service',
'cancel', 'tv', 'service', 'add', 'account', 'clue', 'add', 'account', 'plan', 'unchanged', 'sure', 'comcast', 'charg
e', 'extra', 'interact', 'xfinity', 'customer', 'care', 'time', 'aware', 'thing', 'mislead']
```

Unnecessary words removed!

processed\_m 54 is:

target buy router modem service case gullible want let know sign xfinity ask buy modem rent theirs tell representative  
theirs work kind compatible techno knowledgeable person believe buy pay damn thing multiple time year piss friend tell  
get new modem target baffle go bring home sure work comcast cable damn modem piece mind small spare right feel bad get  
know personal fault unfortunately go hear dirt bag lie piece deal idea bet work anymore lie modem save money tell nice  
day

split\_processed\_m 54 is of length < 81 > :

```
['target', 'buy', 'router', 'modem', 'service', 'case', 'gullible', 'want', 'let', 'know', 'sign', 'xfinity', 'ask',
'buy', 'modem', 'rent', 'theirs', 'tell', 'representative', 'theirs', 'work', 'kind', 'compatible', 'techno', 'knowledg
eable', 'person', 'believe', 'buy', 'pay', 'damn', 'thing', 'multiple', 'time', 'year', 'piss', 'friend', 'tell', 'ge
t', 'new', 'modem', 'target', 'baffle', 'go', 'bring', 'home', 'sure', 'work', 'comcast', 'cable', 'damn', 'modem', 'pi
ece', 'mind', 'small', 'spare', 'right', 'feel', 'bad', 'get', 'know', 'personal', 'fault', 'unfortunately', 'go', 'hea
r', 'dirt', 'bag', 'lie', 'piece', 'deal', 'idea', 'bet', 'work', 'anymore', 'lie', 'modem', 'save', 'money', 'tell',
'nice', 'day']
```

Removing unnecessary words ...



Updated list of length < 77 > : ['target', 'buy', 'router', 'modem', 'service', 'case', 'gullible', 'want', 'let', 'know', 'sign', 'xfinity', 'ask', 'buy', 'modem', 'rent', 'theirs', 'tell', 'representative', 'theirs', 'work', 'kind', 'compatible', 'techno', 'knowledgeable', 'person', 'believe', 'buy', 'pay', 'damn', 'thing', 'multiple', 'time', 'year', 'piss', 'friend', 'tell', 'new', 'modem', 'target', 'baffle', 'bring', 'home', 'sure', 'work', 'comcast', 'cable', 'damn', 'modem', 'piece', 'mind', 'small', 'spare', 'right', 'feel', 'bad', 'know', 'personal', 'fault', 'unfortunately', 'hear', 'dirt', 'bag', 'lie', 'piece', 'deal', 'idea', 'bet', 'work', 'anymore', 'lie', 'modem', 'save', 'money', 'tell', 'nice', 'day']

Unnecessary words removed!

processed\_m 55 is:

comcast raise price year contract month bill previous bill go call comcast customer service find go state promotion deal roll come end contract year contract promotion roll monthly year expire tell month bill cancel find new provider company headache year bad company

split\_processed\_m 55 is of length < 42 > :

['comcast', 'raise', 'price', 'year', 'contract', 'month', 'bill', 'previous', 'bill', 'go', 'call', 'comcast', 'customer', 'service', 'find', 'go', 'state', 'promotion', 'deal', 'roll', 'come', 'end', 'contract', 'year', 'contract', 'promotion', 'roll', 'monthly', 'year', 'expire', 'tell', 'month', 'bill', 'cancel', 'find', 'new', 'provider', 'company', 'headache', 'year', 'bad', 'company']

Removing unnecessary words ...

Updated list of length < 39 > : ['comcast', 'raise', 'price', 'year', 'contract', 'month', 'bill', 'previous', 'bill', 'comcast', 'customer', 'service', 'find', 'state', 'promotion', 'deal', 'roll', 'come', 'end', 'contract', 'year', 'contract', 'promotion', 'roll', 'monthly', 'year', 'expire', 'tell', 'month', 'bill', 'cancel', 'find', 'new', 'provider', 'company', 'headache', 'year', 'bad', 'company']

Unnecessary words removed!

processed\_m 56 is:

watch demand sudden tv froze phone internet stop work call comcast get disconnect time bounce multiple people repeat mind wait time finally fix phone internet day cable main tv demand work court officer busy busy court comcast state cell

phone go house surprise ask chief leave suppose get home receive message home phone home reschedule leave job early have use time cable demand bill pay month think company unprofessional incompetent company deal plan report well business tell comcast think want proud company take help customer shameful

split\_processed\_m 56 is of length < 86 > :

```
['watch', 'demand', 'sudden', 'tv', 'froze', 'phone', 'internet', 'stop', 'work', 'call', 'comcast', 'get', 'disconnect', 'time', 'bounce', 'multiple', 'people', 'repeat', 'mind', 'wait', 'time', 'finally', 'fix', 'phone', 'internet', 'day', 'cable', 'main', 'tv', 'demand', 'work', 'court', 'officer', 'busy', 'busy', 'court', 'comcast', 'state', 'cell', 'phone', 'go', 'house', 'surprise', 'ask', 'chief', 'leave', 'suppose', 'get', 'home', 'receive', 'message', 'home', 'phone', 'home', 'reschedule', 'leave', 'job', 'early', 'have', 'use', 'time', 'cable', 'demand', 'bill', 'pay', 'month', 'think', 'company', 'unprofessional', 'incompetent', 'company', 'deal', 'plan', 'report', 'well', 'business', 'tell', 'comcast', 'think', 'want', 'proud', 'company', 'take', 'help', 'customer', 'shameful']
```

Removing unnecessary words ...

Updated list of length < 79 > : ['watch', 'demand', 'sudden', 'tv', 'froze', 'phone', 'internet', 'stop', 'work', 'comcast', 'disconnect', 'time', 'bounce', 'multiple', 'people', 'repeat', 'mind', 'wait', 'time', 'finally', 'fix', 'phone', 'internet', 'day', 'cable', 'main', 'tv', 'demand', 'work', 'court', 'officer', 'busy', 'busy', 'court', 'comcast', 'state', 'cell', 'phone', 'house', 'surprise', 'ask', 'chief', 'leave', 'suppose', 'home', 'receive', 'message', 'home', 'phone', 'home', 'reschedule', 'leave', 'job', 'early', 'use', 'time', 'cable', 'demand', 'bill', 'pay', 'month', 'think', 'company', 'unprofessional', 'incompetent', 'company', 'deal', 'plan', 'report', 'business', 'tell', 'comcast', 'think', 'want', 'proud', 'company', 'help', 'customer', 'shameful']

Unnecessary words removed!

processed\_m 57 is:

call comcast set payment arrangement old account gentleman speak wish remember delightful sweet helpful patience pull old account transfer collection department assist hold min employee phill collection loud rude help ask account number consider employee able locate old account issue ask speak supervisor say busy imply wait available work center superior available time insist help call high volume ridiculous comcast employee superior away job help job agent phill customer service way help polite sound friendly like smile phone angry tone short want speak company employee represent satisfaction number goal center employee direct contact customer employee deal stress ongoing pressure high volume assist customer engage personal sure experience good possible fire want help sit hold min employee will assist problem call customer service representative reason represent comcast comcast well job employee hire horrible business sure guy coach employee listen help fix error mistake well

split\_processed\_m 57 is of length < 143 > :

```
['call', 'comcast', 'set', 'payment', 'arrangement', 'old', 'account', 'gentleman', 'speak', 'wish', 'remember', 'delightful', 'sweet', 'helpful', 'patience', 'pull', 'old', 'account', 'transfer', 'collection', 'department', 'assist', 'hold', 'min', 'employee', 'phill', 'collection', 'loud', 'rude', 'help', 'ask', 'account', 'number', 'consider', 'employee', 'able', 'locate', 'old', 'account', 'issue', 'ask', 'speak', 'supervisor', 'say', 'busy', 'imply', 'wait', 'available', 'work', 'center', 'superior', 'available', 'time', 'insist', 'help', 'call', 'high', 'volume', 'ridiculous', 'comcast', 'employee', 'superior', 'away', 'job', 'help', 'job', 'agent', 'phill', 'customer', 'service', 'way', 'help', 'polite', 'sound', 'friendly', 'like', 'smile', 'phone', 'angry', 'tone', 'short', 'want', 'speak', 'company', 'employee', 'represent', 'satisfaction', 'number', 'goal', 'center', 'employee', 'direct', 'contact', 'customer', 'employee', 'deal', 'stress', 'ongoing', 'pressure', 'high', 'volume', 'assist', 'customer', 'engage', 'personal', 'sure', 'experience', 'good', 'possible', 'fire', 'want', 'help', 'sit', 'hold', 'min', 'employee', 'will', 'assist', 'problem', 'call', 'customer', 'service', 'representative', 'reason', 'represent', 'comcast', 'comcast', 'well', 'job', 'employee', 'hire', 'horrible', 'business', 'sure', 'guy', 'coach', 'employee', 'listen', 'help', 'fix', 'error', 'mistake', 'well']
```

Removing unnecessary words ...

```
Updated list of length < 136 > : ['comcast', 'set', 'payment', 'arrangement', 'old', 'account', 'gentleman', 'speak', 'wish', 'remember', 'delightful', 'sweet', 'helpful', 'patience', 'pull', 'old', 'account', 'transfer', 'collection', 'department', 'assist', 'hold', 'min', 'employee', 'phill', 'collection', 'loud', 'rude', 'help', 'ask', 'account', 'number', 'consider', 'employee', 'able', 'locate', 'old', 'account', 'issue', 'ask', 'speak', 'supervisor', 'busy', 'imply', 'wait', 'available', 'work', 'center', 'superior', 'available', 'time', 'insist', 'help', 'high', 'volume', 'ridiculous', 'comcast', 'employee', 'superior', 'away', 'job', 'help', 'job', 'agent', 'phill', 'customer', 'service', 'way', 'help', 'polite', 'sound', 'friendly', 'like', 'smile', 'phone', 'angry', 'tone', 'short', 'want', 'speak', 'company', 'employee', 'represent', 'satisfaction', 'number', 'goal', 'center', 'employee', 'direct', 'contact', 'customer', 'employee', 'deal', 'stress', 'ongoing', 'pressure', 'high', 'volume', 'assist', 'customer', 'engage', 'personal', 'sure', 'experience', 'good', 'possible', 'fire', 'want', 'help', 'sit', 'hold', 'min', 'employee', 'assist', 'problem', 'customer', 'service', 'representative', 'reason', 'represent', 'comcast', 'comcast', 'job', 'employee', 'hire', 'horrible', 'business', 'sure', 'guy', 'coach', 'employee', 'listen', 'help', 'fix', 'error', 'mistake']
```

Unnecessary words removed!

processed\_m 58 is:

absolute bad customer service transfer separate people thick accent terrible reception need tell information look like  
expire available service switch provider break monopoly

split\_processed\_m 58 is of length < 23 > :

```
['absolute', 'bad', 'customer', 'service', 'transfer', 'separate', 'people', 'thick', 'accent', 'terrible', 'reception', 'need', 'tell', 'information', 'look', 'like', 'expire', 'available', 'service', 'switch', 'provider', 'break', 'monopoly']
```

Removing unnecessary words ...

```
Updated list of length < 23 > : ['absolute', 'bad', 'customer', 'service', 'transfer', 'separate', 'people', 'thick', 'accent', 'terrible', 'reception', 'need', 'tell', 'information', 'look', 'like', 'expire', 'available', 'service', 'switch', 'provider', 'break', 'monopoly']
```

Unnecessary words removed!

processed\_m 59 is:

```
go comcast office ask pay final bill guy tell go mail new address receive bill pay bill think final bill sudden find final bill week pay call customer service talk guy net explain reason call receive letter credit bureau hang surprise mad receive notice owe money pay bill time believe necessary far aware comcast tell sure record phone
```

split\_processed\_m 59 is of length < 58 > :

```
['go', 'comcast', 'office', 'ask', 'pay', 'final', 'bill', 'guy', 'tell', 'go', 'mail', 'new', 'address', 'receive', 'bill', 'pay', 'bill', 'think', 'final', 'bill', 'sudden', 'find', 'final', 'bill', 'week', 'pay', 'call', 'customer', 'service', 'talk', 'guy', 'net', 'explain', 'reason', 'call', 'receive', 'letter', 'credit', 'bureau', 'hang', 'surprise', 'mad', 'receive', 'notice', 'owe', 'money', 'pay', 'bill', 'time', 'believe', 'necessary', 'far', 'aware', 'comcast', 'tell', 'sure', 'record', 'phone']
```

Removing unnecessary words ...

```
Updated list of length < 54 > : ['comcast', 'office', 'ask', 'pay', 'final', 'bill', 'guy', 'tell', 'mail', 'new', 'address', 'receive', 'bill', 'pay', 'bill', 'think', 'final', 'bill', 'sudden', 'find', 'final', 'bill', 'week', 'pay', 'customer', 'service', 'talk', 'guy', 'net', 'explain', 'reason', 'receive', 'letter', 'credit', 'bureau', 'hang', 'surprise', 'mad', 'receive', 'notice', 'owe', 'money', 'pay', 'bill', 'time', 'believe', 'necessary', 'far', 'aware', 'comcast', 'tell', 'sure', 'record', 'phone']
```

Unnecessary words removed!

processed\_m 60 is:

problem comcast forever speak representative useless get thing resolve frustrating recent conversation deal move state  
service provide charge term fee avoid

split\_processed\_m 60 is of length < 21 > :

['problem', 'comcast', 'forever', 'speak', 'representative', 'useless', 'get', 'thing', 'resolve', 'frustrating', 'recent', 'conversation', 'deal', 'move', 'state', 'service', 'provide', 'charge', 'term', 'fee', 'avoid']

Removing unnecessary words ...

Updated list of length < 19 > : ['problem', 'comcast', 'forever', 'speak', 'representative', 'useless', 'thing', 'resolve', 'frustrating', 'recent', 'conversation', 'deal', 'state', 'service', 'provide', 'charge', 'term', 'fee', 'avoid']

Unnecessary words removed!

processed\_m 61 is:

think comcast con artist investigation tell price easy till high bill charge month advance charge month advanced think  
gold digger

split\_processed\_m 61 is of length < 20 > :

['think', 'comcast', 'con', 'artist', 'investigation', 'tell', 'price', 'easy', 'till', 'high', 'bill', 'charge', 'month', 'advance', 'charge', 'month', 'advanced', 'think', 'gold', 'digger']

Removing unnecessary words ...

Updated list of length < 20 > : ['think', 'comcast', 'con', 'artist', 'investigation', 'tell', 'price', 'easy', 'till', 'high', 'bill', 'charge', 'month', 'advance', 'charge', 'month', 'advanced', 'think', 'gold', 'digger']

Unnecessary words removed!

processed\_m 62 is:

queue online chat customer service rep minute queue minute choose online chat want stuck hold hour phone simple question self service box schedule arrive day ago internet access

split\_processed\_m 62 is of length < 28 > :

```
['queue', 'online', 'chat', 'customer', 'service', 'rep', 'minute', 'queue', 'minute', 'choose', 'online', 'chat', 'want', 'stuck', 'hold', 'hour', 'phone', 'simple', 'question', 'self', 'service', 'box', 'schedule', 'arrive', 'day', 'ago', 'internet', 'access']
```

Removing unnecessary words ...

Updated list of length < 28 > : ['queue', 'online', 'chat', 'customer', 'service', 'rep', 'minute', 'queue', 'minute', 'choose', 'online', 'chat', 'want', 'stuck', 'hold', 'hour', 'phone', 'simple', 'question', 'self', 'service', 'box', 'schedule', 'arrive', 'day', 'ago', 'internet', 'access']

Unnecessary words removed!

processed\_m 63 is:

find amazing comcast run commercial customer service customer service poor deal life ask corporate level tell mail letter unbelievable choice definitely pick comcast

split\_processed\_m 63 is of length < 23 > :

```
['find', 'amazing', 'comcast', 'run', 'commercial', 'customer', 'service', 'customer', 'service', 'poor', 'deal', 'life', 'ask', 'corporate', 'level', 'tell', 'mail', 'letter', 'unbelievable', 'choice', 'definitely', 'pick', 'comcast']
```

Removing unnecessary words ...

Updated list of length < 23 > : ['find', 'amazing', 'comcast', 'run', 'commercial', 'customer', 'service', 'customer', 'service', 'poor', 'deal', 'life', 'ask', 'corporate', 'level', 'tell', 'mail', 'letter', 'unbelievable', 'choice', 'definitely', 'pick', 'comcast']

finitely', 'pick', 'comcast']

Unnecessary words removed!

processed\_m 64 is:

subscribe comcast virtual monopoly comcast hold greater boston area choice use company horrible finish right comcast month dispute bill originally call bundle deal apparently expire initially sign bundle tell expiration rate call explain situation tell mistake rate go force sign bundle think tell cheap rate week ago bill rise time look account comcast add fee instead reduce guarantee basic cable high speed internet current bill pay cable internet call today tell bundle offer existent apparently technical error computer system hold responsible bill comcast bother notify deal unobtainable offer insight rectify problem tell senior supervisor pay bill rectify month tell supervisor move state cancel comcast month future bill supervisor essentially tell tough luck defensive say felt manipulate company tell supervisor want cancel right apparently comcast handle agent rectify cancellation issue tell division contact information helpful tip bad company deal service comparable toxic sewage fact go personal mission help know encounter disillusioned horrendous business model sure post review nature site use company maul pack wolf comcast business aware use company robbed choice emphatic angry like volcanic eruption rage choose angry big understatement century comcast wait foundation definition vile evil

split\_processed\_m 64 is of length < 187 > :

['subscribe', 'comcast', 'virtual', 'monopoly', 'comcast', 'hold', 'greater', 'boston', 'area', 'choice', 'use', 'company', 'horrible', 'finish', 'right', 'comcast', 'month', 'dispute', 'bill', 'originally', 'call', 'bundle', 'deal', 'apparently', 'expire', 'initially', 'sign', 'bundle', 'tell', 'expiration', 'rate', 'call', 'explain', 'situation', 'tell', 'mistake', 'rate', 'go', 'force', 'sign', 'bundle', 'think', 'tell', 'cheap', 'rate', 'week', 'ago', 'bill', 'rise', 'time', 'look', 'account', 'comcast', 'add', 'fee', 'instead', 'reduce', 'guarantee', 'basic', 'cable', 'high', 'speed', 'internet', 'current', 'bill', 'pay', 'cable', 'internet', 'call', 'today', 'tell', 'bundle', 'offer', 'existent', 'apparently', 'technical', 'error', 'computer', 'system', 'hold', 'responsible', 'bill', 'comcast', 'bother', 'notify', 'deal', 'unobtainable', 'offer', 'insight', 'rectify', 'problem', 'tell', 'senior', 'supervisor', 'pay', 'bill', 'rectify', 'month', 'tell', 'supervisor', 'move', 'state', 'cancel', 'comcast', 'month', 'future', 'bill', 'supervisor', 'essentially', 'tell', 'tough', 'luck', 'defensive', 'say', 'felt', 'manipulate', 'company', 'tell', 'supervisor', 'want', 'cancel', 'right', 'apparently', 'comcast', 'handle', 'agent', 'rectify', 'cancellation', 'issue', 'tell', 'division', 'contact', 'information', 'helpful', 'tip', 'bad', 'company', 'deal', 'service', 'comparable', 'toxic', 'sewage', 'fact', 'go', 'personal', 'mission', 'help', 'know', 'encounter', 'disillusioned', 'horrendous', 'business', 'model', 'sure', 'post', 'review', 'nature', 'site', 'use', 'company', 'maul', 'pack', 'wolf', 'comcast', 'business', 'aware', 'use', 'company', 'robbed', 'choice', 'emphatic', 'angry', 'like', 'volcanic', 'eruption', 'rage', 'choose', 'angry', 'big', 'understatement', 'century', 'comcast', 'wait', 'foundation', 'definition', 'vile', 'evil']

Removing unnecessary words ...

Updated list of length < 180 > : ['subscribe', 'comcast', 'virtual', 'monopoly', 'comcast', 'hold', 'greater', 'boston', 'area', 'choice', 'use', 'company', 'horrible', 'finish', 'right', 'comcast', 'month', 'dispute', 'bill', 'originally', 'bundle', 'deal', 'apparently', 'expire', 'initially', 'sign', 'bundle', 'tell', 'expiration', 'rate', 'explain', 'situation', 'tell', 'mistake', 'rate', 'force', 'sign', 'bundle', 'think', 'tell', 'cheap', 'rate', 'week', 'ago', 'bill', 'rise', 'time', 'look', 'account', 'comcast', 'add', 'fee', 'instead', 'reduce', 'guarantee', 'basic', 'cable', 'high', 'speed', 'internet', 'current', 'bill', 'pay', 'cable', 'internet', 'today', 'tell', 'bundle', 'offer', 'existen', 't', 'apparently', 'technical', 'error', 'computer', 'system', 'hold', 'responsible', 'bill', 'comcast', 'bother', 'notify', 'deal', 'unobtainable', 'offer', 'insight', 'rectify', 'problem', 'tell', 'senior', 'supervisor', 'pay', 'bill', 'rectify', 'month', 'tell', 'supervisor', 'state', 'cancel', 'comcast', 'month', 'future', 'bill', 'supervisor', 'essentially', 'tell', 'tough', 'luck', 'defensive', 'felt', 'manipulate', 'company', 'tell', 'supervisor', 'want', 'cancel', 'right', 'apparently', 'comcast', 'handle', 'agent', 'rectify', 'cancellation', 'issue', 'tell', 'division', 'contact', 'information', 'helpful', 'tip', 'bad', 'company', 'deal', 'service', 'comparable', 'toxic', 'sewage', 'fact', 'persona', 'mission', 'help', 'know', 'encounter', 'disillusioned', 'horrendous', 'business', 'model', 'sure', 'post', 'review', 'nature', 'site', 'use', 'company', 'maul', 'pack', 'wolf', 'comcast', 'business', 'aware', 'use', 'company', 'robbed', 'choice', 'emphatic', 'angry', 'like', 'volcanic', 'eruption', 'rage', 'choose', 'angry', 'big', 'understatement', 'century', 'comcast', 'wait', 'foundation', 'definition', 'vile', 'evil']

Unnecessary words removed!

processed\_m 65 is:

business relationship comcast begin recently move room house multiple cable hookup want internet access provider area call customer service number tell easily local office pick self install kit run drive address provide enter discover give address local marketing office worry give correct address proceed road pick easy self install kit got office great service get home hook computer cable room computer online neighboring roommate lose cable service apparently line install room actually call customer service set appt tech install cost success internet instal receive comcast telemarketer offer cable tv service add internet month good deal say proceed send easy self install kit receipt realize way cable set self install want pay tech come day take trip local comcast office assure charge cable tv acct return previous billing surprise week receive bill comcast month prior telemarketing offer pay internet service overprice opinion option bill call customer service speak nice guy say credit cable tv self install kit talk representative special relation resolve rest agree charge double service hold minute special relation rep tell offer day money guarantee telemarketer cancel cable tv service day offer sign month previous exist anymore go circle minute say sign economy internet plan price pay previously approx rent modem recommend pay bill generous credit resolve billing period check acct online week guess sign cable tv internet bundle month deal telephone customer service people anymore return local comcast office cancel people treat way

split\_processed\_m 65 is of length < 235 > :

['business', 'relationship', 'comcast', 'begin', 'recently', 'move', 'room', 'house', 'multiple', 'cable', 'hookup', 'want', 'internet', 'access', 'provider', 'area', 'call', 'customer', 'service', 'number', 'tell', 'easily', 'local', 'office', 'pick', 'self', 'install', 'kit', 'run', 'drive', 'address', 'provide', 'enter', 'discover', 'give', 'address']



s', 'local', 'marketing', 'office', 'worry', 'give', 'correct', 'address', 'proceed', 'road', 'pick', 'easy', 'self', 'install', 'kit', 'got', 'office', 'great', 'service', 'get', 'home', 'hook', 'computer', 'cable', 'room', 'computer', 'online', 'neighboring', 'roommate', 'lose', 'cable', 'service', 'apparently', 'line', 'instal', 'room', 'actually', 'call', 'customer', 'service', 'set', 'appt', 'tech', 'install', 'cost', 'success', 'internet', 'instal', 'receive', 'comcast', 'telemarketer', 'offer', 'cable', 'tv', 'service', 'add', 'internet', 'month', 'good', 'deal', 'say', 'proceed', 'send', 'easy', 'self', 'install', 'kit', 'receipt', 'realize', 'way', 'cable', 'set', 'self', 'install', 'want', 'pay', 'tech', 'come', 'day', 'take', 'trip', 'local', 'comcast', 'office', 'assure', 'charge', 'cable', 'tv', 'acct', 'return', 'previous', 'billing', 'surprise', 'week', 'receive', 'bill', 'comcast', 'month', 'prior', 'telemarketing', 'offer', 'pay', 'internet', 'service', 'overprice', 'opinion', 'option', 'bill', 'call', 'customer', 'service', 'speak', 'nice', 'guy', 'say', 'credit', 'cable', 'tv', 'self', 'install', 'kit', 'talk', 'representative', 'special', 'relation', 'resolve', 'rest', 'agree', 'charge', 'double', 'service', 'hold', 'minute', 'special', 'relation', 'rep', 'tell', 'offer', 'day', 'money', 'guarantee', 'telemarketer', 'cancel', 'cable', 'tv', 'service', 'day', 'offer', 'sign', 'month', 'previous', 'exist', 'anymore', 'go', 'circle', 'minute', 'say', 'sign', 'economy', 'internet', 'plan', 'price', 'pay', 'previously', 'approx', 'rent', 'modem', 'recommend', 'pay', 'bill', 'generous', 'credit', 'resolve', 'billing', 'period', 'check', 'acct', 'online', 'week', 'guess', 'sign', 'cable', 'tv', 'internet', 'bundle', 'month', 'deal', 'telephone', 'customer', 'service', 'people', 'anymore', 'return', 'local', 'comcast', 'office', 'cancel', 'people', 'treat', 'way']

Removing unnecessary words ...

Updated list of length < 223 > : ['business', 'relationship', 'comcast', 'begin', 'recently', 'room', 'house', 'multiple', 'cable', 'hookup', 'want', 'internet', 'access', 'provider', 'area', 'customer', 'service', 'number', 'tell', 'easily', 'local', 'office', 'pick', 'self', 'install', 'kit', 'run', 'drive', 'address', 'provide', 'enter', 'discover', 'address', 'local', 'marketing', 'office', 'worry', 'correct', 'address', 'proceed', 'road', 'pick', 'easy', 'self', 'install', 'kit', 'got', 'office', 'great', 'service', 'home', 'hook', 'computer', 'cable', 'room', 'computer', 'online', 'neighboring', 'roommate', 'lose', 'cable', 'service', 'apparently', 'line', 'instal', 'room', 'actually', 'customer', 'service', 'set', 'appt', 'tech', 'install', 'cost', 'success', 'internet', 'instal', 'receive', 'comcast', 'telemarketer', 'offer', 'cable', 'tv', 'service', 'add', 'internet', 'month', 'good', 'deal', 'proceed', 'send', 'easy', 'self', 'install', 'kit', 'receipt', 'realize', 'way', 'cable', 'set', 'self', 'install', 'want', 'pay', 'tech', 'come', 'day', 'trip', 'local', 'comcast', 'office', 'assure', 'charge', 'cable', 'tv', 'acct', 'return', 'previous', 'billing', 'surprise', 'week', 'receive', 'bill', 'comcast', 'month', 'prior', 'telemarketing', 'offer', 'pay', 'internet', 'service', 'overprice', 'opinion', 'option', 'bill', 'customer', 'service', 'speak', 'nice', 'guy', 'credit', 'cable', 'tv', 'self', 'install', 'kit', 'talk', 'representative', 'special', 'relation', 'resolve', 'rest', 'agree', 'charge', 'double', 'service', 'hold', 'minute', 'special', 'relation', 'rep', 'tell', 'offer', 'day', 'money', 'guarantee', 'telemarketer', 'cancel', 'cable', 'tv', 'service', 'day', 'offer', 'sign', 'month', 'previous', 'exist', 'anymore', 'circle', 'minute', 'sign', 'economy', 'internet', 'plan', 'price', 'pay', 'previously', 'approx', 'rent', 'modem', 'recommend', 'pay', 'bill', 'generous', 'credit', 'resolve', 'billing', 'period', 'check', 'acct', 'online', 'week', 'guess', 'sign', 'cable', 'tv', 'internet', 'bundle', 'month', 'deal', 'telephone', 'customer', 'service', 'people', 'anymore', 'return', 'local', 'comcast', 'office', 'cancel', 'people', 'treat', 'way']

Unnecessary words removed!

processed\_m 66 is:

frustrated week fully connect string complaint sale representative give option cable equipment spend receive mail technician install mention simply pick cable hook right away course mention fast say pay shipping receive day box come day later set box small cable box far internet modem important reason stuck comcast place sadly comcast monopolize area think need instruction manual terrible call set box activate half hour struggle sale representative tell need billing department receive service day call customer service surprise surprise need billing department figure research need internet modem pick internet modem local comcast store sale representative finally work find need splitter order use cable outlet internet local comcast store pick splitter return extra little cable box send waste packaging internet modem instead hook set cable robot send sale representative guess set box work look like trip comcast store mean hard pack right thing sure work want spend shipping ridiculous recommend comcast

split\_processed\_m 66 is of length < 150 > :

```
['frustrated', 'week', 'fully', 'connect', 'string', 'complaint', 'sale', 'representative', 'give', 'option', 'cable', 'equipment', 'spend', 'receive', 'mail', 'technician', 'install', 'mention', 'simply', 'pick', 'cable', 'hook', 'right', 'away', 'course', 'mention', 'fast', 'say', 'pay', 'shipping', 'receive', 'day', 'box', 'come', 'day', 'later', 'set', 'box', 'small', 'cable', 'box', 'far', 'internet', 'modem', 'important', 'reason', 'stuck', 'comcast', 'place', 'sadly', 'comcast', 'monopolize', 'area', 'think', 'need', 'instruction', 'manual', 'terrible', 'call', 'set', 'box', 'activate', 'half', 'hour', 'struggle', 'sale', 'representative', 'tell', 'need', 'billing', 'department', 'receive', 'service', 'day', 'call', 'customer', 'service', 'surprise', 'surprise', 'need', 'billing', 'department', 'figure', 'research', 'need', 'internet', 'modem', 'pick', 'internet', 'modem', 'local', 'comcast', 'store', 'sale', 'representative', 'finally', 'work', 'find', 'need', 'splitter', 'order', 'use', 'cable', 'outlet', 'internet', 'local', 'comcast', 'store', 'pick', 'splitter', 'return', 'extra', 'little', 'cable', 'box', 'send', 'waste', 'packaging', 'internet', 'modem', 'instead', 'hook', 'set', 'cable', 'robot', 'send', 'sale', 'representative', 'guess', 'set', 'box', 'work', 'look', 'like', 'trip', 'comcast', 'store', 'mean', 'hard', 'pack', 'right', 'thing', 'sure', 'work', 'want', 'spend', 'shipping', 'ridiculous', 'recommend', 'comcast']
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Removing unnecessary words ...

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Updated list of length < 146 > : ['frustrated', 'week', 'fully', 'connect', 'string', 'complaint', 'sale', 'representative', 'option', 'cable', 'equipment', 'spend', 'receive', 'mail', 'technician', 'install', 'mention', 'simply', 'pick', 'cable', 'hook', 'right', 'away', 'course', 'mention', 'fast', 'pay', 'shipping', 'receive', 'day', 'box', 'come', 'day', 'later', 'set', 'box', 'small', 'cable', 'box', 'far', 'internet', 'modem', 'important', 'reason', 'stuck', 'comcast', 'place', 'sadly', 'comcast', 'monopolize', 'area', 'think', 'need', 'instruction', 'manual', 'terrible', 'set', 'box', 'activate', 'half', 'hour', 'struggle', 'sale', 'representative', 'tell', 'need', 'billing', 'department', 'receive', 'service', 'day', 'customer', 'service', 'surprise', 'surprise', 'need', 'billing', 'department', 'figure', 'research', 'need', 'internet', 'modem', 'pick', 'internet', 'modem', 'local', 'comcast', 'store', 'sale', 'representative', 'finally', 'work', 'find', 'need', 'splitter', 'order', 'use', 'cable', 'outlet', 'internet', 'local', 'comcast', 'store', 'pick', 'splitter', 'return', 'extra', 'little', 'cable', 'box', 'send', 'waste', 'packaging', 'internet', 'modem',
```

'instead', 'hook', 'set', 'cable', 'robot', 'send', 'sale', 'representative', 'guess', 'set', 'box', 'work', 'look', 'like', 'trip', 'comcast', 'store', 'mean', 'hard', 'pack', 'right', 'thing', 'sure', 'work', 'want', 'spend', 'shipping', 'ridiculous', 'recommend', 'comcast']

Unnecessary words removed!

processed\_m 67 is:

walk local comcast store pick new cable box young woman desk notice bill piece equipment request say bill adapter like reimburse credit comcast forward year return comcast overcharging appear assure fix give ticket number bear mind automatic deduction bank account monthly bill comcast send paper electronic bill year request receive electronic bill day credit month overbilling call tell agent speak person wrong reimbursement comcast strict policy essence fix mistake month explain speak year ago explain knowledge overcharge send bill basically easy go person egregious happen probably happen apparently star indicate angry leave wait supervisor hold breath time spend try remedy mistake ridiculous operate business recognize mistake agree repay small portion sum realize erroneously deduct bank account

split\_processed\_m 67 is of length < 116 > :

['walk', 'local', 'comcast', 'store', 'pick', 'new', 'cable', 'box', 'young', 'woman', 'desk', 'notice', 'bill', 'piece', 'equipment', 'request', 'say', 'bill', 'adapter', 'like', 'reimburse', 'credit', 'comcast', 'forward', 'year', 'return', 'comcast', 'overcharging', 'appear', 'assure', 'fix', 'give', 'ticket', 'number', 'bear', 'mind', 'automatic', 'deduction', 'bank', 'account', 'monthly', 'bill', 'comcast', 'send', 'paper', 'electronic', 'bill', 'year', 'request', 'receive', 'electronic', 'bill', 'day', 'credit', 'month', 'overbilling', 'call', 'tell', 'agent', 'speak', 'person', 'wrong', 'reimbursement', 'comcast', 'strict', 'policy', 'essence', 'fix', 'mistake', 'month', 'explain', 'speak', 'year', 'ago', 'explain', 'knowledge', 'overcharge', 'send', 'bill', 'basically', 'easy', 'go', 'person', 'egregious', 'happen', 'probably', 'happen', 'apparently', 'star', 'indicate', 'angry', 'leave', 'wait', 'supervisor', 'hold', 'breath', 'time', 'spend', 'try', 'remedy', 'mistake', 'ridiculous', 'operate', 'business', 'recognize', 'mistake', 'agree', 'repay', 'small', 'portion', 'sum', 'realize', 'erroneously', 'deduct', 'bank', 'account']

Removing unnecessary words ...

Updated list of length < 112 > : ['walk', 'local', 'comcast', 'store', 'pick', 'new', 'cable', 'box', 'young', 'woman', 'desk', 'notice', 'bill', 'piece', 'equipment', 'request', 'bill', 'adapter', 'like', 'reimburse', 'credit', 'comcast', 'forward', 'year', 'return', 'comcast', 'overcharging', 'appear', 'assure', 'fix', 'ticket', 'number', 'bear', 'mind', 'automatic', 'deduction', 'bank', 'account', 'monthly', 'bill', 'comcast', 'send', 'paper', 'electronic', 'bill', 'year', 'request', 'receive', 'electronic', 'bill', 'day', 'credit', 'month', 'overbilling', 'tell', 'agent', 'speak', 'person', 'wrong', 'reimbursement', 'comcast', 'strict', 'policy', 'essence', 'fix', 'mistake', 'month', 'explain', 'speak', 'year', 'ago', 'explain', 'knowledge', 'overcharge', 'send', 'bill', 'basically', 'easy', 'person', 'egregious', 'happen', 'probably', 'happen', 'apparently', 'star', 'indicate', 'angry', 'leave', 'wait', 'supervisor', 'hold', 'breath', 'time', 'spend', 'try', 'remedy', 'mistake', 'ridiculous', 'operate', 'business', 'recognize', 'mistake', 'agree', 'repay', 'small', 'portion', 'sum', 'realize', 'erroneously', 'deduct', 'bank', 'account']

th', 'time', 'spend', 'try', 'remedy', 'mistake', 'ridiculous', 'operate', 'business', 'recognize', 'mistake', 'agree', 'repay', 'small', 'portion', 'sum', 'realize', 'erroneously', 'deduct', 'bank', 'account']

Unnecessary words removed!

processed\_m 68 is:

day ago speak salesperson service agree pay phone service deal plus extra order mbps internet speed charge box technician show set service home get mbps instead mbps ask happen say company send technician different department booster internet speed originally pay customer service representative tell best buy purchase booster company anymore representative tell area mbps get confuse salesperson tell mbps website say mbps customer service representative tell reach mbps confused urge comcast customer check internet speed pay comcast lie promise provide overcharge

split\_processed\_m 68 is of length < 81 > :

['day', 'ago', 'speak', 'salesperson', 'service', 'agree', 'pay', 'phone', 'service', 'deal', 'plus', 'extra', 'order', 'mbps', 'internet', 'speed', 'charge', 'box', 'technician', 'show', 'set', 'service', 'home', 'get', 'mbps', 'instead', 'mbps', 'ask', 'happen', 'say', 'company', 'send', 'technician', 'different', 'department', 'booster', 'internet', 'speed', 'originally', 'pay', 'customer', 'service', 'representative', 'tell', 'best', 'buy', 'purchase', 'booster', 'company', 'anymore', 'representative', 'tell', 'area', 'mbps', 'get', 'confuse', 'salesperson', 'tell', 'mbps', 'website', 'say', 'mbps', 'customer', 'service', 'representative', 'tell', 'reach', 'mbps', 'confused', 'urge', 'comcast', 'customer', 'check', 'internet', 'speed', 'pay', 'comcast', 'lie', 'promise', 'provide', 'overcharge']

Removing unnecessary words ...

Updated list of length < 76 > : ['day', 'ago', 'speak', 'salesperson', 'service', 'agree', 'pay', 'phone', 'service', 'deal', 'plus', 'extra', 'order', 'mbps', 'internet', 'speed', 'charge', 'box', 'technician', 'set', 'service', 'home', 'mbps', 'instead', 'mbps', 'ask', 'happen', 'company', 'send', 'technician', 'different', 'department', 'booster', 'internet', 'speed', 'originally', 'pay', 'customer', 'service', 'representative', 'tell', 'best', 'buy', 'purchase', 'booster', 'company', 'anymore', 'representative', 'tell', 'area', 'mbps', 'confuse', 'salesperson', 'tell', 'mbps', 'website', 'mbps', 'customer', 'service', 'representative', 'tell', 'reach', 'mbps', 'confused', 'urge', 'comcast', 'customer', 'check', 'internet', 'speed', 'pay', 'comcast', 'lie', 'promise', 'provide', 'overcharge']

Unnecessary words removed!

processed\_m 69 is:

minus star ask low package take tv service reduce speed internet find pay expensive package tv phone service internet  
get slow speed service customer service call technician got to want work reason answer phone call hard job suck problem  
customer

split\_processed\_m 69 is of length < 40 > :

```
['minus', 'star', 'ask', 'low', 'package', 'take', 'tv', 'service', 'reduce', 'speed', 'internet', 'find', 'pay', 'expensive', 'package', 'tv', 'phone', 'service', 'internet', 'get', 'slow', 'speed', 'service', 'customer', 'service', 'call', 'technician', 'got', 'to', 'want', 'work', 'reason', 'answer', 'phone', 'call', 'hard', 'job', 'suck', 'problem', 'customer']
```

Removing unnecessary words ...

Updated list of length < 35 > : ['minus', 'star', 'ask', 'low', 'package', 'tv', 'service', 'reduce', 'speed', 'internet', 'find', 'pay', 'expensive', 'package', 'tv', 'phone', 'service', 'internet', 'slow', 'speed', 'service', 'customer', 'service', 'technician', 'got', 'want', 'work', 'reason', 'answer', 'phone', 'hard', 'job', 'suck', 'problem', 'customer']

Unnecessary words removed!

processed\_m 70 is:

contact comcast set cable internet new apartment speak representative agree deal cable internet dvr month pretty good  
technician come day later hook internet work fine cable box buggy day unplug reboot work day evening call min phone rep  
say technician need come fix tech available tech come say cable loose box fine suspicious let box fine hour get home work  
box completely frozen will change channel receive bill comcast tech support try tell remote incorrectly know work remote  
promise needless get upset tell long want cable service want internet advertise month tell offer available new customer  
exist customer pay month service seriously cancel unfortunately real alternative area comcast need competition control  
easily away hidden charge fee extremely poor customer service provide broadband service public increasingly reliant  
service time demand alternative corrupt company

split\_processed\_m 70 is of length < 132 > :

```
['contact', 'comcast', 'set', 'cable', 'internet', 'new', 'apartment', 'speak', 'representative', 'agree', 'deal', 'cable', 'internet', 'dvr', 'month', 'pretty', 'good', 'technician', 'come', 'day', 'later', 'hook', 'internet', 'work', 'fine', 'cable', 'box', 'buggy', 'day', 'unplug', 'reboot', 'work', 'day', 'evening', 'call', 'min', 'phone', 'rep', 'say', 'technician', 'need', 'come', 'fix', 'tech', 'available', 'tech', 'come', 'say', 'cable', 'loose', 'box', 'fine',
```

'suspicious', 'let', 'box', 'fine', 'hour', 'get', 'home', 'work', 'box', 'completely', 'frozen', 'will', 'change', 'channel', 'receive', 'bill', 'comcast', 'tech', 'support', 'try', 'tell', 'remote', 'incorrectly', 'know', 'work', 'remote', 'promise', 'needless', 'get', 'upset', 'tell', 'long', 'want', 'cable', 'service', 'want', 'internet', 'advertise', 'month', 'tell', 'offer', 'available', 'new', 'customer', 'exist', 'customer', 'pay', 'month', 'service', 'seriously', 'cancel', 'unfortunately', 'real', 'alternative', 'area', 'comcast', 'need', 'competition', 'control', 'easily', 'away', 'hidden', 'charge', 'fee', 'extremely', 'poor', 'customer', 'service', 'provide', 'broadband', 'service', 'public', 'increasingly', 'reliant', 'service', 'time', 'demand', 'alternative', 'corrupt', 'company']

Removing unnecessary words ...

Updated list of length < 126 > : ['contact', 'comcast', 'set', 'cable', 'internet', 'new', 'apartment', 'speak', 'representative', 'agree', 'deal', 'cable', 'internet', 'dvr', 'month', 'pretty', 'good', 'technician', 'come', 'day', 'later', 'hook', 'internet', 'work', 'fine', 'cable', 'box', 'buggy', 'day', 'unplug', 'reboot', 'work', 'day', 'evening', 'min', 'phone', 'rep', 'technician', 'need', 'come', 'fix', 'tech', 'available', 'tech', 'come', 'cable', 'loose', 'box', 'fine', 'suspicious', 'let', 'box', 'fine', 'hour', 'home', 'work', 'box', 'completely', 'frozen', 'change', 'channel', 'receive', 'bill', 'comcast', 'tech', 'support', 'try', 'tell', 'remote', 'incorrectly', 'know', 'work', 'remote', 'promise', 'needless', 'upset', 'tell', 'long', 'want', 'cable', 'service', 'want', 'internet', 'advertise', 'month', 'tell', 'offer', 'available', 'new', 'customer', 'exist', 'customer', 'pay', 'month', 'service', 'seriously', 'cancel', 'unfortunately', 'real', 'alternative', 'area', 'comcast', 'need', 'competition', 'control', 'easily', 'away', 'hidden', 'charge', 'fee', 'extremely', 'poor', 'customer', 'service', 'provide', 'broadband', 'service', 'public', 'increasingly', 'reliant', 'service', 'time', 'demand', 'alternative', 'corrupt', 'company']

Unnecessary words removed!

processed\_m 71 is:

comcast incompetent company deal write type review waste time comcast waste let know stay away want frustrate incompetent lack customer service cable internet service previous address move schedule technician hook service stay home work come tell wrong guy house need rewire ticket contact call customer service day later say technician schedule tomorrow stay home work technician come incredibly tell thing wrong guy comcast need send somebody department rewire say ticket day confirm call day find spend hour phone try reach right group schedule rewire free backup wifi service meantime say department backup wifi service department tell free wifi service comcast service try explain comcast service send wrong technician twice say talk department connect hold minute person department tell wifi department tell talk early tell recommend different department day schedule rewire job call department day minute phone find somebody know go say schedule rewire technician come week today receive comcast early say technician come hour late hour window give caution ask technician come rewire job tell group rewire job need rewire group comcast lose service person say comcast rewire group hold minute say somebody right away schedule rewire appointment hour ago anybody believe deal company show level incompetence dysfunctionality total disrespect customer time

split\_processed\_m 71 is of length < 202 > :

```
['comcast', 'incompetent', 'company', 'deal', 'write', 'type', 'review', 'waste', 'time', 'comcast', 'waste', 'let',
'know', 'stay', 'away', 'want', 'frustrate', 'incompetency', 'lack', 'customer', 'service', 'cable', 'internet', 'servi
ce', 'previous', 'address', 'move', 'schedule', 'technician', 'hook', 'service', 'stay', 'home', 'work', 'come', 'tel
l', 'wrong', 'guy', 'house', 'need', 'rewire', 'ticket', 'contact', 'call', 'customer', 'service', 'day', 'later', 'sa
y', 'technician', 'schedule', 'tomorrow', 'stay', 'home', 'work', 'technician', 'come', 'incredibly', 'tell', 'thing',
'wrong', 'guy', 'comcast', 'need', 'send', 'somebody', 'department', 'rewire', 'say', 'ticket', 'day', 'confirm', 'cal
l', 'day', 'find', 'spend', 'hour', 'phone', 'try', 'reach', 'right', 'group', 'schedule', 'rewire', 'free', 'backup',
'wifi', 'service', 'meantime', 'say', 'department', 'backup', 'wifi', 'service', 'department', 'tell', 'free', 'wifi',
'service', 'comcast', 'service', 'try', 'explain', 'comcast', 'service', 'send', 'wrong', 'technician', 'twice', 'say',
'talk', 'department', 'connect', 'hold', 'minute', 'person', 'department', 'tell', 'wifi', 'department', 'tell', 'tal
k', 'early', 'tell', 'recommend', 'different', 'department', 'day', 'schedule', 'rewire', 'job', 'call', 'department',
'day', 'minute', 'phone', 'find', 'somebody', 'know', 'go', 'say', 'schedule', 'rewire', 'technician', 'come', 'week',
'today', 'receive', 'comcast', 'early', 'say', 'technician', 'come', 'hour', 'late', 'hour', 'window', 'give', 'cautio
n', 'ask', 'technician', 'come', 'rewire', 'job', 'tell', 'group', 'rewire', 'job', 'need', 'rewire', 'group', 'comcas
t', 'lose', 'service', 'person', 'say', 'comcast', 'rewire', 'group', 'hold', 'minute', 'say', 'somebody', 'right', 'aw
ay', 'schedule', 'rewire', 'appointment', 'hour', 'ago', 'anybody', 'believe', 'deal', 'company', 'show', 'level', 'inc
ompetence', 'dysfunctionality', 'total', 'disrespect', 'customer', 'time']
```

Removing unnecessary words ...

```
Updated list of length < 187 > : ['comcast', 'incompetent', 'company', 'deal', 'write', 'type', 'review', 'waste', 'ti
me', 'comcast', 'waste', 'let', 'know', 'stay', 'away', 'want', 'frustrate', 'incompetency', 'lack', 'customer', 'servi
ce', 'cable', 'internet', 'service', 'previous', 'address', 'schedule', 'technician', 'hook', 'service', 'stay', 'hom
e', 'work', 'come', 'tell', 'wrong', 'guy', 'house', 'need', 'rewire', 'ticket', 'contact', 'customer', 'service', 'da
y', 'later', 'technician', 'schedule', 'tomorrow', 'stay', 'home', 'work', 'technician', 'come', 'incredibly', 'tell',
'thing', 'wrong', 'guy', 'comcast', 'need', 'send', 'somebody', 'department', 'rewire', 'ticket', 'day', 'confirm', 'da
y', 'find', 'spend', 'hour', 'phone', 'try', 'reach', 'right', 'group', 'schedule', 'rewire', 'free', 'backup', 'wifi',
'service', 'meantime', 'department', 'backup', 'wifi', 'service', 'department', 'tell', 'free', 'wifi', 'service', 'com
cast', 'service', 'try', 'explain', 'comcast', 'service', 'send', 'wrong', 'technician', 'twice', 'talk', 'department',
'connect', 'hold', 'minute', 'person', 'department', 'tell', 'wifi', 'department', 'tell', 'talk', 'early', 'tell', 're
commend', 'different', 'department', 'day', 'schedule', 'rewire', 'job', 'department', 'day', 'minute', 'phone', 'fin
d', 'somebody', 'know', 'schedule', 'rewire', 'technician', 'come', 'week', 'today', 'receive', 'comcast', 'early', 'te
chnician', 'come', 'hour', 'late', 'hour', 'window', 'caution', 'ask', 'technician', 'come', 'rewire', 'job', 'tell',
'group', 'rewire', 'job', 'need', 'rewire', 'group', 'comcast', 'lose', 'service', 'person', 'comcast', 'rewire', 'grou
p', 'hold', 'minute', 'somebody', 'right', 'away', 'schedule', 'rewire', 'appointment', 'hour', 'ago', 'anybody', 'beli
eve', 'deal', 'company', 'level', 'incompetence', 'dysfunctionality', 'total', 'disrespect', 'customer', 'time']
```

Unnecessary words removed!

processed\_m 72 is:

customer comcast year move experience way problem internet demand move new house start get intermittent internet connection start have problem demand access time problem comcast say duplicate wrong service finally decide service decide pay bill early show option website enrol auto pay day later deduct payment checking account call say cancel enrollment auto pay pay early say website take week process refund account cancel service deduct month payment account send bill credit partial month deduct owe bill call go money tell take week ridiculous money total month look provider comcast

split\_processed\_m 72 is of length < 90 > :

```
['customer', 'comcast', 'year', 'move', 'experience', 'way', 'problem', 'internet', 'demand', 'move', 'new', 'house', 'start', 'get', 'intermittent', 'internet', 'connection', 'start', 'have', 'problem', 'demand', 'access', 'time', 'problem', 'comcast', 'say', 'duplicate', 'wrong', 'service', 'finally', 'decide', 'service', 'decide', 'pay', 'bill', 'early', 'show', 'option', 'website', 'enrol', 'auto', 'pay', 'day', 'later', 'deduct', 'payment', 'checking', 'account', 'call', 'say', 'cancel', 'enrollment', 'auto', 'pay', 'pay', 'early', 'say', 'website', 'take', 'week', 'process', 'refund', 'account', 'cancel', 'service', 'deduct', 'month', 'payment', 'account', 'send', 'bill', 'credit', 'partial', 'month', 'deduct', 'owe', 'bill', 'call', 'go', 'money', 'tell', 'take', 'week', 'ridiculous', 'money', 'total', 'month', 'look', 'provider', 'comcast']
```

Removing unnecessary words ...

```
Updated list of length < 77 > : ['customer', 'comcast', 'year', 'experience', 'way', 'problem', 'internet', 'demand', 'new', 'house', 'start', 'intermittent', 'internet', 'connection', 'start', 'problem', 'demand', 'access', 'time', 'problem', 'comcast', 'duplicate', 'wrong', 'service', 'finally', 'decide', 'service', 'decide', 'pay', 'bill', 'early', 'option', 'website', 'enrol', 'auto', 'pay', 'day', 'later', 'deduct', 'payment', 'checking', 'account', 'cancel', 'enrollment', 'auto', 'pay', 'pay', 'early', 'website', 'week', 'process', 'refund', 'account', 'cancel', 'service', 'deduct', 'month', 'payment', 'account', 'send', 'bill', 'credit', 'partial', 'month', 'deduct', 'owe', 'bill', 'money', 'tell', 'week', 'ridiculous', 'money', 'total', 'month', 'look', 'provider', 'comcast']
```

Unnecessary words removed!

processed\_m 73 is:

appointment dozen call service comcast year contract untrustworthy technician day wait give time expect tech come home take consideration snow boston look xfinity truck come house lie say come answer door fresh snow fall morning track indicate house far date give credit techs today sit wait schedule appointment slot time rep guarantee installation today spend countless hour wait tech install cable phone internet well cable supplier hear horror story directv rcn verizon



split\_processed\_m 73 is of length < 72 > :

```
['appointment', 'dozen', 'call', 'service', 'comcast', 'year', 'contract', 'untrustworthy', 'technician', 'day', 'wait', 'give', 'time', 'expect', 'tech', 'come', 'home', 'take', 'consideration', 'snow', 'boston', 'look', 'xfinity', 'truck', 'come', 'house', 'lie', 'say', 'come', 'answer', 'door', 'fresh', 'snow', 'fall', 'morning', 'track', 'indicate', 'house', 'far', 'date', 'give', 'credit', 'techs', 'today', 'sit', 'wait', 'schedule', 'appointment', 'slot', 'time', 'rep', 'guarantee', 'installation', 'today', 'spend', 'countless', 'hour', 'wait', 'tech', 'install', 'cable', 'phone', 'internet', 'well', 'cable', 'supplier', 'hear', 'horror', 'story', 'directv', 'rcn', 'verizon']
```

Removing unnecessary words ...

Updated list of length < 66 > : ['appointment', 'dozen', 'service', 'comcast', 'year', 'contract', 'untrustworthy', 'technician', 'day', 'wait', 'time', 'expect', 'tech', 'come', 'home', 'consideration', 'snow', 'boston', 'look', 'xfinity', 'truck', 'come', 'house', 'lie', 'come', 'answer', 'door', 'fresh', 'snow', 'fall', 'morning', 'track', 'indicate', 'house', 'far', 'date', 'credit', 'techs', 'today', 'sit', 'wait', 'schedule', 'appointment', 'slot', 'time', 'rep', 'guarantee', 'installation', 'today', 'spend', 'countless', 'hour', 'wait', 'tech', 'install', 'cable', 'phone', 'internet', 'cable', 'supplier', 'hear', 'horror', 'story', 'directv', 'rcn', 'verizon']

Unnecessary words removed!

processed\_m 74 is:

snowstorm tree come take wire nstar hour climb pole power appointment comcast finally tell appointment cancel say driveway plow cancel appointment driveway completely plow drive day appoint comcast tag emergency comcast help desk lose money everyday family member independent contractor dependent internet service monopoly service cape cod allow continue a bus lie customer beg look matter company hold customer hostage like

split\_processed\_m 74 is of length < 60 > :

```
['snowstorm', 'tree', 'come', 'take', 'wire', 'nstar', 'hour', 'climb', 'pole', 'power', 'appointment', 'comcast', 'finally', 'tell', 'appointment', 'cancel', 'say', 'driveway', 'plow', 'cancel', 'appointment', 'driveway', 'completely', 'plow', 'drive', 'day', 'appoint', 'comcast', 'tag', 'emergency', 'comcast', 'help', 'desk', 'lose', 'money', 'everyday', 'family', 'member', 'independent', 'contractor', 'dependent', 'internet', 'service', 'monopoly', 'service', 'cape', 'cod', 'allow', 'continue', 'abuse', 'lie', 'customer', 'beg', 'look', 'matter', 'company', 'hold', 'customer', 'hostage', 'like']
```

Removing unnecessary words ...

Updated list of length < 58 > : ['snowstorm', 'tree', 'come', 'wire', 'nstar', 'hour', 'climb', 'pole', 'power', 'appointment', 'comcast', 'finally', 'tell', 'appointment', 'cancel', 'driveway', 'plow', 'cancel', 'appointment', 'driveway', 'completely', 'plow', 'drive', 'day', 'appoint', 'comcast', 'tag', 'emergency', 'comcast', 'help', 'desk', 'lose', 'money', 'everyday', 'family', 'member', 'independent', 'contractor', 'dependent', 'internet', 'service', 'monopoly', 'service', 'cape', 'cod', 'allow', 'continue', 'abuse', 'lie', 'customer', 'beg', 'look', 'matter', 'company', 'hold', 'customer', 'hostage', 'like']

Unnecessary words removed!

processed\_m 75 is:

day wait actually come house install equipment laugh commercial say hour window appointment ha yea sure far bad service aspect customer service home installation stink quincy comcast monopoly service available internet tv know believe jerk call incredibly frustrating day fourth time sit appointment probably will service stink way expensive try online order dvr mail come second time figure try inhome appointment pointless

split\_processed\_m 75 is of length < 62 > :

['day', 'wait', 'actually', 'come', 'house', 'install', 'equipment', 'laugh', 'commercial', 'say', 'hour', 'window', 'appointment', 'ha', 'yea', 'sure', 'far', 'bad', 'service', 'aspect', 'customer', 'service', 'home', 'installation', 'stink', 'quincy', 'comcast', 'monopoly', 'service', 'available', 'internet', 'tv', 'know', 'believe', 'jerk', 'call', 'incredibly', 'frustrating', 'day', 'fourth', 'time', 'sit', 'appointment', 'probably', 'will', 'service', 'stink', 'way', 'expensive', 'try', 'online', 'order', 'dvr', 'mail', 'come', 'second', 'time', 'figure', 'try', 'inhome', 'appointment', 'pointless']

Removing unnecessary words ...

Updated list of length < 59 > : ['day', 'wait', 'actually', 'come', 'house', 'install', 'equipment', 'laugh', 'commercial', 'hour', 'window', 'appointment', 'ha', 'yea', 'sure', 'far', 'bad', 'service', 'aspect', 'customer', 'service', 'home', 'installation', 'stink', 'quincy', 'comcast', 'monopoly', 'service', 'available', 'internet', 'tv', 'know', 'believe', 'jerk', 'incredibly', 'frustrating', 'day', 'fourth', 'time', 'sit', 'appointment', 'probably', 'service', 'stink', 'way', 'expensive', 'try', 'online', 'order', 'dvr', 'mail', 'come', 'second', 'time', 'figure', 'try', 'inhome', 'appointment', 'pointless']

Unnecessary words removed!

processed\_m 76 is:

comcast ask customer sign year commitment good promotion unwilling provide marginally good customer service watch bill climb month request disconnect pay tell payment night wake morning find payment go credit card unauthorized payment spend day try billing department tell send ticket finance department unauthorized payment review ask long reimburse say know ask speak finance department say connect learn ask question hang phone phone disconnect week realize instruct resolve conversation comcast spend high marketing dollar free visa gift card refer friend kid friend

split\_processed\_m 76 is of length < 82 > :

```
['comcast', 'ask', 'customer', 'sign', 'year', 'commitment', 'good', 'promotion', 'unwilling', 'provide', 'marginally', 'good', 'customer', 'service', 'watch', 'bill', 'climb', 'month', 'request', 'disconnect', 'pay', 'tell', 'payment', 'night', 'wake', 'morning', 'find', 'payment', 'go', 'credit', 'card', 'unauthorized', 'payment', 'spend', 'day', 'try', 'billing', 'department', 'tell', 'send', 'ticket', 'finance', 'department', 'unauthorized', 'payment', 'review', 'ask', 'long', 'reimburse', 'say', 'know', 'ask', 'speak', 'finance', 'department', 'say', 'connect', 'learn', 'ask', 'question', 'hang', 'phone', 'phone', 'disconnect', 'week', 'realize', 'instruct', 'resolve', 'conversation', 'comcast', 'spend', 'high', 'marketing', 'dollar', 'free', 'visa', 'gift', 'card', 'refer', 'friend', 'kid', 'friend']
```

Removing unnecessary words ...

Updated list of length < 79 > : ['comcast', 'ask', 'customer', 'sign', 'year', 'commitment', 'good', 'promotion', 'unwilling', 'provide', 'marginally', 'good', 'customer', 'service', 'watch', 'bill', 'climb', 'month', 'request', 'disconnect', 'pay', 'tell', 'payment', 'night', 'wake', 'morning', 'find', 'payment', 'credit', 'card', 'unauthorized', 'payment', 'spend', 'day', 'try', 'billing', 'department', 'tell', 'send', 'ticket', 'finance', 'department', 'unauthorized', 'payment', 'review', 'ask', 'long', 'reimburse', 'know', 'ask', 'speak', 'finance', 'department', 'connect', 'learn', 'ask', 'question', 'hang', 'phone', 'phone', 'disconnect', 'week', 'realize', 'instruct', 'resolve', 'conversation', 'comcast', 'spend', 'high', 'marketing', 'dollar', 'free', 'visa', 'gift', 'card', 'refer', 'friend', 'kid', 'friend']

Unnecessary words removed!

processed\_m 77 is:

comcast pay month service want charge additional episode watch shield series free watch come fx hear episode old show free watch originally come consider gouge customer

split\_processed\_m 77 is of length < 26 > :

```
['comcast', 'pay', 'month', 'service', 'want', 'charge', 'additional', 'episode', 'watch', 'shield', 'series', 'free', 'watch', 'come', 'fx', 'hear', 'episode', 'old', 'show', 'free', 'watch', 'originally', 'come', 'consider', 'gouge', 'customer']
```

Removing unnecessary words ...

Updated list of length < 25 > : ['comcast', 'pay', 'month', 'service', 'want', 'charge', 'additional', 'episode', 'watch', 'shield', 'series', 'free', 'watch', 'come', 'fx', 'hear', 'episode', 'old', 'free', 'watch', 'originally', 'come', 'consider', 'gouge', 'customer']

Unnecessary words removed!

processed\_m 78 is:

comcast bundle western bundle directv jump bill month state comcast lose channel pay service awful constantly lose internet service need help western awful treat like

split\_processed\_m 78 is of length < 25 > :

```
['comcast', 'bundle', 'western', 'bundle', 'directv', 'jump', 'bill', 'month', 'state', 'comcast', 'lose', 'channel', 'pay', 'service', 'awful', 'constantly', 'lose', 'internet', 'service', 'need', 'help', 'western', 'awful', 'treat', 'like']
```

Removing unnecessary words ...

Updated list of length < 25 > : ['comcast', 'bundle', 'western', 'bundle', 'directv', 'jump', 'bill', 'month', 'state', 'comcast', 'lose', 'channel', 'pay', 'service', 'awful', 'constantly', 'lose', 'internet', 'service', 'need', 'help', 'western', 'awful', 'treat', 'like']

Unnecessary words removed!

processed\_m 79 is:

day headache technician come install soon start want add extra box apparently extra outlet channel want include original price continuously ignore ask stop installation process decide comcast cancel end agree actually installation complete technician refuse uninstall say lot work job arguing agree come client definitely shock bill refuse pay service suspend tell fix charge need restore reconnect fee add start new billing cycle figure fix ok point dozen call find contract adjust cancel early termination fee refuse pay tell supervisor contact fix wait come account suspension disconnect add cancellation fee total month wait supervisor return call drop equipment avoid additional nightmare

split\_processed\_m 79 is of length < 101 > :

```
['day', 'headache', 'technician', 'come', 'install', 'soon', 'start', 'want', 'add', 'extra', 'box', 'apparently', 'extra', 'outlet', 'channel', 'want', 'include', 'original', 'price', 'continuously', 'ignore', 'ask', 'stop', 'installation', 'process', 'decide', 'comcast', 'cancel', 'end', 'agree', 'actually', 'installation', 'complete', 'technician', 'refuse', 'uninstall', 'say', 'lot', 'work', 'job', 'arguing', 'agree', 'come', 'client', 'definitely', 'shock', 'bill', 'refuse', 'pay', 'service', 'suspend', 'tell', 'fix', 'charge', 'need', 'restore', 'reconnect', 'fee', 'add', 'start', 'new', 'billing', 'cycle', 'figure', 'fix', 'ok', 'point', 'dozen', 'call', 'find', 'contract', 'adjust', 'cancel', 'early', 'termination', 'fee', 'refuse', 'pay', 'tell', 'supervisor', 'contact', 'fix', 'wait', 'come', 'account', 'suspension', 'disconnect', 'add', 'cancellation', 'fee', 'total', 'month', 'wait', 'supervisor', 'return', 'call', 'drop', 'equipment', 'avoid', 'additional', 'nightmare']
```

Removing unnecessary words ...

```
Updated list of length < 98 > : ['day', 'headache', 'technician', 'come', 'install', 'soon', 'start', 'want', 'add', 'extra', 'box', 'apparently', 'extra', 'outlet', 'channel', 'want', 'include', 'original', 'price', 'continuously', 'ignore', 'ask', 'stop', 'installation', 'process', 'decide', 'comcast', 'cancel', 'end', 'agree', 'actually', 'installation', 'complete', 'technician', 'refuse', 'uninstall', 'lot', 'work', 'job', 'arguing', 'agree', 'come', 'client', 'definitely', 'shock', 'bill', 'refuse', 'pay', 'service', 'suspend', 'tell', 'fix', 'charge', 'need', 'restore', 'reconnect', 'fee', 'add', 'start', 'new', 'billing', 'cycle', 'figure', 'fix', 'ok', 'point', 'dozen', 'find', 'contract', 'adjust', 'cancel', 'early', 'termination', 'fee', 'refuse', 'pay', 'tell', 'supervisor', 'contact', 'fix', 'wait', 'come', 'account', 'suspension', 'disconnect', 'add', 'cancellation', 'fee', 'total', 'month', 'wait', 'supervisor', 'return', 'drop', 'equipment', 'avoid', 'additional', 'nightmare']
```

Unnecessary words removed!

processed\_m 80 is:

massachusetts bill date comcast give notice price increase effective short notice time comcast refuse reply short time interested find comcast policy state ask people respond identify state advise date recent price increase notice receive comcast date price increase take effect billing process short date receive notice date bank credit card debit increase site fill numerous duplicate response state check answer state respond answer

split\_processed\_m 80 is of length < 63 > :

```
['massachusetts', 'bill', 'date', 'comcast', 'give', 'notice', 'price', 'increase', 'effective', 'short', 'notice', 'time', 'comcast', 'refuse', 'reply', 'short', 'time', 'interested', 'find', 'comcast', 'policy', 'state', 'ask', 'people', 'respond', 'identify', 'state', 'advise', 'date', 'recent', 'price', 'increase', 'notice', 'receive', 'comcast', 'date', 'price', 'increase', 'take', 'effect', 'billing', 'process', 'short', 'date', 'receive', 'notice', 'date', 'bank', 'credit', 'card', 'debit', 'increase', 'site', 'fill', 'numerous', 'duplicate', 'response', 'state', 'check', 'answer', 'state', 'respond', 'answer']
```

Removing unnecessary words ...

```
Updated list of length < 61 > : ['massachusetts', 'bill', 'date', 'comcast', 'notice', 'price', 'increase', 'effective', 'short', 'notice', 'time', 'comcast', 'refuse', 'reply', 'short', 'time', 'interested', 'find', 'comcast', 'policy', 'state', 'ask', 'people', 'respond', 'identify', 'state', 'advise', 'date', 'recent', 'price', 'increase', 'notice', 'receive', 'comcast', 'date', 'price', 'increase', 'effect', 'billing', 'process', 'short', 'date', 'receive', 'notice', 'date', 'bank', 'credit', 'card', 'debit', 'increase', 'site', 'fill', 'numerous', 'duplicate', 'response', 'state', 'check', 'answer', 'state', 'respond', 'answer']
```

Unnecessary words removed!

processed\_m 81 is:

ongoing problem year replace item house pole management support corporate involvement work intermittent repetitive issue time start square frustration come time comcast state fix time similar experience platform

split\_processed\_m 81 is of length < 28 > :

```
['ongoing', 'problem', 'year', 'replace', 'item', 'house', 'pole', 'management', 'support', 'corporate', 'involvement', 'work', 'intermittent', 'repetitive', 'issue', 'time', 'start', 'square', 'frustration', 'come', 'time', 'comcast', 'state', 'fix', 'time', 'similar', 'experience', 'platform']
```

Removing unnecessary words ...

```
Updated list of length < 28 > : ['ongoing', 'problem', 'year', 'replace', 'item', 'house', 'pole', 'management', 'support', 'corporate', 'involvement', 'work', 'intermittent', 'repetitive', 'issue', 'time', 'start', 'square', 'frustration', 'come', 'time', 'comcast', 'state', 'fix', 'time', 'similar', 'experience', 'platform']
```

```
n', 'come', 'time', 'comcast', 'state', 'fix', 'time', 'similar', 'experience', 'platform']
```

Unnecessary words removed!

processed\_m 82 is:

```
go pay past bill service reconnecte comcast employee tell pay past bill relative ask go tell person relate pay past bi
ll order service ask possible bill person past bill say policy theirs relative charge unpaid bill word past bill accoun
t clearly social security number know possible
```

split\_processed\_m 82 is of length < 46 > :

```
['go', 'pay', 'past', 'bill', 'service', 'reconnecte', 'comcast', 'employee', 'tell', 'pay', 'past', 'bill', 'relativ
e', 'ask', 'go', 'tell', 'person', 'relate', 'pay', 'past', 'bill', 'order', 'service', 'ask', 'possible', 'bill', 'per
son', 'past', 'bill', 'say', 'policy', 'theirs', 'relative', 'charge', 'unpaid', 'bill', 'word', 'past', 'bill', 'accou
nt', 'clearly', 'social', 'security', 'number', 'know', 'possible']
```

Removing unnecessary words ...

```
Updated list of length < 43 > : ['pay', 'past', 'bill', 'service', 'reconnecte', 'comcast', 'employee', 'tell', 'pay',
'past', 'bill', 'relative', 'ask', 'tell', 'person', 'relate', 'pay', 'past', 'bill', 'order', 'service', 'ask', 'possi
ble', 'bill', 'person', 'past', 'bill', 'policy', 'theirs', 'relative', 'charge', 'unpaid', 'bill', 'word', 'past', 'bi
ll', 'account', 'clearly', 'social', 'security', 'number', 'know', 'possible']
```

Unnecessary words removed!

processed\_m 83 is:

```
comcast rob customer stay business horrified customer service experience hope burn hell shame shame shame switch rcn
```

split\_processed\_m 83 is of length < 17 > :

```
['comcast', 'rob', 'customer', 'stay', 'business', 'horrified', 'customer', 'service', 'experience', 'hope', 'burn',
'hell', 'shame', 'shame', 'shame', 'switch', 'rcn']
```

Removing unnecessary words ...

Updated list of length < 17 > : ['comcast', 'rob', 'customer', 'stay', 'business', 'horrified', 'customer', 'service', 'experience', 'hope', 'burn', 'hell', 'shame', 'shame', 'shame', 'switch', 'rcn']

Unnecessary words removed!

processed\_m 84 is:

pay blast internet service speed advertise come close speed xfinity service technician run xfinity speed test mbps past week currently internet speed run blister mbps call ask credit account internet speed basic internet package speed tell long internet service entitle credit completely ridiculous pay speed rarely

split\_processed\_m 84 is of length < 46 > :

['pay', 'blast', 'internet', 'service', 'speed', 'advertise', 'come', 'close', 'speed', 'xfinity', 'service', 'technician', 'run', 'xfinity', 'speed', 'test', 'mbps', 'past', 'week', 'currently', 'internet', 'speed', 'run', 'blister', 'mbps', 'call', 'ask', 'credit', 'account', 'internet', 'speed', 'basic', 'internet', 'package', 'speed', 'tell', 'long', 'internet', 'service', 'entitle', 'credit', 'completely', 'ridiculous', 'pay', 'speed', 'rarely']

Removing unnecessary words ...

Updated list of length < 45 > : ['pay', 'blast', 'internet', 'service', 'speed', 'advertise', 'come', 'close', 'speed', 'xfinity', 'service', 'technician', 'run', 'xfinity', 'speed', 'test', 'mbps', 'past', 'week', 'currently', 'internet', 'speed', 'run', 'blister', 'mbps', 'ask', 'credit', 'account', 'internet', 'speed', 'basic', 'internet', 'package', 'speed', 'tell', 'long', 'internet', 'service', 'entitle', 'credit', 'completely', 'ridiculous', 'pay', 'speed', 'rarely']

Unnecessary words removed!

processed\_m 85 is:

pay comcast bill automatically month credit card credit card get hack comcast attempt bill fail bank get new credit card new account number give comcast comcast billing system blacklist hack credit card bill refuse bill new credit card n



otify result watch tv suddenly service comcast service representative tell service cancel nonpayment happen twice time  
comcast new credit card number time assure work time fail silently comcast cut tv service allege nonpayment tell happen  
cancel service happen ado switch directv

split\_processed\_m 85 is of length < 79 > :

```
['pay', 'comcast', 'bill', 'automatically', 'month', 'credit', 'card', 'credit', 'card', 'get', 'hack', 'comcast', 'at  
tempt', 'bill', 'fail', 'bank', 'get', 'new', 'credit', 'card', 'new', 'account', 'number', 'give', 'comcast', 'comcas  
t', 'billing', 'system', 'blacklist', 'hack', 'credit', 'card', 'bill', 'refuse', 'bill', 'new', 'credit', 'card', 'not  
ify', 'result', 'watch', 'tv', 'suddenly', 'service', 'comcast', 'service', 'representative', 'tell', 'service', 'cance  
l', 'nonpayment', 'happen', 'twice', 'time', 'comcast', 'new', 'credit', 'card', 'number', 'time', 'assure', 'work', 't  
ime', 'fail', 'silently', 'comcast', 'cut', 'tv', 'service', 'allege', 'nonpayment', 'tell', 'happen', 'cancel', 'servi  
ce', 'happen', 'ado', 'switch', 'directv']
```

Removing unnecessary words ...

```
Updated list of length < 76 > : ['pay', 'comcast', 'bill', 'automatically', 'month', 'credit', 'card', 'credit', 'car  
d', 'hack', 'comcast', 'attempt', 'bill', 'fail', 'bank', 'new', 'credit', 'card', 'new', 'account', 'number', 'comcas  
t', 'comcast', 'billing', 'system', 'blacklist', 'hack', 'credit', 'card', 'bill', 'refuse', 'bill', 'new', 'credit',  
'card', 'notify', 'result', 'watch', 'tv', 'suddenly', 'service', 'comcast', 'service', 'representative', 'tell', 'serv  
ice', 'cancel', 'nonpayment', 'happen', 'twice', 'time', 'comcast', 'new', 'credit', 'card', 'number', 'time', 'assur  
e', 'work', 'time', 'fail', 'silently', 'comcast', 'cut', 'tv', 'service', 'allege', 'nonpayment', 'tell', 'happen', 'c  
ancel', 'service', 'happen', 'ado', 'switch', 'directv']
```

Unnecessary words removed!

processed\_m 86 is:

contact comcast reluctantly hear fraudulent practice gig town call order internet cable service tell internet service  
basic cable service channel tell internet service watch tv set installation date rearrange schedule meet need receive c  
onfirmation letter meantime need internet service go website state receive free wi fi different hotspot provide free ho  
ur service service expire go look free hotspot connect secure free xfinity network service pay free day come call day  
confirm say installation date week date explain tell day apologize ask credit courtesy plus charge extra week plus comp  
uter house connection access customer service rep hold come say bill reflect credit monthly fee pay ask original price  
quote plus email confirmation installation date plus credit have pay weekly fee computer tell receive email minute rece  
ive notification resolve choose verizon instead cable tv satellite lie have money extort comcast allow continue functio  
n current fraudulent business practice

split\_processed\_m 86 is of length < 146 > :

```
['contact', 'comcast', 'reluctantly', 'hear', 'fraudulent', 'practice', 'gig', 'town', 'call', 'order', 'internet', 'cable', 'service', 'tell', 'internet', 'service', 'basic', 'cable', 'service', 'channel', 'tell', 'internet', 'service', 'watch', 'tv', 'set', 'installation', 'date', 'rearrange', 'schedule', 'meet', 'need', 'receive', 'confirmation', 'letter', 'meantime', 'need', 'internet', 'service', 'go', 'website', 'state', 'receive', 'free', 'wi', 'fi', 'different', 'hotspot', 'provide', 'free', 'hour', 'service', 'service', 'expire', 'go', 'look', 'free', 'hotspot', 'connect', 'secure', 'free', 'x', 'finity', 'network', 'service', 'pay', 'free', 'day', 'come', 'call', 'day', 'confirm', 'say', 'installation', 'date', 'week', 'date', 'explain', 'tell', 'day', 'apologize', 'ask', 'credit', 'courtesy', 'plus', 'charge', 'extra', 'week', 'plus', 'computer', 'house', 'connection', 'access', 'customer', 'service', 'rep', 'hold', 'come', 'say', 'bill', 'reflect', 'credit', 'monthly', 'fee', 'pay', 'ask', 'original', 'price', 'quote', 'plus', 'email', 'confirmation', 'installation', 'date', 'plus', 'credit', 'have', 'pay', 'weekly', 'fee', 'computer', 'tell', 'receive', 'email', 'minute', 'receive', 'notification', 'resolve', 'choose', 'verizon', 'instead', 'cable', 'tv', 'satellite', 'lie', 'have', 'money', 'extort', 'comcast', 'allow', 'continue', 'function', 'current', 'fraudulent', 'business', 'practice']
```

Removing unnecessary words ...

```
Updated list of length < 138 > : ['contact', 'comcast', 'reluctantly', 'hear', 'fraudulent', 'practice', 'gig', 'town', 'order', 'internet', 'cable', 'service', 'tell', 'internet', 'service', 'basic', 'cable', 'service', 'channel', 'tell', 'internet', 'service', 'watch', 'tv', 'set', 'installation', 'date', 'rearrange', 'schedule', 'meet', 'need', 'receive', 'confirmation', 'letter', 'meantime', 'need', 'internet', 'service', 'website', 'state', 'receive', 'free', 'wi', 'fi', 'different', 'hotspot', 'provide', 'free', 'hour', 'service', 'service', 'expire', 'look', 'free', 'hotspot', 'connect', 'secure', 'free', 'x', 'finity', 'network', 'service', 'pay', 'free', 'day', 'come', 'day', 'confirm', 'installation', 'date', 'week', 'date', 'explain', 'tell', 'day', 'apologize', 'ask', 'credit', 'courtesy', 'plus', 'charge', 'extra', 'week', 'plus', 'computer', 'house', 'connection', 'access', 'customer', 'service', 'rep', 'hold', 'come', 'bill', 'reflect', 'credit', 'monthly', 'fee', 'pay', 'ask', 'original', 'price', 'quote', 'plus', 'email', 'confirmation', 'installation', 'date', 'plus', 'credit', 'pay', 'weekly', 'fee', 'computer', 'tell', 'receive', 'email', 'minute', 'receive', 'notification', 'resolve', 'choose', 'verizon', 'instead', 'cable', 'tv', 'satellite', 'lie', 'money', 'extort', 'comcast', 'allow', 'continue', 'function', 'current', 'fraudulent', 'business', 'practice']
```

Unnecessary words removed!

processed\_m 87 is:

comcast customer year home account try change service online hardly watch tv currently pay close month tv internet cable try month triple play let sign new customer get minute find different number customer service hold listen advertisement minute tell week day end cancel service sign new service day save year feel charge exist client new customer price need reconsider business strategy

split\_processed\_m 87 is of length < 61 > :

```
['comcast', 'customer', 'year', 'home', 'account', 'try', 'change', 'service', 'online', 'hardly', 'watch', 'tv', 'currently', 'pay', 'close', 'month', 'tv', 'internet', 'cable', 'try', 'month', 'triple', 'play', 'let', 'sign', 'new', 'customer', 'get', 'minute', 'find', 'different', 'number', 'customer', 'service', 'hold', 'listen', 'advertisement', 'minute', 'tell', 'week', 'day', 'end', 'cancel', 'service', 'sign', 'new', 'service', 'day', 'save', 'year', 'feel', 'charge', 'exist', 'client', 'new', 'customer', 'price', 'need', 'reconsider', 'business', 'strategy']
```

Removing unnecessary words ...

```
Updated list of length < 60 > : ['comcast', 'customer', 'year', 'home', 'account', 'try', 'change', 'service', 'online', 'hardly', 'watch', 'tv', 'currently', 'pay', 'close', 'month', 'tv', 'internet', 'cable', 'try', 'month', 'triple', 'play', 'let', 'sign', 'new', 'customer', 'minute', 'find', 'different', 'number', 'customer', 'service', 'hold', 'listen', 'advertisement', 'minute', 'tell', 'week', 'day', 'end', 'cancel', 'service', 'sign', 'new', 'service', 'day', 'save', 'year', 'feel', 'charge', 'exist', 'client', 'new', 'customer', 'price', 'need', 'reconsider', 'business', 'strategy']
```

Unnecessary words removed!

processed\_m 88 is:

```
want change number channel receive think easy alas min later rep line hold keep tell thing useless like comcast package start new customer year comcast customer apparently package available tease fair price package use
```

split\_processed\_m 88 is of length < 34 > :

```
['want', 'change', 'number', 'channel', 'receive', 'think', 'easy', 'alas', 'min', 'later', 'rep', 'line', 'hold', 'keep', 'tell', 'thing', 'useless', 'like', 'comcast', 'package', 'start', 'new', 'customer', 'year', 'comcast', 'customer', 'apparently', 'package', 'available', 'tease', 'fair', 'price', 'package', 'use']
```

Removing unnecessary words ...

```
Updated list of length < 33 > : ['want', 'change', 'number', 'channel', 'receive', 'think', 'easy', 'alas', 'min', 'later', 'rep', 'line', 'hold', 'tell', 'thing', 'useless', 'like', 'comcast', 'package', 'start', 'new', 'customer', 'year', 'comcast', 'customer', 'apparently', 'package', 'available', 'tease', 'fair', 'price', 'package', 'use']
```

Unnecessary words removed!

processed\_m 89 is:

comcast terrible customer service wife phone different rep ask mgr talk disconnect call ask mgr rep say terrible service work utility treat customer like job comcast smarten probably look new internet

split\_processed\_m 89 is of length < 31 > :

```
['comcast', 'terrible', 'customer', 'service', 'wife', 'phone', 'different', 'rep', 'ask', 'mgr', 'talk', 'disconnect', 'call', 'ask', 'mgr', 'rep', 'say', 'terrible', 'service', 'work', 'utility', 'treat', 'customer', 'like', 'job', 'comcast', 'smarten', 'probably', 'look', 'new', 'internet']
```

Removing unnecessary words ...

Updated list of length < 29 > : ['comcast', 'terrible', 'customer', 'service', 'wife', 'phone', 'different', 'rep', 'ask', 'mgr', 'talk', 'disconnect', 'ask', 'mgr', 'rep', 'terrible', 'service', 'work', 'utility', 'treat', 'customer', 'like', 'job', 'comcast', 'smarten', 'probably', 'look', 'new', 'internet']

Unnecessary words removed!

processed\_m 90 is:

set box defective hdmi port take service center half hour drive close service center town person line person work desk half hour finally get new box drive home half hour new set box defective wait phone minute minimal troubleshooting set appointment send technician appointment place hour away call tell early appointment week half away complain move appointment day credit account outage failure horrible service

split\_processed\_m 90 is of length < 64 > :

```
['set', 'box', 'defective', 'hdmi', 'port', 'take', 'service', 'center', 'half', 'hour', 'drive', 'close', 'service', 'center', 'town', 'person', 'line', 'person', 'work', 'desk', 'half', 'hour', 'finally', 'get', 'new', 'box', 'drive', 'home', 'half', 'hour', 'new', 'set', 'box', 'defective', 'wait', 'phone', 'minute', 'minimal', 'troubleshooting', 'set', 'appointment', 'send', 'technician', 'appointment', 'place', 'hour', 'away', 'call', 'tell', 'early', 'appointment', 'week', 'half', 'away', 'complain', 'move', 'appointment', 'day', 'credit', 'account', 'outage', 'failure', 'horrible', 'service']
```

Removing unnecessary words ...

Updated list of length < 60 > : ['set', 'box', 'defective', 'hdmi', 'port', 'service', 'center', 'half', 'hour', 'drive', 'close', 'service', 'center', 'town', 'person', 'line', 'person', 'work', 'desk', 'half', 'hour', 'finally', 'new', 'box', 'drive', 'home', 'half', 'hour', 'new', 'set', 'box', 'defective', 'wait', 'phone', 'minute', 'minimal', 'troubleshooting', 'set', 'appointment', 'send', 'technician', 'appointment', 'place', 'hour', 'away', 'tell', 'early', 'appointment', 'week', 'half', 'away', 'complain', 'appointment', 'day', 'credit', 'account', 'outage', 'failure', 'horrible', 'service']

Unnecessary words removed!

processed\_m 91 is:

comcast come house install new connection need new connection dish tv outlet room get comcast tv guy come house install service mind home adult house guy disconnect coaxial go tv wall connect ide tv modem connect comcast wall outlet home decide check service realize charge service happen guy mess dish network comcast explain happen need send rectify situation lady put hold press wrong button end phone directory menu lady explain situation need reschedule like ok send right wrong north east division state tech not request argue lady bit livid mean dare someone house mess service wash hand situation argue hang strange feeling cancel appointment main phone number guy white noise talk time white noise decide stoke conversation state need tech send situation min state tech department thing resolve day state go to send go to say yes hang phone obviously real dense know real cs dish tech come today fix comcast mistake new line know cs home tonight call comcast billing pay incorrectly work mind mess service reimburse money pay dish come

split\_processed\_m 91 is of length < 172 > :

['comcast', 'come', 'house', 'install', 'new', 'connection', 'need', 'new', 'connection', 'dish', 'tv', 'outlet', 'room', 'get', 'comcast', 'tv', 'guy', 'come', 'house', 'install', 'service', 'mind', 'home', 'adult', 'house', 'guy', 'disconnect', 'coaxial', 'go', 'tv', 'wall', 'connect', 'ide', 'tv', 'modem', 'connect', 'comcast', 'wall', 'outlet', 'home', 'decide', 'check', 'service', 'realize', 'charge', 'service', 'happen', 'guy', 'mess', 'dish', 'network', 'comcast', 'explain', 'happen', 'need', 'send', 'rectify', 'situation', 'lady', 'put', 'hold', 'press', 'wrong', 'button', 'end', 'phone', 'directory', 'menu', 'lady', 'explain', 'situation', 'need', 'reschedule', 'like', 'ok', 'send', 'right', 'wrong', 'north', 'east', 'division', 'state', 'tech', 'not', 'request', 'argue', 'lady', 'bit', 'livid', 'mean', 'dare', 'someone', 'house', 'mess', 'service', 'wash', 'hand', 'situation', 'argue', 'hang', 'strange', 'feeling', 'cancel', 'appointment', 'main', 'phone', 'number', 'guy', 'white', 'noise', 'talk', 'time', 'white', 'noise', 'decide', 'stoke', 'conversation', 'state', 'need', 'tech', 'send', 'situation', 'min', 'state', 'tech', 'department', 'thing', 'resolve', 'day', 'state', 'go', 'to', 'send', 'go', 'to', 'say', 'yes', 'hang', 'phone', 'obviously', 'real', 'dense', 'know', 'real', 'cs', 'dish', 'tech', 'come', 'today', 'fix', 'comcast', 'mistake', 'new', 'line', 'know', 'cs', 'home', 'tonight', 'call', 'comcast', 'billing', 'pay', 'incorrectly', 'work', 'mind', 'mess', 'service', 'reimburse', 'money',

'pay', 'dish', 'come']

Removing unnecessary words ...

Updated list of length < 161 > : ['comcast', 'come', 'house', 'install', 'new', 'connection', 'need', 'new', 'connection', 'dish', 'tv', 'outlet', 'room', 'comcast', 'tv', 'guy', 'come', 'house', 'install', 'service', 'mind', 'home', 'adult', 'house', 'guy', 'disconnect', 'coaxial', 'tv', 'wall', 'connect', 'ide', 'tv', 'modem', 'connect', 'comcast', 'wall', 'outlet', 'home', 'decide', 'check', 'service', 'realize', 'charge', 'service', 'happen', 'guy', 'mess', 'dish', 'network', 'comcast', 'explain', 'happen', 'need', 'send', 'rectify', 'situation', 'lady', 'hold', 'press', 'wrong', 'button', 'end', 'phone', 'directory', 'menu', 'lady', 'explain', 'situation', 'need', 'reschedule', 'like', 'ok', 'send', 'right', 'wrong', 'north', 'east', 'division', 'state', 'tech', 'request', 'argue', 'lady', 'bit', 'livid', 'mean', 'dare', 'house', 'mess', 'service', 'wash', 'hand', 'situation', 'argue', 'hang', 'strange', 'feeling', 'cancel', 'appointment', 'main', 'phone', 'number', 'guy', 'white', 'noise', 'talk', 'time', 'white', 'noise', 'decide', 'stoke', 'conversation', 'state', 'need', 'tech', 'send', 'situation', 'min', 'state', 'tech', 'department', 'thing', 'resolve', 'day', 'state', 'send', 'yes', 'hang', 'phone', 'obviously', 'real', 'dense', 'know', 'real', 'cs', 'dish', 'tech', 'come', 'today', 'fix', 'comcast', 'mistake', 'new', 'line', 'know', 'cs', 'home', 'tonight', 'comcast', 'billing', 'pay', 'incorrectly', 'work', 'mind', 'mess', 'service', 'reimburse', 'money', 'pay', 'dish', 'come']

Unnecessary words removed!

processed\_m 92 is:

service comcast overall pretty good high speed internet cable tv phone bad thing comcast inconsistency knowledge product handling issue arise average come electronics connect thing totally ignorant need optimal performance comcast horror operator technician come house good time stick complete moron personal experience fortunate people deal knowledgeable know negative review think problem provider country matter brand

split\_processed\_m 92 is of length < 56 > :

['service', 'comcast', 'overall', 'pretty', 'good', 'high', 'speed', 'internet', 'cable', 'tv', 'phone', 'bad', 'thing', 'comcast', 'inconsistency', 'knowledge', 'product', 'handling', 'issue', 'arise', 'average', 'come', 'electronics', 'connect', 'thing', 'totally', 'ignorant', 'need', 'optimal', 'performance', 'comcast', 'horror', 'operator', 'technician', 'come', 'house', 'good', 'time', 'stick', 'complete', 'moron', 'personal', 'experience', 'fortunate', 'people', 'deal', 'knowledgeable', 'know', 'negative', 'review', 'think', 'problem', 'provider', 'country', 'matter', 'brand']

Removing unnecessary words ...

Updated list of length < 56 > : ['service', 'comcast', 'overall', 'pretty', 'good', 'high', 'speed', 'internet', 'cable', 'tv', 'phone', 'bad', 'thing', 'comcast', 'inconsistency', 'knowledge', 'product', 'handling', 'issue', 'arise', 'average', 'come', 'electronics', 'connect', 'thing', 'totally', 'ignorant', 'need', 'optimal', 'performance', 'comcast', 'horror', 'operator', 'technician', 'come', 'house', 'good', 'time', 'stick', 'complete', 'moron', 'personal', 'experience', 'fortunate', 'people', 'deal', 'knowledgeable', 'know', 'negative', 'review', 'think', 'problem', 'provider', 'country', 'matter', 'brand']

Unnecessary words removed!

processed\_m 93 is:

order new month comcast xfinity plan receive box service customer service department horrible call twice set service call time customer service representative hang phone call time comcast technician come house fix problem guarantee technician stop today show pay month service deal comcast offer comcast care customer care make money chromecast day cancel horrible barber work barbershop barber client single person tell comcast bad

split\_processed\_m 93 is of length < 63 > :

['order', 'new', 'month', 'comcast', 'xfinity', 'plan', 'receive', 'box', 'service', 'customer', 'service', 'department', 'horrible', 'call', 'twice', 'set', 'service', 'call', 'time', 'customer', 'service', 'representative', 'hang', 'phone', 'call', 'time', 'comcast', 'technician', 'come', 'house', 'fix', 'problem', 'guarantee', 'technician', 'stop', 'today', 'show', 'pay', 'month', 'service', 'deal', 'comcast', 'offer', 'comcast', 'care', 'customer', 'care', 'make', 'money', 'chromecast', 'day', 'cancel', 'horrible', 'barber', 'work', 'barbershop', 'barber', 'client', 'single', 'person', 'tell', 'comcast', 'bad']

Removing unnecessary words ...

Updated list of length < 58 > : ['order', 'new', 'month', 'comcast', 'xfinity', 'plan', 'receive', 'box', 'service', 'customer', 'service', 'department', 'horrible', 'twice', 'set', 'service', 'time', 'customer', 'service', 'representative', 'hang', 'phone', 'time', 'comcast', 'technician', 'come', 'house', 'fix', 'problem', 'guarantee', 'technician', 'stop', 'today', 'pay', 'month', 'service', 'deal', 'comcast', 'offer', 'comcast', 'care', 'customer', 'care', 'money', 'chromecast', 'day', 'cancel', 'horrible', 'barber', 'work', 'barbershop', 'barber', 'client', 'single', 'person', 'tell', 'comcast', 'bad']

Unnecessary words removed!

processed\_m 94 is:

unfortunately wait resolve damage complaint multiple call try resolve issue ticket comcast extensive note record additionally assure time expedited ticket address immediately wait get angry time long story short buy new home day move comcast installer come hook cable installer drill hole wall outside presumably connect box point push wall shingle exterior break leave hole exterior protect element good new england winter installer run cable wall staple exterior wall break additional shingle say damage leave cable minute go installer come week work absolutely unprofessional experience add insult installer tell jack room work fine charge service worker come reconnect needless situation frustrating resolve extremely patient result place month later upset homeowner association have hole wall thing comcast website frustrating maybe design log matter try comcast care customer decide

split\_processed\_m 94 is of length < 127 > :

```
['unfortunately', 'wait', 'resolve', 'damage', 'complaint', 'multiple', 'call', 'try', 'resolve', 'issue', 'ticket', 'comcast', 'extensive', 'note', 'record', 'additionally', 'assure', 'time', 'expedited', 'ticket', 'address', 'immediately', 'wait', 'get', 'angry', 'time', 'long', 'story', 'short', 'buy', 'new', 'home', 'day', 'move', 'comcast', 'installer', 'come', 'hook', 'cable', 'installer', 'drill', 'hole', 'wall', 'outside', 'presumably', 'connect', 'box', 'point', 'push', 'wall', 'shingle', 'exterior', 'break', 'leave', 'hole', 'exterior', 'protect', 'element', 'good', 'new', 'england', 'winter', 'installer', 'run', 'cable', 'wall', 'staple', 'exterior', 'wall', 'break', 'additional', 'shingle', 'say', 'damage', 'leave', 'cable', 'minute', 'go', 'installer', 'come', 'week', 'work', 'absolutely', 'unprofessional', 'experience', 'add', 'insult', 'installer', 'tell', 'jack', 'room', 'work', 'fine', 'charge', 'service', 'worker', 'come', 'reconnect', 'needless', 'situation', 'frustrating', 'resolve', 'extremely', 'patient', 'result', 'place', 'month', 'later', 'upset', 'homeowner', 'association', 'have', 'hole', 'wall', 'thing', 'comcast', 'website', 'frustrating', 'maybe', 'design', 'log', 'matter', 'try', 'comcast', 'care', 'customer', 'decide']
```

Removing unnecessary words ...

```
Updated list of length < 121 > : ['unfortunately', 'wait', 'resolve', 'damage', 'complaint', 'multiple', 'try', 'resolve', 'issue', 'ticket', 'comcast', 'extensive', 'note', 'record', 'additionally', 'assure', 'time', 'expedited', 'ticket', 'address', 'immediately', 'wait', 'angry', 'time', 'long', 'story', 'short', 'buy', 'new', 'home', 'day', 'comcast', 'installer', 'come', 'hook', 'cable', 'installer', 'drill', 'hole', 'wall', 'outside', 'presumably', 'connect', 'box', 'point', 'push', 'wall', 'shingle', 'exterior', 'break', 'leave', 'hole', 'exterior', 'protect', 'element', 'good', 'new', 'england', 'winter', 'installer', 'run', 'cable', 'wall', 'staple', 'exterior', 'wall', 'break', 'additional', 'shingle', 'damage', 'leave', 'cable', 'minute', 'installer', 'come', 'week', 'work', 'absolutely', 'unprofessional', 'experience', 'add', 'insult', 'installer', 'tell', 'jack', 'room', 'work', 'fine', 'charge', 'service', 'worker', 'come', 'reconnect', 'needless', 'situation', 'frustrating', 'resolve', 'extremely', 'patient', 'result', 'place', 'month', 'later', 'upset', 'homeowner', 'association', 'hole', 'wall', 'thing', 'comcast', 'website', 'frustrating', 'maybe', 'design', 'log', 'matter', 'try', 'comcast', 'care', 'customer', 'decide']
```

Unnecessary words removed!



processed\_m 95 is:

comcast company like monopoly area work right legal cancel service comcast credit account pay month service wait day process credit send check pay service cancel wait day issue credit great policy comcast bad customer service policy people gouge

split\_processed\_m 95 is of length < 38 > :

```
['comcast', 'company', 'like', 'monopoly', 'area', 'work', 'right', 'legal', 'cancel', 'service', 'comcast', 'credit', 'account', 'pay', 'month', 'service', 'wait', 'day', 'process', 'credit', 'send', 'check', 'pay', 'service', 'cancel', 'wait', 'day', 'issue', 'credit', 'great', 'policy', 'comcast', 'bad', 'customer', 'service', 'policy', 'people', 'gouge']
```

Removing unnecessary words ...

Updated list of length < 38 > : ['comcast', 'company', 'like', 'monopoly', 'area', 'work', 'right', 'legal', 'cancel', 'service', 'comcast', 'credit', 'account', 'pay', 'month', 'service', 'wait', 'day', 'process', 'credit', 'send', 'check', 'pay', 'service', 'cancel', 'wait', 'day', 'issue', 'credit', 'great', 'policy', 'comcast', 'bad', 'customer', 'service', 'policy', 'people', 'gouge']

Unnecessary words removed!

processed\_m 96 is:

send comcast morning frustrated comcast leave ugly dish hang deck despise continue rob comcast longtime customer year pay pay dollar week owe pay single month skip payment month ago speak customer service rep admit payment online truly concern money come account speak attitude disgusting tell pay dollar attitude quirkiness voice yeah right prove come home service shut pay single month offended bill sooooo high month suppose pay month fact charge unbelievable unrealistic understand pay pay single month

split\_processed\_m 96 is of length < 77 > :

```
['send', 'comcast', 'morning', 'frustrated', 'comcast', 'leave', 'ugly', 'dish', 'hang', 'deck', 'despise', 'continue', 'rob', 'comcast', 'longtime', 'customer', 'year', 'pay', 'pay', 'dollar', 'week', 'owe', 'pay', 'single', 'month', 'skip', 'payment', 'month', 'ago', 'speak', 'customer', 'service', 'rep', 'admit', 'payment', 'online', 'truly', 'concern', 'money', 'come', 'account', 'speak', 'attitude', 'disgusting', 'tell', 'pay', 'dollar', 'attitude', 'quirkiness', 'voice', 'yeah', 'right', 'prove', 'come', 'home', 'service', 'shut', 'pay', 'single', 'month', 'offended', 'bill', 'sooooo', 'high', 'month', 'suppose', 'pay', 'month', 'fact', 'charge', 'unbelievable', 'unrealistic', 'understand', 'pay', 'pay', 'single', 'month']
```

```
'voice', 'yeah', 'right', 'prove', 'come', 'home', 'service', 'shut', 'pay', 'single', 'month', 'offended', 'bill', 'so
oooo', 'high', 'month', 'suppose', 'pay', 'month', 'fact', 'charge', 'unbelievable', 'unrealistic', 'understand', 'pa
y', 'pay', 'single', 'month']
```

Removing unnecessary words ...

```
Updated list of length < 77 > : ['send', 'comcast', 'morning', 'frustrated', 'comcast', 'leave', 'ugly', 'dish', 'han
g', 'deck', 'despise', 'continue', 'rob', 'comcast', 'longtime', 'customer', 'year', 'pay', 'pay', 'dollar', 'week', 'o
we', 'pay', 'single', 'month', 'skip', 'payment', 'month', 'ago', 'speak', 'customer', 'service', 'rep', 'admit', 'paym
ent', 'online', 'truly', 'concern', 'money', 'come', 'account', 'speak', 'attitude', 'disgusting', 'tell', 'pay', 'doll
ar', 'attitude', 'quirkiness', 'voice', 'yeah', 'right', 'prove', 'come', 'home', 'service', 'shut', 'pay', 'single',
'month', 'offended', 'bill', 'sooooo', 'high', 'month', 'suppose', 'pay', 'month', 'fact', 'charge', 'unbelievable', 'u
nrealistic', 'understand', 'pay', 'pay', 'single', 'month']
```

Unnecessary words removed!

processed\_m 97 is:

```
ex contact comcast customer support transfer account apartment line csr speak assure phone month later get past say ac
count suspend nonpayment tell account anymore contact ex month later happen ask call tell record transfer mail paperwor
k fill mail cancel account time call ex call comcast csr speak tell person customer center submit paperwork person spea
k customer center appear assure transfer complete way submit paperwork month later happen time look equipment tell subm
it transfer paperwork inform request decline follow instruction properly ask possible follow instruction give tell righ
t decline request see fit tell csr mail paperwork parent address fill send request honor start receive text message pho
ne call multiple time day comcast demand return equipment keep try explain need contact ex single csr contact inform re
sponsible account responsible return equipment call ex swear return equipment receive phone collection agency explain c
omcast send account collection equipment return know possible explain horror collection agent give ex contact informati
on ask time file complaint comcast better business bureau week later get phone comcast executive person try tell origin
al request transfer ex prior account comcast satisfied eligible account ask time person mention fact give number reason
request honor tell honesty employee expect kind information ask suppose know thing bother mention time response ex hone
st tell ask hold responsible account inform responsible time paraphrasing exactly say point completely lose start yell
swear dare sue mind anger frustration absolutely believe service professional say thing note ex contact comcast discuss
reason request decline inquire account satisfied far aware prior account pay life disgusted service provider single emp
loyee comcast honest willing work resolve issue willing accept responsibility issue mess get start employee comcast spe
ak blame responsibility keep ask want answer give clear way resolve problem company want issue resolve understand possi
bly gain prevent conclude business
```

split\_processed\_m 97 is of length < 295 > :

['ex', 'contact', 'comcast', 'customer', 'support', 'transfer', 'account', 'apartment', 'line', 'csr', 'speak', 'assure', 'phone', 'month', 'later', 'get', 'past', 'say', 'account', 'suspend', 'nonpayment', 'tell', 'account', 'anymore', 'contact', 'ex', 'month', 'later', 'happen', 'ask', 'call', 'tell', 'record', 'transfer', 'mail', 'paperwork', 'fill', 'mail', 'cancel', 'account', 'time', 'call', 'ex', 'call', 'comcast', 'csr', 'speak', 'tell', 'person', 'customer', 'center', 'submit', 'paperwork', 'person', 'speak', 'customer', 'center', 'appear', 'assure', 'transfer', 'complete', 'way', 'submit', 'paperwork', 'month', 'later', 'happen', 'time', 'look', 'equipment', 'tell', 'submit', 'transfer', 'paperwork', 'inform', 'request', 'decline', 'follow', 'instruction', 'properly', 'ask', 'possible', 'follow', 'instruction', 'give', 'tell', 'right', 'decline', 'request', 'see', 'fit', 'tell', 'csr', 'mail', 'paperwork', 'parent', 'addresses', 'fill', 'send', 'request', 'honor', 'start', 'receive', 'text', 'message', 'phone', 'call', 'multiple', 'time', 'day', 'comcast', 'demand', 'return', 'equipment', 'keep', 'try', 'explain', 'need', 'contact', 'ex', 'single', 'csr', 'contact', 'inform', 'responsible', 'account', 'responsible', 'return', 'equipment', 'call', 'ex', 'swear', 'return', 'equipment', 'receive', 'phone', 'collection', 'agency', 'explain', 'comcast', 'send', 'account', 'collection', 'equipment', 'return', 'know', 'possible', 'explain', 'horror', 'collection', 'agent', 'give', 'ex', 'contact', 'information', 'ask', 'time', 'file', 'complaint', 'comcast', 'better', 'business', 'bureau', 'week', 'later', 'get', 'phone', 'comcast', 'executive', 'person', 'try', 'tell', 'original', 'request', 'transfer', 'ex', 'prior', 'account', 'comcast', 'satisfied', 'eligible', 'account', 'ask', 'time', 'person', 'mention', 'fact', 'give', 'number', 'reason', 'request', 'honor', 'tell', 'honesty', 'employee', 'expect', 'kind', 'information', 'ask', 'suppose', 'know', 'thing', 'bother', 'mention', 'time', 'response', 'ex', 'honest', 'tell', 'ask', 'hold', 'responsible', 'account', 'inform', 'responsible', 'time', 'paraphrasing', 'exactly', 'say', 'point', 'completely', 'lose', 'start', 'yell', 'swear', 'dare', 'sue', 'mind', 'anger', 'frustration', 'absolutely', 'believe', 'service', 'professional', 'say', 'thing', 'note', 'ex', 'contact', 'comcast', 'discuss', 'reason', 'request', 'decline', 'inquire', 'account', 'satisfied', 'far', 'aware', 'prior', 'account', 'pay', 'life', 'disgusted', 'service', 'provider', 'single', 'employee', 'comcast', 'honest', 'willing', 'work', 'resolve', 'issue', 'willing', 'accept', 'responsibility', 'issue', 'mess', 'get', 'start', 'employee', 'comcast', 'speak', 'blame', 'responsibility', 'keep', 'ask', 'want', 'answer', 'give', 'clear', 'way', 'resolve', 'problem', 'company', 'want', 'issue', 'resolve', 'understand', 'possibly', 'gain', 'prevent', 'conclude', 'business']

Removing unnecessary words ...

Updated list of length < 277 > : ['ex', 'contact', 'comcast', 'customer', 'support', 'transfer', 'account', 'apartment', 'line', 'csr', 'speak', 'assure', 'phone', 'month', 'later', 'past', 'account', 'suspend', 'nonpayment', 'tell', 'account', 'anymore', 'contact', 'ex', 'month', 'later', 'happen', 'ask', 'tell', 'record', 'transfer', 'mail', 'paperwork', 'fill', 'mail', 'cancel', 'account', 'time', 'ex', 'comcast', 'csr', 'speak', 'tell', 'person', 'customer', 'center', 'submit', 'paperwork', 'person', 'speak', 'customer', 'center', 'appear', 'assure', 'transfer', 'complete', 'way', 'submit', 'paperwork', 'month', 'later', 'happen', 'time', 'look', 'equipment', 'tell', 'submit', 'transfer', 'paperwork', 'inform', 'request', 'decline', 'follow', 'instruction', 'properly', 'ask', 'possible', 'follow', 'instruction', 'tell', 'right', 'decline', 'request', 'fit', 'tell', 'csr', 'mail', 'paperwork', 'parent', 'address', 'fill', 'send', 'request', 'honor', 'start', 'receive', 'text', 'message', 'phone', 'multiple', 'time', 'day', 'comcast', 'demand', 'return', 'equipment', 'try', 'explain', 'need', 'contact', 'ex', 'single', 'csr', 'contact', 'inform', 'responsible', 'account', 'responsible', 'return', 'equipment', 'ex', 'swear', 'return', 'equipment', 'receive', 'phone', 'collection', 'agency', 'explain', 'comcast', 'send', 'account', 'collection', 'equipment', 'return', 'know', 'possible', 'explain', 'horror', 'collection', 'agent', 'ex', 'contact', 'information', 'ask', 'time', 'file', 'complaint', 'comcast', 'better', 'business', 'bureau', 'week', 'later', 'phone', 'comcast', 'executive', 'person', 'try', 'tell', 'original', 'request', 'transfer', 'ex', 'prior', 'account', 'comcast', 'satisfied', 'eligible', 'account', 'ask', 'time', 'person', 'mention']

n', 'fact', 'number', 'reason', 'request', 'honor', 'tell', 'honesty', 'employee', 'expect', 'kind', 'information', 'ask', 'suppose', 'know', 'thing', 'bother', 'mention', 'time', 'response', 'ex', 'honest', 'tell', 'ask', 'hold', 'responsible', 'account', 'inform', 'responsible', 'time', 'paraphrasing', 'exactly', 'point', 'completely', 'lose', 'start', 'yell', 'swear', 'dare', 'sue', 'mind', 'anger', 'frustration', 'absolutely', 'believe', 'service', 'professional', 'thing', 'note', 'ex', 'contact', 'comcast', 'discuss', 'reason', 'request', 'decline', 'inquire', 'account', 'satisfied', 'far', 'aware', 'prior', 'account', 'pay', 'life', 'disgusted', 'service', 'provider', 'single', 'employee', 'comcast', 'honest', 'willing', 'work', 'resolve', 'issue', 'willing', 'accept', 'responsibility', 'issue', 'mess', 'start', 'employee', 'comcast', 'speak', 'blame', 'responsibility', 'ask', 'want', 'answer', 'clear', 'way', 'resolve', 'problem', 'company', 'want', 'issue', 'resolve', 'understand', 'possibly', 'gain', 'prevent', 'conclude', 'business']

Unnecessary words removed!

processed\_m 98 is:

hd tv cable box power button low right hand corner change channel box take second result series black screen grey screen box problem change channel swap box tv result box delay channel change complain comcast year request replace box claim know service center tech

split\_processed\_m 98 is of length < 44 > :

['hd', 'tv', 'cable', 'box', 'power', 'button', 'low', 'right', 'hand', 'corner', 'change', 'channel', 'box', 'take', 'second', 'result', 'series', 'black', 'screen', 'grey', 'screen', 'box', 'problem', 'change', 'channel', 'swap', 'box', 'tv', 'result', 'box', 'delay', 'channel', 'change', 'complain', 'comcast', 'year', 'request', 'replace', 'box', 'claim', 'know', 'service', 'center', 'tech']

Removing unnecessary words ...

Updated list of length < 43 > : ['hd', 'tv', 'cable', 'box', 'power', 'button', 'low', 'right', 'hand', 'corner', 'change', 'channel', 'box', 'second', 'result', 'series', 'black', 'screen', 'grey', 'screen', 'box', 'problem', 'change', 'channel', 'swap', 'box', 'tv', 'result', 'box', 'delay', 'channel', 'change', 'complain', 'comcast', 'year', 'request', 'replace', 'box', 'claim', 'know', 'service', 'center', 'tech']

Unnecessary words removed!

processed\_m 99 is:

come seasonal disconnect visit house find comcast service dead door nail comcast box basement light arrange tech come tech spend hrs fix include new interface box basement contact customer service tell seasonal disconnect credit ask pay current bill say wait till credit credit bill call say indication rep get credit speak supervisor belch script garbage know crm know rep authorize ask supervisor meeting send email say garbage believe

split\_processed\_m 99 is of length < 68 > :

```
['come', 'seasonal', 'disconnect', 'visit', 'house', 'find', 'comcast', 'service', 'dead', 'door', 'nail', 'comcast', 'box', 'basement', 'light', 'arrange', 'tech', 'come', 'tech', 'spend', 'hrs', 'fix', 'include', 'new', 'interface', 'box', 'basement', 'contact', 'customer', 'service', 'tell', 'seasonal', 'disconnect', 'credit', 'ask', 'pay', 'current', 'bill', 'say', 'wait', 'till', 'credit', 'credit', 'bill', 'call', 'say', 'indication', 'rep', 'get', 'credit', 'speak', 'supervisor', 'belch', 'script', 'garbage', 'know', 'crm', 'know', 'rep', 'authorize', 'ask', 'supervisor', 'meeting', 'send', 'email', 'say', 'garbage', 'believe']
```

Removing unnecessary words ...

Updated list of length < 63 > : ['come', 'seasonal', 'disconnect', 'visit', 'house', 'find', 'comcast', 'service', 'dead', 'door', 'nail', 'comcast', 'box', 'basement', 'light', 'arrange', 'tech', 'come', 'tech', 'spend', 'hrs', 'fix', 'include', 'new', 'interface', 'box', 'basement', 'contact', 'customer', 'service', 'tell', 'seasonal', 'disconnect', 'credit', 'ask', 'pay', 'current', 'bill', 'wait', 'till', 'credit', 'credit', 'bill', 'indication', 'rep', 'credit', 'speak', 'supervisor', 'belch', 'script', 'garbage', 'know', 'crm', 'know', 'rep', 'authorize', 'ask', 'supervisor', 'meeting', 'send', 'email', 'garbage', 'believe']

Unnecessary words removed!

processed\_m 100 is:

let start state wait day come comcast go way aol apartment stop issue comcast slimy fee money squeeze tactic bill new apartment pay bank transfer fill account number route number website mind pay service cell phone utility credit card bill comcast manage screw payment online get confirmation screen show balance pay log online time continue month later comcast mail letter say service shut payment contact cs resolve comcast automaton clearly work script keep tell owe payment explain multiple time log account right talk phone look screen say pay bill automaton tell know talk basically payment right reactivate service expect bill list fee total return payment fee reactivation fee phone internet cable late fee payment phone fee know happen phantom payment basically comcast opinion payment account online say liable fee refuse refund accept responsibility website error say payment go absolutely incredible thing think maybe enter number wrong case decline payment instead comcast charge imagine charge fee payment online believe comcast business understand try brand xfinity give decade horrible service comcast stigma service level usps deservedly

split\_processed\_m 100 is of length < 174 > :

```
['let', 'start', 'state', 'wait', 'day', 'come', 'comcast', 'go', 'way', 'aol', 'apartment', 'stop', 'issue', 'comcast', 'slimy', 'fee', 'money', 'squeeze', 'tactic', 'bill', 'new', 'apartment', 'pay', 'bank', 'transfer', 'fill', 'account', 'number', 'route', 'number', 'website', 'mind', 'pay', 'service', 'cell', 'phone', 'utility', 'credit', 'card', 'bill', 'comcast', 'manage', 'screw', 'payment', 'online', 'get', 'confirmation', 'screen', 'show', 'balance', 'pay', 'log', 'online', 'time', 'continue', 'month', 'later', 'comcast', 'mail', 'letter', 'say', 'service', 'shut', 'payment', 'contact', 'cs', 'resolve', 'comcast', 'automaton', 'clearly', 'work', 'script', 'keep', 'tell', 'owe', 'payment', 'explain', 'multiple', 'time', 'log', 'account', 'right', 'talk', 'phone', 'look', 'screen', 'say', 'pay', 'bill', 'automaton', 'tell', 'know', 'talk', 'basically', 'payment', 'right', 'reactivate', 'service', 'expect', 'bill', 'list', 'fee', 'total', 'return', 'payment', 'fee', 'reactivation', 'fee', 'phone', 'internet', 'cable', 'late', 'fee', 'payment', 'phone', 'fee', 'know', 'happen', 'phantom', 'payment', 'basically', 'comcast', 'opinion', 'payment', 'account', 'online', 'say', 'liable', 'fee', 'refuse', 'refund', 'accept', 'responsibility', 'website', 'error', 'say', 'payment', 'go', 'absolutely', 'incredible', 'thing', 'think', 'maybe', 'enter', 'number', 'wrong', 'case', 'decline', 'payment', 'instead', 'comcast', 'charge', 'imagine', 'charge', 'fee', 'payment', 'online', 'believe', 'comcast', 'business', 'understand', 'try', 'brand', 'xfinity', 'give', 'decade', 'horrible', 'service', 'comcast', 'stigma', 'service', 'level', 'usps', 'deservedly']
```

Removing unnecessary words ...

```
Updated list of length < 164 > : ['let', 'start', 'state', 'wait', 'day', 'come', 'comcast', 'way', 'aol', 'apartment', 'stop', 'issue', 'comcast', 'slimy', 'fee', 'money', 'squeeze', 'tactic', 'bill', 'new', 'apartment', 'pay', 'bank', 'transfer', 'fill', 'account', 'number', 'route', 'number', 'website', 'mind', 'pay', 'service', 'cell', 'phone', 'utility', 'credit', 'card', 'bill', 'comcast', 'manage', 'screw', 'payment', 'online', 'confirmation', 'screen', 'balance', 'pay', 'log', 'online', 'time', 'continue', 'month', 'later', 'comcast', 'mail', 'letter', 'service', 'shut', 'payment', 'contact', 'cs', 'resolve', 'comcast', 'automaton', 'clearly', 'work', 'script', 'tell', 'owe', 'payment', 'explain', 'multiple', 'time', 'log', 'account', 'right', 'talk', 'phone', 'look', 'screen', 'pay', 'bill', 'automaton', 'tell', 'know', 'talk', 'basically', 'payment', 'right', 'reactivate', 'service', 'expect', 'bill', 'list', 'fee', 'total', 'return', 'payment', 'fee', 'reactivation', 'fee', 'phone', 'internet', 'cable', 'late', 'fee', 'payment', 'phone', 'fee', 'know', 'happen', 'phantom', 'payment', 'basically', 'comcast', 'opinion', 'payment', 'account', 'online', 'liable', 'fee', 'refuse', 'refund', 'accept', 'responsibility', 'website', 'error', 'payment', 'absolutely', 'incredible', 'thing', 'think', 'maybe', 'enter', 'number', 'wrong', 'case', 'decline', 'payment', 'instead', 'comcast', 'charge', 'imagine', 'charge', 'fee', 'payment', 'online', 'believe', 'comcast', 'business', 'understand', 'try', 'brand', 'xfinity', 'decade', 'horrible', 'service', 'comcast', 'stigma', 'service', 'level', 'usps', 'deservedly']
```

Unnecessary words removed!

processed\_m 101 is:

```
dispute install fee comcast unlawfully charge sign comcast send self install kit install try repeatedly unable cable i
```

internet work speak comcast send technician day meet technician determine apartment live cable telephone pole house need comcast service assure fault send self install kit begin speak comcast day later agree credit account cost installation bill receive credit comcast say pay install bill dispute charge assist

split\_processed\_m 101 is of length < 63 > :

```
['dispute', 'install', 'fee', 'comcast', 'unlawfully', 'charge', 'sign', 'comcast', 'send', 'self', 'install', 'kit', 'install', 'try', 'repeatedly', 'unable', 'cable', 'internet', 'work', 'speak', 'comcast', 'send', 'technician', 'day', 'meet', 'technician', 'determine', 'apartment', 'live', 'cable', 'telephone', 'pole', 'house', 'need', 'comcast', 'service', 'assure', 'fault', 'send', 'self', 'install', 'kit', 'begin', 'speak', 'comcast', 'day', 'later', 'agree', 'credit', 'account', 'cost', 'installation', 'bill', 'receive', 'credit', 'comcast', 'say', 'pay', 'install', 'bill', 'dispute', 'charge', 'assist']
```

Removing unnecessary words ...

Updated list of length < 62 > : ['dispute', 'install', 'fee', 'comcast', 'unlawfully', 'charge', 'sign', 'comcast', 'send', 'self', 'install', 'kit', 'install', 'try', 'repeatedly', 'unable', 'cable', 'internet', 'work', 'speak', 'comcast', 'send', 'technician', 'day', 'meet', 'technician', 'determine', 'apartment', 'live', 'cable', 'telephone', 'pole', 'house', 'need', 'comcast', 'service', 'assure', 'fault', 'send', 'self', 'install', 'kit', 'begin', 'speak', 'comcast', 'day', 'later', 'agree', 'credit', 'account', 'cost', 'installation', 'bill', 'receive', 'credit', 'comcast', 'pay', 'install', 'bill', 'dispute', 'charge', 'assist']

Unnecessary words removed!

processed\_m 102 is:

call set payment arrangement payment withdraw check account payment withdraw immediately call comcast speak people multiple department include supervisor inform supervisor early withdrawal cause outstanding check bounce cause embarrassment dollar fee inform record computer intent pay say change error refuse reverse payment tell take overage fee comcast bill tell disconnect service say policy accept payment future issue representative train properly accept date payment ask speak chuckle say look disconnect

split\_processed\_m 102 is of length < 69 > :

```
['call', 'set', 'payment', 'arrangement', 'payment', 'withdraw', 'check', 'account', 'payment', 'withdraw', 'immediately', 'call', 'comcast', 'speak', 'people', 'multiple', 'department', 'include', 'supervisor', 'inform', 'supervisor', 'early', 'withdrawal', 'cause', 'outstanding', 'check', 'bounce', 'cause', 'embarrassment', 'dollar', 'fee', 'inform', 'record', 'computer', 'intent', 'pay', 'say', 'change', 'error', 'refuse', 'reverse', 'payment', 'tell', 'take', 'overage', 'bill', 'disconnect', 'service', 'policy', 'accept', 'payment', 'future', 'issue', 'representative', 'train', 'properly', 'accept', 'date', 'payment', 'ask', 'speak', 'chuckle', 'look', 'disconnect']
```

```
ge', 'fee', 'comcast', 'bill', 'tell', 'disconnect', 'service', 'say', 'policy', 'accept', 'payment', 'future', 'issue', 'representative', 'train', 'properly', 'accept', 'date', 'payment', 'ask', 'speak', 'chuckle', 'say', 'look', 'disconnect']
```

Removing unnecessary words ...

```
Updated list of length < 63 > : ['set', 'payment', 'arrangement', 'payment', 'withdraw', 'check', 'account', 'payment', 'withdraw', 'immediately', 'comcast', 'speak', 'people', 'multiple', 'department', 'include', 'supervisor', 'inform', 'supervisor', 'early', 'withdrawal', 'cause', 'outstanding', 'check', 'bounce', 'cause', 'embarrassment', 'dollar', 'fee', 'inform', 'record', 'computer', 'intent', 'pay', 'change', 'error', 'refuse', 'reverse', 'payment', 'tell', 'overage', 'fee', 'comcast', 'bill', 'tell', 'disconnect', 'service', 'policy', 'accept', 'payment', 'future', 'issue', 'representative', 'train', 'properly', 'accept', 'date', 'payment', 'ask', 'speak', 'chuckle', 'look', 'disconnect']
```

Unnecessary words removed!

processed\_m 103 is:

outraged cost basic cable channel internet month purchase bundled service comcast year tell contract year fee increase tell long step pricing good ask option answer pay service significantly slow internet obviously basic user competitor area stuck want business model monopoly raise price year deliver promotion think give deal cost month internet service free channel need oversee people force provide service reasonable price especially competitor ridiculous

split\_processed\_m 103 is of length < 65 > :

```
['outraged', 'cost', 'basic', 'cable', 'channel', 'internet', 'month', 'purchase', 'bundled', 'service', 'comcast', 'year', 'tell', 'contract', 'year', 'fee', 'increase', 'tell', 'long', 'step', 'pricing', 'good', 'ask', 'option', 'answer', 'pay', 'service', 'significantly', 'slow', 'internet', 'obviously', 'basic', 'user', 'competitor', 'area', 'stuck', 'want', 'business', 'model', 'monopoly', 'raise', 'price', 'year', 'deliver', 'promotion', 'think', 'give', 'deal', 'cost', 'month', 'internet', 'service', 'free', 'channel', 'need', 'oversee', 'people', 'force', 'provide', 'service', 'reasonable', 'price', 'especially', 'competitor', 'ridiculous']
```

Removing unnecessary words ...

```
Updated list of length < 64 > : ['outraged', 'cost', 'basic', 'cable', 'channel', 'internet', 'month', 'purchase', 'bundled', 'service', 'comcast', 'year', 'tell', 'contract', 'year', 'fee', 'increase', 'tell', 'long', 'step', 'pricing', 'good', 'ask', 'option', 'answer', 'pay', 'service', 'significantly', 'slow', 'internet', 'obviously', 'basic', 'user', 'competitor', 'area', 'stuck', 'want', 'business', 'model', 'monopoly', 'raise', 'price', 'year', 'deliver', 'promotion']
```



n', 'think', 'deal', 'cost', 'month', 'internet', 'service', 'free', 'channel', 'need', 'oversee', 'people', 'force', 'provide', 'service', 'reasonable', 'price', 'especially', 'competitor', 'ridiculous']

Unnecessary words removed!

processed\_m 104 is:

attempt pay outstanding balance comcast online paperless customer complete procedure twice get try later message time try contact comcast online help useless find telephone number webpage send email outline problem difficulty pay online paperless billing customer account double debit payment service disconnect return email direct comcast online analyst say help comcast billing number remember paperless digit ssn number husband victim identify theft ssn physician bank stick pay bill account double debit will customer service customer abuse difficult problem address comcast alternative like switch cable provider heartbeat self employ need internet work husband hope help collect dissatisfied customer datum

split\_processed\_m 104 is of length < 98 > :

['attempt', 'pay', 'outstanding', 'balance', 'comcast', 'online', 'paperless', 'customer', 'complete', 'procedure', 'twice', 'get', 'try', 'later', 'message', 'time', 'try', 'contact', 'comcast', 'online', 'help', 'useless', 'find', 'telephone', 'number', 'webpage', 'send', 'email', 'outline', 'problem', 'difficulty', 'pay', 'online', 'paperless', 'billing', 'customer', 'account', 'double', 'debit', 'payment', 'service', 'disconnect', 'return', 'email', 'direct', 'comcast', 'online', 'analyst', 'say', 'help', 'comcast', 'billing', 'number', 'remember', 'paperless', 'digit', 'ssn', 'number', 'husband', 'victim', 'identify', 'theft', 'ssn', 'physician', 'bank', 'stick', 'pay', 'bill', 'account', 'double', 'debit', 'will', 'customer', 'service', 'customer', 'abuse', 'difficult', 'problem', 'address', 'comcast', 'alternative', 'like', 'switch', 'cable', 'provider', 'heartbeat', 'self', 'employ', 'need', 'internet', 'work', 'husband', 'hope', 'help', 'collect', 'dissatisfied', 'customer', 'datum']

Removing unnecessary words ...

Updated list of length < 95 > : ['attempt', 'pay', 'outstanding', 'balance', 'comcast', 'online', 'paperless', 'customer', 'complete', 'procedure', 'twice', 'try', 'later', 'message', 'time', 'try', 'contact', 'comcast', 'online', 'help', 'useless', 'find', 'telephone', 'number', 'webpage', 'send', 'email', 'outline', 'problem', 'difficulty', 'pay', 'online', 'paperless', 'billing', 'customer', 'account', 'double', 'debit', 'payment', 'service', 'disconnect', 'return', 'email', 'direct', 'comcast', 'online', 'analyst', 'help', 'comcast', 'billing', 'number', 'remember', 'paperless', 'digit', 'ssn', 'number', 'husband', 'victim', 'identify', 'theft', 'ssn', 'physician', 'bank', 'stick', 'pay', 'bill', 'account', 'double', 'debit', 'customer', 'service', 'customer', 'abuse', 'difficult', 'problem', 'address', 'comcast', 'alternative', 'like', 'switch', 'cable', 'provider', 'heartbeat', 'self', 'employ', 'need', 'internet', 'work', 'husband', 'hope', 'help', 'collect', 'dissatisfied', 'customer', 'datum']

Unnecessary words removed!

processed\_m 105 is:

discover soapnet line want

split\_processed\_m 105 is of length < 4 > :

['discover', 'soapnet', 'line', 'want']

Removing unnecessary words ...

Updated list of length < 4 > : ['discover', 'soapnet', 'line', 'want']

Unnecessary words removed!

processed\_m 106 is:

call cancel showtime cable bill maureen husband harry die account death add internet service premium station order cancel showtime want death certificate write check sign cable spend half hour try supervisor email address write call totally frustrated

split\_processed\_m 106 is of length < 37 > :

['call', 'cancel', 'showtime', 'cable', 'bill', 'maureen', 'husband', 'harry', 'die', 'account', 'death', 'add', 'internet', 'service', 'premium', 'station', 'order', 'cancel', 'showtime', 'want', 'death', 'certificate', 'write', 'check', 'sign', 'cable', 'spend', 'half', 'hour', 'try', 'supervisor', 'email', 'address', 'write', 'call', 'totally', 'frustrated']

Removing unnecessary words ...

Updated list of length < 35 > : ['cancel', 'showtime', 'cable', 'bill', 'maureen', 'husband', 'harry', 'die', 'account', 'death', 'add', 'internet', 'service', 'premium', 'station', 'order', 'cancel', 'showtime', 'want', 'death', 'certificate', 'write', 'check', 'sign', 'cable', 'spend', 'half', 'hour', 'try', 'supervisor', 'email', 'address', 'write',

'totally', 'frustrated']

Unnecessary words removed!

processed\_m 107 is:

comcast instal tell keep account good standing receive gift card week day call gift card arrive speak customer rep tell mail receive end week call speak rep say record call info card send rebate department tell comcast send information card process send ask speak supervisor tell week card sure tell mail ask go tell send note supervisor rep tell mail today tell supervisor type person write thing get gift card comcast mail imagine people forget gift card angry lie care try explain happen contract end renew contract comcast want need answer happen pay month company care customer good way new old customer thank

split\_processed\_m 107 is of length < 103 > :

```
['comcast', 'instal', 'tell', 'keep', 'account', 'good', 'standing', 'receive', 'gift', 'card', 'week', 'day', 'call', 'gift', 'card', 'arrive', 'speak', 'customer', 'rep', 'tell', 'mail', 'receive', 'end', 'week', 'call', 'speak', 'rep', 'say', 'record', 'call', 'info', 'card', 'send', 'rebate', 'department', 'tell', 'comcast', 'send', 'information', 'card', 'process', 'send', 'ask', 'speak', 'supervisor', 'tell', 'week', 'card', 'sure', 'tell', 'mail', 'ask', 'go', 'tell', 'send', 'note', 'supervisor', 'rep', 'tell', 'mail', 'today', 'tell', 'supervisor', 'type', 'person', 'write', 'thing', 'get', 'gift', 'card', 'comcast', 'mail', 'imagine', 'people', 'forget', 'gift', 'card', 'angry', 'lie', 'care', 'try', 'explain', 'happen', 'contract', 'end', 'renew', 'contract', 'comcast', 'want', 'need', 'answer', 'happen', 'pay', 'month', 'company', 'care', 'customer', 'good', 'way', 'new', 'old', 'customer', 'thank']
```

Removing unnecessary words ...

```
Updated list of length < 96 > : ['comcast', 'instal', 'tell', 'account', 'good', 'standing', 'receive', 'gift', 'card', 'week', 'day', 'gift', 'card', 'arrive', 'speak', 'customer', 'rep', 'tell', 'mail', 'receive', 'end', 'week', 'speak', 'rep', 'record', 'info', 'card', 'send', 'rebate', 'department', 'tell', 'comcast', 'send', 'information', 'card', 'process', 'send', 'ask', 'speak', 'supervisor', 'tell', 'week', 'card', 'sure', 'tell', 'mail', 'ask', 'tell', 'send', 'note', 'supervisor', 'rep', 'tell', 'mail', 'today', 'tell', 'supervisor', 'type', 'person', 'write', 'thing', 'gift', 'card', 'comcast', 'mail', 'imagine', 'people', 'forget', 'gift', 'card', 'angry', 'lie', 'care', 'try', 'explain', 'happen', 'contract', 'end', 'renew', 'contract', 'comcast', 'want', 'need', 'answer', 'happen', 'pay', 'month', 'company', 'care', 'customer', 'good', 'way', 'new', 'old', 'customer', 'thank']
```

Unnecessary words removed!

processed\_m 108 is:

charge tech come fix cable defective equipment unbelievable hold minute speak manager help say bad fault blow tv year  
early ground wire basement instal cable house

split\_processed\_m 108 is of length < 26 > :

```
['charge', 'tech', 'come', 'fix', 'cable', 'defective', 'equipment', 'unbelievable', 'hold', 'minute', 'speak', 'manag  
er', 'help', 'say', 'bad', 'fault', 'blow', 'tv', 'year', 'early', 'ground', 'wire', 'basement', 'instal', 'cable', 'ho  
use']
```

Removing unnecessary words ...

Updated list of length < 25 > : ['charge', 'tech', 'come', 'fix', 'cable', 'defective', 'equipment', 'unbelievable',  
'hold', 'minute', 'speak', 'manager', 'help', 'bad', 'fault', 'blow', 'tv', 'year', 'early', 'ground', 'wire', 'basemen  
t', 'instal', 'cable', 'house']

Unnecessary words removed!

processed\_m 109 is:

year deal bad company term product support people lovely try helpful let tell suffer comcast cable tv comcast tivo awf  
ul awful service able use tv month service people time year simply watch tv service work ask supervisor follow survey p  
hone ring feel world world country truly represent service disgrace switch service computer tv phone use comcast servic  
e contact rep congress point merit licensing

split\_processed\_m 109 is of length < 63 > :

```
['year', 'deal', 'bad', 'company', 'term', 'product', 'support', 'people', 'lovely', 'try', 'helpful', 'let', 'tell',  
'suffer', 'comcast', 'cable', 'tv', 'comcast', 'tivo', 'awful', 'awful', 'service', 'able', 'use', 'tv', 'month', 'serv  
ice', 'people', 'time', 'year', 'simply', 'watch', 'tv', 'service', 'work', 'ask', 'supervisor', 'follow', 'survey', 'p  
hone', 'ring', 'feel', 'world', 'world', 'country', 'truly', 'represent', 'service', 'disgrace', 'switch', 'service',  
'computer', 'tv', 'phone', 'use', 'comcast', 'service', 'contact', 'rep', 'congress', 'point', 'merit', 'licensing']
```

Removing unnecessary words ...

Updated list of length < 63 > : ['year', 'deal', 'bad', 'company', 'term', 'product', 'support', 'people', 'lovely', 'try', 'helpful', 'let', 'tell', 'suffer', 'comcast', 'cable', 'tv', 'comcast', 'tivo', 'awful', 'awful', 'service', 'able', 'use', 'tv', 'month', 'service', 'people', 'time', 'year', 'simply', 'watch', 'tv', 'service', 'work', 'ask', 'supervisor', 'follow', 'survey', 'phone', 'ring', 'feel', 'world', 'world', 'country', 'truly', 'represent', 'service', 'disgrace', 'switch', 'service', 'computer', 'tv', 'phone', 'use', 'comcast', 'service', 'contact', 'rep', 'congress', 'point', 'merit', 'licensing']

Unnecessary words removed!

processed\_m 110 is:

reduce comcast cable service digital starter digital economy save month extra service channel channel clearly list price adjustment information send effective problem second tv small converter box half channel advertise listing mention footnote term service think comcast live advertise allow channel view second tv tv

split\_processed\_m 110 is of length < 45 > :

['reduce', 'comcast', 'cable', 'service', 'digital', 'starter', 'digital', 'economy', 'save', 'month', 'extra', 'service', 'channel', 'channel', 'clearly', 'list', 'price', 'adjustment', 'information', 'send', 'effective', 'problem', 'second', 'tv', 'small', 'converter', 'box', 'half', 'channel', 'advertise', 'listing', 'mention', 'footnote', 'term', 'service', 'think', 'comcast', 'live', 'advertise', 'allow', 'channel', 'view', 'second', 'tv', 'tv']

Removing unnecessary words ...

Updated list of length < 45 > : ['reduce', 'comcast', 'cable', 'service', 'digital', 'starter', 'digital', 'economy', 'save', 'month', 'extra', 'service', 'channel', 'channel', 'clearly', 'list', 'price', 'adjustment', 'information', 'send', 'effective', 'problem', 'second', 'tv', 'small', 'converter', 'box', 'half', 'channel', 'advertise', 'listing', 'mention', 'footnote', 'term', 'service', 'think', 'comcast', 'live', 'advertise', 'allow', 'channel', 'view', 'second', 'tv', 'tv']

Unnecessary words removed!

processed\_m 111 is:

dispute upgrade order installation charge result phone customer service center charge installation fee order clear say

waive tell send sign copy order proof order get copy get pen ask speak supervisor get friendly sure hold minute simply  
hang call tell previous minute hand successfully close issue resolve customer satisfaction base experience conclude com  
cast hire liar cheat send copy paper work

split\_processed\_m 111 is of length < 60 > :

```
['dispute', 'upgrade', 'order', 'installation', 'charge', 'result', 'phone', 'customer', 'service', 'center', 'charge', 'installation', 'fee', 'order', 'clear', 'say', 'waive', 'tell', 'send', 'sign', 'copy', 'order', 'proof', 'order', 'get', 'copy', 'get', 'pen', 'ask', 'speak', 'supervisor', 'get', 'friendly', 'sure', 'hold', 'minute', 'simply', 'hang', 'call', 'tell', 'previous', 'minute', 'hand', 'successfully', 'close', 'issue', 'resolve', 'customer', 'satisfaction', 'base', 'experience', 'conclude', 'comcast', 'hire', 'liar', 'cheat', 'send', 'copy', 'paper', 'work']
```

Removing unnecessary words ...

Updated list of length < 55 > : ['dispute', 'upgrade', 'order', 'installation', 'charge', 'result', 'phone', 'customer', 'service', 'center', 'charge', 'installation', 'fee', 'order', 'clear', 'waive', 'tell', 'send', 'sign', 'copy', 'order', 'proof', 'order', 'copy', 'pen', 'ask', 'speak', 'supervisor', 'friendly', 'sure', 'hold', 'minute', 'simply', 'hang', 'tell', 'previous', 'minute', 'hand', 'successfully', 'close', 'issue', 'resolve', 'customer', 'satisfaction', 'base', 'experience', 'conclude', 'comcast', 'hire', 'liar', 'cheat', 'send', 'copy', 'paper', 'work']

Unnecessary words removed!

processed\_m 112 is:

lie straight quote specific price package specific station phone hour discuss monthly fee evening home channel discuss  
order activate bill approximately quote conversation record expose help lock year contract price high agree

split\_processed\_m 112 is of length < 32 > :

```
['lie', 'straight', 'quote', 'specific', 'price', 'package', 'specific', 'station', 'phone', 'hour', 'discuss', 'monthly', 'fee', 'evening', 'home', 'channel', 'discuss', 'order', 'activate', 'bill', 'approximately', 'quote', 'conversation', 'record', 'expose', 'help', 'lock', 'year', 'contract', 'price', 'high', 'agree']
```

Removing unnecessary words ...

Updated list of length < 32 > : ['lie', 'straight', 'quote', 'specific', 'price', 'package', 'specific', 'station', 'p

hone', 'hour', 'discuss', 'monthly', 'fee', 'evening', 'home', 'channel', 'discuss', 'order', 'activate', 'bill', 'approximately', 'quote', 'conversation', 'record', 'expose', 'help', 'lock', 'year', 'contract', 'price', 'high', 'agree']

Unnecessary words removed!

processed\_m 113 is:

try guide fix comcast address right customer guarantee joke rude hold forever comcast need investigate

split\_processed\_m 113 is of length < 15 > :

['try', 'guide', 'fix', 'comcast', 'address', 'right', 'customer', 'guarantee', 'joke', 'rude', 'hold', 'forever', 'comcast', 'need', 'investigate']

Removing unnecessary words ...

Updated list of length < 15 > : ['try', 'guide', 'fix', 'comcast', 'address', 'right', 'customer', 'guarantee', 'joke', 'rude', 'hold', 'forever', 'comcast', 'need', 'investigate']

Unnecessary words removed!

processed\_m 114 is:

cable bad storm repeat call wait time hour speak tell day call go week tell day schedule day voila show bad customer service experience day service neighbor run cable ground chance switch company heartbeat ridiculous

split\_processed\_m 114 is of length < 35 > :

['cable', 'bad', 'storm', 'repeat', 'call', 'wait', 'time', 'hour', 'speak', 'tell', 'day', 'call', 'go', 'week', 'tell', 'day', 'schedule', 'day', 'voila', 'show', 'bad', 'customer', 'service', 'experience', 'day', 'service', 'neighbor', 'run', 'cable', 'ground', 'chance', 'switch', 'company', 'heartbeat', 'ridiculous']

Removing unnecessary words ...

Updated list of length < 31 > : ['cable', 'bad', 'storm', 'repeat', 'wait', 'time', 'hour', 'speak', 'tell', 'day', 'week', 'tell', 'day', 'schedule', 'day', 'voila', 'bad', 'customer', 'service', 'experience', 'day', 'service', 'neighbor', 'run', 'cable', 'ground', 'chance', 'switch', 'company', 'heartbeat', 'ridiculous']

Unnecessary words removed!

processed\_m 115 is:

multiple home visit replace nonworking dvr box month have problem

split\_processed\_m 115 is of length < 10 > :

['multiple', 'home', 'visit', 'replace', 'nonworking', 'dvr', 'box', 'month', 'have', 'problem']

Removing unnecessary words ...

Updated list of length < 9 > : ['multiple', 'home', 'visit', 'replace', 'nonworking', 'dvr', 'box', 'month', 'problem']

Unnecessary words removed!

processed\_m 116 is:

plain simple comcast awful move new apartment contact cable internet provider time verizon service hook new address unfortunately take place strike tell able hook service strike go cable internet week finally decide option leave satellite tv comcast reluctantly go forward decision verizon comcast beat mile price package quality comcast angle charge ton extra money thing verizon automatically include service comcast month internet connection fair cable quality downright awful channel continuously blank scramble minute time channel guide reset announce place program title needless month service comcast switch verizon strike

split\_processed\_m 116 is of length < 88 > :

['plain', 'simple', 'comcast', 'awful', 'move', 'new', 'apartment', 'contact', 'cable', 'internet', 'provider', 'time', 'verizon', 'service', 'hook', 'new', 'address', 'unfortunately', 'take', 'place', 'strike', 'tell', 'able', 'hook',



```
'service', 'strike', 'go', 'cable', 'internet', 'week', 'finally', 'decide', 'option', 'leave', 'satellite', 'tv', 'com
cast', 'reluctantly', 'go', 'forward', 'decision', 'verizon', 'comcast', 'beat', 'mile', 'price', 'package', 'quality',
'comcast', 'angle', 'charge', 'ton', 'extra', 'money', 'thing', 'verizon', 'automatically', 'include', 'service', 'comc
ast', 'month', 'internet', 'connection', 'fair', 'cable', 'quality', 'downright', 'awful', 'channel', 'continuously',
'blank', 'scramble', 'minute', 'time', 'channel', 'guide', 'reset', 'announce', 'place', 'program', 'title', 'needles
s', 'month', 'service', 'comcast', 'switch', 'verizon', 'strike']
```

Removing unnecessary words ...

```
Updated list of length < 84 > : ['plain', 'simple', 'comcast', 'awful', 'new', 'apartment', 'contact', 'cable', 'inter
net', 'provider', 'time', 'verizon', 'service', 'hook', 'new', 'address', 'unfortunately', 'place', 'strike', 'tell',
'able', 'hook', 'service', 'strike', 'cable', 'internet', 'week', 'finally', 'decide', 'option', 'leave', 'satellite',
'tv', 'comcast', 'reluctantly', 'forward', 'decision', 'verizon', 'comcast', 'beat', 'mile', 'price', 'package', 'quali
ty', 'comcast', 'angle', 'charge', 'ton', 'extra', 'money', 'thing', 'verizon', 'automatically', 'include', 'service',
'comcast', 'month', 'internet', 'connection', 'fair', 'cable', 'quality', 'downright', 'awful', 'channel', 'continuousl
y', 'blank', 'scramble', 'minute', 'time', 'channel', 'guide', 'reset', 'announce', 'place', 'program', 'title', 'needl
ess', 'month', 'service', 'comcast', 'switch', 'verizon', 'strike']
```

Unnecessary words removed!

processed\_m 117 is:

```
replace cable box time month service interruption certain aspect cable package function properly technician come apart
ment replace current box dvr storage refurbish model accord company consumer board pay price different amount memory se
rvice day refurbish cable box stop work tell charge service service station replace cable box
```

split\_processed\_m 117 is of length < 47 > :

```
['replace', 'cable', 'box', 'time', 'month', 'service', 'interruption', 'certain', 'aspect', 'cable', 'package', 'func
tion', 'properly', 'technician', 'come', 'apartment', 'replace', 'current', 'box', 'dvr', 'storage', 'refurbish', 'mode
l', 'accord', 'company', 'consumer', 'board', 'pay', 'price', 'different', 'amount', 'memory', 'service', 'day', 'refur
bish', 'cable', 'box', 'stop', 'work', 'tell', 'charge', 'service', 'service', 'station', 'replace', 'cable', 'box']
```

Removing unnecessary words ...

```
Updated list of length < 46 > : ['replace', 'cable', 'box', 'time', 'month', 'service', 'interruption', 'certain', 'as
pect', 'cable', 'package', 'function', 'properly', 'technician', 'come', 'apartment', 'replace', 'current', 'box', 'dv
```

```
r', 'storage', 'refurbish', 'model', 'accord', 'company', 'consumer', 'board', 'pay', 'price', 'different', 'memory',  
'service', 'day', 'refurbish', 'cable', 'box', 'stop', 'work', 'tell', 'charge', 'service', 'service', 'station', 'repl  
ace', 'cable', 'box']
```

Unnecessary words removed!

processed\_m 118 is:

cable today upset cable phone internet comcast customer year bad know storm day hope home tonight

split\_processed\_m 118 is of length < 16 > :

```
['cable', 'today', 'upset', 'cable', 'phone', 'internet', 'comcast', 'customer', 'year', 'bad', 'know', 'storm', 'da  
y', 'hope', 'home', 'tonight']
```

Removing unnecessary words ...

Updated list of length < 16 > : ['cable', 'today', 'upset', 'cable', 'phone', 'internet', 'comcast', 'customer', 'yea  
r', 'bad', 'know', 'storm', 'day', 'hope', 'home', 'tonight']

Unnecessary words removed!

processed\_m 119 is:

late summer inch tv stop wrpke call comcast want tv cable box repairman come use electrical testing equipment say box  
good tv good ask hook box set sure say room truck box small tell box tv upstairs use say time set day buy new inch lg s  
et best buy deliver week later massachusetts sale tax weekend create backlog order box call comcast send man bring new b  
ox work cheap program tell want suppose tell know day later day call comcast correct box stock new instal call comcast  
initial repair person error tell get second opinion

split\_processed\_m 119 is of length < 95 > :

```
['late', 'summer', 'inch', 'tv', 'stop', 'wrpke', 'call', 'comcast', 'want', 'tv', 'cable', 'box', 'repairman', 'com  
e', 'use', 'electrical', 'testing', 'equipment', 'say', 'box', 'good', 'tv', 'good', 'ask', 'hook', 'box', 'set', 'sur  
e', 'say', 'room', 'truck', 'box', 'small', 'tell', 'box', 'tv', 'upstairs', 'use', 'say', 'time', 'set', 'day', 'buy',
```

```
'new', 'inch', 'lg', 'set', 'best', 'buy', 'deliver', 'week', 'later', 'massachusetts', 'sale', 'tax', 'weekend', 'create', 'backlog', 'order', 'box', 'call', 'comcast', 'send', 'man', 'bring', 'new', 'box', 'work', 'cheap', 'program', 'tell', 'want', 'suppose', 'tell', 'know', 'day', 'later', 'day', 'call', 'comcast', 'correct', 'box', 'stock', 'new', 'install', 'call', 'comcast', 'initial', 'repair', 'person', 'error', 'tell', 'get', 'second', 'opinion']
```

Removing unnecessary words ...

```
Updated list of length < 87 > : ['late', 'summer', 'inch', 'tv', 'stop', 'wprke', 'comcast', 'want', 'tv', 'cable', 'box', 'repairman', 'come', 'use', 'electrical', 'testing', 'equipment', 'box', 'good', 'tv', 'good', 'ask', 'hook', 'box', 'set', 'sure', 'room', 'truck', 'box', 'small', 'tell', 'box', 'tv', 'upstairs', 'use', 'time', 'set', 'day', 'buy', 'y', 'new', 'inch', 'lg', 'set', 'best', 'buy', 'deliver', 'week', 'later', 'massachusetts', 'sale', 'tax', 'weekend', 'create', 'backlog', 'order', 'box', 'comcast', 'send', 'man', 'bring', 'new', 'box', 'work', 'cheap', 'program', 'tell', 'want', 'suppose', 'tell', 'know', 'day', 'later', 'day', 'comcast', 'correct', 'box', 'stock', 'new', 'install', 'comcast', 'initial', 'repair', 'person', 'error', 'tell', 'second', 'opinion']
```

Unnecessary words removed!

processed\_m 120 is:

```
upgrade guide notification price change eliminate timer ability save dvr show vhs tape huge thing view program guide line hide new ad space keep bleep audio video setting customize view change view setting view read guide info
```

split\_processed\_m 120 is of length < 37 > :

```
['upgrade', 'guide', 'notification', 'price', 'change', 'eliminate', 'timer', 'ability', 'save', 'dvr', 'show', 'vhs', 'tape', 'huge', 'thing', 'view', 'program', 'guide', 'line', 'hide', 'new', 'ad', 'space', 'keep', 'bleep', 'audio', 'video', 'setting', 'customize', 'view', 'change', 'view', 'setting', 'view', 'read', 'guide', 'info']
```

Removing unnecessary words ...

```
Updated list of length < 35 > : ['upgrade', 'guide', 'notification', 'price', 'change', 'eliminate', 'timer', 'ability', 'save', 'dvr', 'vhs', 'tape', 'huge', 'thing', 'view', 'program', 'guide', 'line', 'hide', 'new', 'ad', 'space', 'bleep', 'audio', 'video', 'setting', 'customize', 'view', 'change', 'view', 'setting', 'view', 'read', 'guide', 'info']
```

Unnecessary words removed!

processed\_m 121 is:

basic cable red sox baseball game local news basic cable xfinity change basic cable bunch spanish channel boston channel bunch pbs station long red sox baseball new england patriots football sport program available air boston area accord interpretation fcc rule suppose duplicate cable comcast violate fcc rule attempt fix fcc comcast fail comcast claim lawsuit fail lawyer pay stockholder lawyer pay pocket consequence action response threaten sue

split\_processed\_m 121 is of length < 67 > :

```
['basic', 'cable', 'red', 'sox', 'baseball', 'game', 'local', 'news', 'basic', 'cable', 'xfinity', 'change', 'basic', 'cable', 'bunch', 'spanish', 'channel', 'boston', 'channel', 'bunch', 'pbs', 'station', 'long', 'red', 'sox', 'baseball', 'new', 'england', 'patriots', 'football', 'sport', 'program', 'available', 'air', 'boston', 'area', 'accord', 'interpretation', 'fcc', 'rule', 'suppose', 'duplicate', 'cable', 'comcast', 'violate', 'fcc', 'rule', 'attempt', 'fix', 'fcc', 'comcast', 'fail', 'comcast', 'claim', 'lawsuit', 'fail', 'lawyer', 'pay', 'stockholder', 'lawyer', 'pay', 'pocket', 'consequence', 'action', 'response', 'threaten', 'sue']
```

Removing unnecessary words ...

Updated list of length < 67 > : ['basic', 'cable', 'red', 'sox', 'baseball', 'game', 'local', 'news', 'basic', 'cable', 'xfinity', 'change', 'basic', 'cable', 'bunch', 'spanish', 'channel', 'boston', 'channel', 'bunch', 'pbs', 'station', 'long', 'red', 'sox', 'baseball', 'new', 'england', 'patriots', 'football', 'sport', 'program', 'available', 'air', 'boston', 'area', 'accord', 'interpretation', 'fcc', 'rule', 'suppose', 'duplicate', 'cable', 'comcast', 'violate', 'fcc', 'rule', 'attempt', 'fix', 'fcc', 'comcast', 'fail', 'comcast', 'claim', 'lawsuit', 'fail', 'lawyer', 'pay', 'stockholder', 'lawyer', 'pay', 'pocket', 'consequence', 'action', 'response', 'threaten', 'sue']

Unnecessary words removed!

processed\_m 122 is:

loyal comcast customer abuse rude representative operator bzb pay bill marshfield office upsetting experience pay bill error balance recently downsize service credit reflect balance male service representative operator bzb approach counter barely moment inquire error rudely reply go spend hour go time spend minute later complain stand stun insult coworker customer present refuse service representative line evidently hold grudge consumer waste time prior month yes spend time reviewing option figure service change turn cable box free adapter save dollar home cc technical department activate operator bzb fail enter needed code cause loss cable day mad waste time mistreatment

split\_processed\_m 122 is of length < 98 > :

```
['loyal', 'comcast', 'customer', 'abuse', 'rude', 'representative', 'operator', 'bzb', 'pay', 'bill', 'marshfield', 'office', 'upsetting', 'experience', 'pay', 'bill', 'error', 'balance', 'recently', 'downsize', 'service', 'credit', 'reflect', 'balance', 'male', 'service', 'representative', 'operator', 'bzb', 'approach', 'counter', 'barely', 'moment', 'inquire', 'error', 'rudely', 'reply', 'go', 'spend', 'hour', 'go', 'time', 'spend', 'minute', 'later', 'complain', 'stand', 'stun', 'insult', 'coworker', 'customer', 'present', 'refuse', 'service', 'representative', 'line', 'evidently', 'hold', 'grudge', 'consumer', 'waste', 'time', 'prior', 'month', 'yes', 'spend', 'time', 'reviewing', 'option', 'figure', 'service', 'change', 'turn', 'cable', 'box', 'free', 'adapter', 'save', 'dollar', 'home', 'cc', 'technical', 'department', 'activate', 'operator', 'bzb', 'fail', 'enter', 'needed', 'code', 'cause', 'loss', 'cable', 'day', 'mad', 'waste', 'time', 'mistreatment']
```

Removing unnecessary words ...

```
Updated list of length < 96 > : ['loyal', 'comcast', 'customer', 'abuse', 'rude', 'representative', 'operator', 'bzb', 'pay', 'bill', 'marshfield', 'office', 'upsetting', 'experience', 'pay', 'bill', 'error', 'balance', 'recently', 'downsize', 'service', 'credit', 'reflect', 'balance', 'male', 'service', 'representative', 'operator', 'bzb', 'approach', 'counter', 'barely', 'moment', 'inquire', 'error', 'rudely', 'reply', 'spend', 'hour', 'time', 'spend', 'minute', 'later', 'complain', 'stand', 'stun', 'insult', 'coworker', 'customer', 'present', 'refuse', 'service', 'representative', 'line', 'evidently', 'hold', 'grudge', 'consumer', 'waste', 'time', 'prior', 'month', 'yes', 'spend', 'time', 'reviewing', 'option', 'figure', 'service', 'change', 'turn', 'cable', 'box', 'free', 'adapter', 'save', 'dollar', 'home', 'cc', 'technical', 'department', 'activate', 'operator', 'bzb', 'fail', 'enter', 'needed', 'code', 'cause', 'loss', 'cable', 'day', 'mad', 'waste', 'time', 'mistreatment']
```

Unnecessary words removed!

processed\_m 123 is:

cancel account bring equipment tell order router need return state order receive say evidence receive ups signature router activate ironically purchase router have issue month early offer free router speak yolanda account manager comcast say worry ask receipt router purchase agree reimburse month plus extra router receive check week wait check call tell need file claim ups lose router send check comcast say need call ups tell comcast responsibility contact ups feel comcast get money router order go give cost equipment evidence sign activate want refund

split\_processed\_m 123 is of length < 86 > :

```
['cancel', 'account', 'bring', 'equipment', 'tell', 'order', 'router', 'need', 'return', 'state', 'order', 'receive', 'say', 'evidence', 'receive', 'ups', 'signature', 'router', 'activate', 'ironically', 'purchase', 'router', 'have', 'issue', 'month', 'early', 'offer', 'free', 'router', 'speak', 'yolanda', 'account', 'manager', 'comcast', 'say', 'worry',
```

```
'ask', 'receipt', 'router', 'purchase', 'agree', 'reimburse', 'month', 'plus', 'extra', 'router', 'receive', 'check',
'week', 'wait', 'check', 'call', 'tell', 'need', 'file', 'claim', 'ups', 'lose', 'router', 'send', 'check', 'comcast',
'say', 'need', 'call', 'ups', 'tell', 'comcast', 'responsibility', 'contact', 'ups', 'feel', 'comcast', 'get', 'money',
'router', 'order', 'go', 'give', 'cost', 'equipment', 'evidence', 'sign', 'activate', 'want', 'refund']
```

Removing unnecessary words ...

```
Updated list of length < 77 > : ['cancel', 'account', 'bring', 'equipment', 'tell', 'order', 'router', 'need', 'return',
'state', 'order', 'receive', 'evidence', 'receive', 'ups', 'signature', 'router', 'activate', 'ironically', 'purchase',
'router', 'issue', 'month', 'early', 'offer', 'free', 'router', 'speak', 'yolanda', 'account', 'manager', 'comcast',
'worry', 'ask', 'receipt', 'router', 'purchase', 'agree', 'reimburse', 'month', 'plus', 'extra', 'router', 'receive',
'check', 'week', 'wait', 'check', 'tell', 'need', 'file', 'claim', 'ups', 'lose', 'router', 'send', 'check', 'comcast',
'need', 'ups', 'tell', 'comcast', 'responsibility', 'contact', 'ups', 'feel', 'comcast', 'money', 'router', 'order',
'cost', 'equipment', 'evidence', 'sign', 'activate', 'want', 'refund']
```

Unnecessary words removed!

processed\_m 124 is:

month ago call comcast customer service change bundle package search internet month customer agent offer free promotion month time cinemax sport package free latino package free month today call comcast customer agent remove free promotion showtime cinemax sport package customer agent say package expire month price go high say pick new package day free promotion offer ask want speak supervisor deny argue thing tell thing supervisor go tell ask time want speak supervisor high let speak anybody ridiculous company offer package customer place system customer end pay try advantage customer profit base economy time life

split\_processed\_m 124 is of length < 95 > :

```
['month', 'ago', 'call', 'comcast', 'customer', 'service', 'change', 'bundle', 'package', 'search', 'internet', 'month',
'customer', 'agent', 'offer', 'free', 'promotion', 'month', 'time', 'cinemax', 'sport', 'package', 'free', 'latin',
'o', 'package', 'free', 'month', 'today', 'call', 'comcast', 'customer', 'agent', 'remove', 'free', 'promotion', 'showtime',
'cinemax', 'sport', 'package', 'customer', 'agent', 'say', 'package', 'expire', 'month', 'price', 'go', 'high', 'say',
'pick', 'new', 'package', 'day', 'free', 'promotion', 'offer', 'ask', 'want', 'speak', 'supervisor', 'deny', 'argue',
'thing', 'tell', 'thing', 'supervisor', 'go', 'tell', 'ask', 'time', 'want', 'speak', 'supervisor', 'high', 'let',
'speak', 'anybody', 'ridiculous', 'company', 'offer', 'package', 'customer', 'place', 'system', 'customer', 'end', 'pay',
'try', 'advantage', 'customer', 'profit', 'base', 'economy', 'time', 'life']
```

Removing unnecessary words ...

Updated list of length < 89 > : ['month', 'ago', 'comcast', 'customer', 'service', 'change', 'bundle', 'package', 'search', 'internet', 'month', 'customer', 'agent', 'offer', 'free', 'promotion', 'month', 'time', 'cinemax', 'sport', 'package', 'free', 'latino', 'package', 'free', 'month', 'today', 'comcast', 'customer', 'agent', 'remove', 'free', 'promotion', 'showtime', 'cinemax', 'sport', 'package', 'customer', 'agent', 'package', 'expire', 'month', 'price', 'high', 'pick', 'new', 'package', 'day', 'free', 'promotion', 'offer', 'ask', 'want', 'speak', 'supervisor', 'deny', 'argue', 'thing', 'tell', 'thing', 'supervisor', 'tell', 'ask', 'time', 'want', 'speak', 'supervisor', 'high', 'let', 'speak', 'anybody', 'ridiculous', 'company', 'offer', 'package', 'customer', 'place', 'system', 'customer', 'end', 'pay', 'try', 'advantage', 'customer', 'profit', 'base', 'economy', 'time', 'life']

Unnecessary words removed!

processed\_m 125 is:

husband move new build house move tech comcast come set cable internet phone main road section lot house comcast line tap hook technician tell call comcast tell problem fix week worry take long service month husband call week transfer numerous time repeat situation help disclose party set line finally reach know talk ask direct line say continue hundred transfer repeat situation think document thing happen demand go tv week number screen answer unplug cable box plug wait half hour think fix give hbo month sorry automatically charge premium channel month instead notify night husband go internet fine go internet phone service work say strong connection access available husband call comcast talk kid novia scotia idea go ask service lose cable response think phone internet connect hate comcast laugh customer service commercial option area

split\_processed\_m 125 is of length < 133 > :

['husband', 'move', 'new', 'build', 'house', 'move', 'tech', 'comcast', 'come', 'set', 'cable', 'internet', 'phone', 'main', 'road', 'section', 'lot', 'house', 'comcast', 'line', 'tap', 'hook', 'technician', 'tell', 'call', 'comcast', 'tell', 'problem', 'fix', 'week', 'worry', 'take', 'long', 'service', 'month', 'husband', 'call', 'week', 'transfer', 'numerous', 'time', 'repeat', 'situation', 'help', 'disclose', 'party', 'set', 'line', 'finally', 'reach', 'know', 'talk', 'ask', 'direct', 'line', 'say', 'continue', 'hundred', 'transfer', 'repeat', 'situation', 'think', 'document', 'thing', 'happen', 'demand', 'go', 'tv', 'week', 'number', 'screen', 'answer', 'unplug', 'cable', 'box', 'plug', 'wait', 'half', 'hour', 'think', 'fix', 'give', 'hbo', 'month', 'sorry', 'automatically', 'charge', 'premium', 'channel', 'month', 'instead', 'notify', 'night', 'husband', 'go', 'internet', 'fine', 'go', 'internet', 'phone', 'service', 'work', 'say', 'strong', 'connection', 'access', 'available', 'husband', 'call', 'comcast', 'talk', 'kid', 'novia', 'scotia', 'idea', 'go', 'ask', 'service', 'lose', 'cable', 'response', 'think', 'phone', 'internet', 'connect', 'hate', 'comcast', 'laugh', 'customer', 'service', 'commercial', 'option', 'area']

Removing unnecessary words ...

Updated list of length < 119 > : ['husband', 'new', 'build', 'house', 'tech', 'comcast', 'come', 'set', 'cable', 'internet', 'phone', 'main', 'road', 'section', 'lot', 'house', 'comcast', 'line', 'tap', 'hook', 'technician', 'tell', 'comcast', 'tell', 'problem', 'fix', 'week', 'worry', 'long', 'service', 'month', 'husband', 'week', 'transfer', 'numerous', 'time', 'repeat', 'situation', 'help', 'disclose', 'party', 'set', 'line', 'finally', 'reach', 'know', 'talk', 'ask', 'direct', 'line', 'continue', 'transfer', 'repeat', 'situation', 'think', 'document', 'thing', 'happen', 'demand', 'tv', 'week', 'number', 'screen', 'answer', 'unplug', 'cable', 'box', 'plug', 'wait', 'half', 'hour', 'think', 'fix', 'hbo', 'month', 'sorry', 'automatically', 'charge', 'premium', 'channel', 'month', 'instead', 'notify', 'night', 'husband', 'internet', 'fine', 'internet', 'phone', 'service', 'work', 'strong', 'connection', 'access', 'available', 'husband', 'comcast', 'talk', 'kid', 'novia', 'scotia', 'idea', 'ask', 'service', 'lose', 'cable', 'response', 'think', 'phone', 'internet', 'connect', 'hate', 'comcast', 'laugh', 'customer', 'service', 'commercial', 'option', 'area']

Unnecessary words removed!

processed\_m 126 is:

sense trouble fact instal technician hurry job hardly time explain day trouble internet access bar site comcast message come oop activation incomplete call time compare contributor supervisor wonder assure problem fix hour probably surprise day later fix frustration begin guess wonder financial impact company come fix instead get job right begin think cost efficient quality work place cost bit hire well qualified technician stre work week month year sure cost incur pass maybe purpose fraudulent

split\_processed\_m 126 is of length < 75 > :

['sense', 'trouble', 'fact', 'instal', 'technician', 'hurry', 'job', 'hardly', 'time', 'explain', 'day', 'trouble', 'internet', 'access', 'bar', 'site', 'comcast', 'message', 'come', 'oop', 'activation', 'incomplete', 'call', 'time', 'compare', 'contributor', 'supervisor', 'wonder', 'assure', 'problem', 'fix', 'hour', 'probably', 'surprise', 'day', 'later', 'fix', 'frustration', 'begin', 'guess', 'wonder', 'financial', 'impact', 'company', 'come', 'fix', 'instead', 'get', 'job', 'right', 'begin', 'think', 'cost', 'efficient', 'quality', 'work', 'place', 'cost', 'bit', 'hire', 'well', 'qualified', 'technician', 'stre', 'work', 'week', 'month', 'year', 'sure', 'cost', 'incur', 'pass', 'maybe', 'purpose', 'fraudulent']

Removing unnecessary words ...

Updated list of length < 72 > : ['sense', 'trouble', 'fact', 'instal', 'technician', 'hurry', 'job', 'hardly', 'time', 'explain', 'day', 'trouble', 'internet', 'access', 'bar', 'site', 'comcast', 'message', 'come', 'oop', 'activation', 'incomplete', 'time', 'compare', 'contributor', 'supervisor', 'wonder', 'assure', 'problem', 'fix', 'hour', 'probably', 'surprise', 'day', 'later', 'fix', 'frustration', 'begin', 'guess', 'wonder', 'financial', 'impact', 'company', 'come', 'fix', 'instead', 'job', 'right', 'begin', 'think', 'cost', 'efficient', 'quality', 'work', 'place', 'cost', 'bit', 'hire']



re', 'qualified', 'technician', 'stre', 'work', 'week', 'month', 'year', 'sure', 'cost', 'incur', 'pass', 'maybe', 'purpose', 'fraudulent']

Unnecessary words removed!

processed\_m 127 is:

move address current address receive bill pay realize comcast bill forward new address actually old address call today ask return want credit new address say receive phone day discuss say acceptable ask speak supervisor hold close minute akidra transfer ebony ebony authority change ask speak supervisor say straw comcast send technician house subcontractor barely speak english try charge extra phone jack cable short unable box leave dirty foot print house leave cover half screw wall leave hand print silk chair switch verizon

split\_processed\_m 127 is of length < 82 > :

['move', 'address', 'current', 'address', 'receive', 'bill', 'pay', 'realize', 'comcast', 'bill', 'forward', 'new', 'address', 'actually', 'old', 'address', 'call', 'today', 'ask', 'return', 'want', 'credit', 'new', 'address', 'say', 'receive', 'phone', 'day', 'discuss', 'say', 'acceptable', 'ask', 'speak', 'supervisor', 'hold', 'close', 'minute', 'akidra', 'transfer', 'ebony', 'ebony', 'authority', 'change', 'ask', 'speak', 'supervisor', 'say', 'straw', 'comcast', 'send', 'technician', 'house', 'subcontractor', 'barely', 'speak', 'english', 'try', 'charge', 'extra', 'phone', 'jack', 'cable', 'short', 'unable', 'box', 'leave', 'dirty', 'foot', 'print', 'house', 'leave', 'cover', 'half', 'screw', 'wall', 'leave', 'hand', 'print', 'silk', 'chair', 'switch', 'verizon']

Removing unnecessary words ...

Updated list of length < 77 > : ['address', 'current', 'address', 'receive', 'bill', 'pay', 'realize', 'comcast', 'bill', 'forward', 'new', 'address', 'actually', 'old', 'address', 'today', 'ask', 'return', 'want', 'credit', 'new', 'address', 'receive', 'phone', 'day', 'discuss', 'acceptable', 'ask', 'speak', 'supervisor', 'hold', 'close', 'minute', 'akidra', 'transfer', 'ebony', 'ebony', 'authority', 'change', 'ask', 'speak', 'supervisor', 'straw', 'comcast', 'send', 'technician', 'house', 'subcontractor', 'barely', 'speak', 'english', 'try', 'charge', 'extra', 'phone', 'jack', 'cable', 'short', 'unable', 'box', 'leave', 'dirty', 'foot', 'print', 'house', 'leave', 'cover', 'half', 'screw', 'wall', 'leave', 'hand', 'print', 'silk', 'chair', 'switch', 'verizon']

Unnecessary words removed!

processed\_m 128 is:

storm tv start switch cable box remain live condo bldg neighbor problem piece equipment home problem reset clock big clock surge protector call comcast suggest unplug cable signal source power wait hook send refresh signal work tv retry time luck bring cable box office exchange luck send tech want blame lightning tv believe tv break room lightning answer finally call get supervisor agree right thing file damage claim promise settle soon protocol send tech supervisor ok call hour window give call look couple week pass promise home call come bit pm try blame thing explain mention agree process claim tell expect check hour claim file bad tell claim lady fault know call insurance co settle icing cake review bill originally bundle include dvr pay second turn faulty box fry tv downgrade charge dvr call woman phone say geez louise bet face feel bad fio available area know automate back happy customer service important laugh cry cave offer tech setup broken tv examine want

split\_processed\_m 128 is of length < 163 > :

```
['storm', 'tv', 'start', 'switch', 'cable', 'box', 'remain', 'live', 'condo', 'bldg', 'neighbor', 'problem', 'piece', 'equipment', 'home', 'problem', 'reset', 'clock', 'big', 'clock', 'surge', 'protector', 'call', 'comcast', 'suggest', 'unplug', 'cable', 'signal', 'source', 'power', 'wait', 'hook', 'send', 'refresh', 'signal', 'work', 'tv', 'retry', 'time', 'luck', 'bring', 'cable', 'box', 'office', 'exchange', 'luck', 'send', 'tech', 'want', 'blame', 'lightning', 'tv', 'believe', 'tv', 'break', 'room', 'lightning', 'answer', 'finally', 'call', 'get', 'supervisor', 'agree', 'right', 'thing', 'file', 'damage', 'claim', 'promise', 'settle', 'soon', 'protocol', 'send', 'tech', 'supervisor', 'ok', 'call', 'hour', 'window', 'give', 'call', 'look', 'couple', 'week', 'pass', 'promise', 'home', 'call', 'come', 'bit', 'pm', 'try', 'y', 'blame', 'thing', 'explain', 'mention', 'agree', 'process', 'claim', 'tell', 'expect', 'check', 'hour', 'claim', 'file', 'bad', 'tell', 'claim', 'lady', 'fault', 'know', 'call', 'insurance', 'co', 'settle', 'icing', 'cake', 'review', 'bill', 'originally', 'bundle', 'include', 'dvr', 'pay', 'second', 'turn', 'faulty', 'box', 'fry', 'tv', 'downgrade', 'charge', 'dvr', 'call', 'woman', 'phone', 'say', 'geez', 'louis', 'bet', 'face', 'feel', 'bad', 'fio', 'available', 'area', 'know', 'automate', 'back', 'happy', 'customer', 'service', 'important', 'laugh', 'cry', 'cave', 'offer', 'tech', 'sup', 'broken', 'tv', 'examine', 'want']
```

Removing unnecessary words ...

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Updated list of length < 152 > : ['storm', 'tv', 'start', 'switch', 'cable', 'box', 'remain', 'live', 'condo', 'bldg', 'neighbor', 'problem', 'piece', 'equipment', 'home', 'problem', 'reset', 'clock', 'big', 'clock', 'surge', 'protector', 'comcast', 'suggest', 'unplug', 'cable', 'signal', 'source', 'power', 'wait', 'hook', 'send', 'refresh', 'signal', 'work', 'tv', 'retry', 'time', 'luck', 'bring', 'cable', 'box', 'office', 'exchange', 'luck', 'send', 'tech', 'want', 'blame', 'lightning', 'tv', 'believe', 'tv', 'break', 'room', 'lightning', 'answer', 'finally', 'supervisor', 'agree', 'right', 'thing', 'file', 'damage', 'claim', 'promise', 'settle', 'soon', 'protocol', 'send', 'tech', 'supervisor', 'ok', 'hour', 'window', 'look', 'couple', 'week', 'pass', 'promise', 'home', 'come', 'bit', 'pm', 'try', 'blame', 'thing', 'explain', 'mention', 'agree', 'process', 'claim', 'tell', 'expect', 'check', 'hour', 'claim', 'file', 'bad', 'tell', 'claim', 'm', 'lady', 'fault', 'know', 'insurance', 'co', 'settle', 'icing', 'cake', 'review', 'bill', 'originally', 'bundle', 'include', 'dvr', 'pay', 'second', 'turn', 'faulty', 'box', 'fry', 'tv', 'downgrade', 'charge', 'dvr', 'woman', 'phone', 'geez', 'louis', 'bet', 'face', 'feel', 'bad', 'fio', 'available', 'area', 'know', 'automate', 'happy', 'customer', 'service', 'important', 'laugh', 'cry', 'cave', 'offer', 'tech', 'sup', 'broken', 'tv', 'examine', 'want']
```

Unnecessary words removed!

processed\_m 129 is:

lousy service clicker work right tell program right one program clicker big headache drop comcast end story

split\_processed\_m 129 is of length < 17 > :

['lousy', 'service', 'clicker', 'work', 'right', 'tell', 'program', 'right', 'one', 'program', 'clicker', 'big', 'headache', 'drop', 'comcast', 'end', 'story']

Removing unnecessary words ...

Updated list of length < 16 > : ['lousy', 'service', 'clicker', 'work', 'right', 'tell', 'program', 'right', 'program', 'clicker', 'big', 'headache', 'drop', 'comcast', 'end', 'story']

Unnecessary words removed!

processed\_m 130 is:

service technician cut multiple building cable remove ft piece cable installation service neighbor unit disrupt service unit unit townhouse building technician repair cable refuse replace want cable repair building wiring long time customer care get run comcast support people wait day technician half work perform unit refuse repair cable unit satisfactory resolution problem initiate police report comcast willful destruction property states attorney office speak lawyer bb local radio newspaper office raise level attention concern field technician behavior lack customer service satisfactory on service technician put customer middle contest verizon appear smart thing facility wiring destroy way difficult repair access multiple unit

split\_processed\_m 130 is of length < 100 > :

['service', 'technician', 'cut', 'multiple', 'building', 'cable', 'remove', 'ft', 'piece', 'cable', 'installation', 'service', 'neighbor', 'unit', 'disrupt', 'service', 'unit', 'unit', 'townhouse', 'building', 'technician', 'repair', 'cable', 'refuse', 'replace', 'want', 'cable', 'repair', 'building', 'wiring', 'long', 'time', 'customer', 'care', 'get', 'run', 'comcast', 'support', 'people', 'wait', 'day', 'technician', 'half', 'work', 'perform', 'unit', 'refuse', 'repair', 'cable', 'unit', 'satisfactory', 'resolution', 'problem', 'initiate', 'police', 'report', 'comcast', 'willful', 'destruction', 'property', 'states', 'attorney', 'office', 'speak', 'lawyer', 'bb', 'local', 'radio', 'newspaper', 'office', 'raise', 'level', 'attention', 'concern', 'field', 'technician', 'behavior', 'lack', 'customer', 'service', 'satisfactory', 'on', 'service', 'technician', 'put', 'customer', 'middle', 'contest', 'verizon', 'appear', 'smart', 'thing', 'facility', 'wiring', 'destroy', 'way', 'difficult', 'repair', 'access', 'multiple', 'unit']

struction', 'property', 'states', 'attorney', 'office', 'speak', 'lawyer', 'bbb', 'local', 'radio', 'newspaper', 'office', 'raise', 'level', 'attention', 'concern', 'field', 'technician', 'behavior', 'lack', 'customer', 'service', 'satisfaction', 'action', 'service', 'technician', 'put', 'customer', 'middle', 'contest', 'verizon', 'appear', 'smart', 'thing', 'facility', 'wiring', 'destroy', 'way', 'difficult', 'repair', 'access', 'multiple', 'unit']

Removing unnecessary words ...

Updated list of length < 98 > : ['service', 'technician', 'cut', 'multiple', 'building', 'cable', 'remove', 'ft', 'piece', 'cable', 'installation', 'service', 'neighbor', 'unit', 'disrupt', 'service', 'unit', 'unit', 'townhouse', 'building', 'technician', 'repair', 'cable', 'refuse', 'replace', 'want', 'cable', 'repair', 'building', 'wiring', 'long', 'time', 'customer', 'care', 'run', 'comcast', 'support', 'people', 'wait', 'day', 'technician', 'half', 'work', 'perform', 'unit', 'refuse', 'repair', 'cable', 'unit', 'satisfactory', 'resolution', 'problem', 'initiate', 'police', 'report', 'comcast', 'willful', 'destruction', 'property', 'states', 'attorney', 'office', 'speak', 'lawyer', 'bbb', 'local', 'radio', 'newspaper', 'office', 'raise', 'level', 'attention', 'concern', 'field', 'technician', 'behavior', 'lack', 'customer', 'service', 'satisfaction', 'service', 'technician', 'customer', 'middle', 'contest', 'verizon', 'appear', 'smart', 'thing', 'facility', 'wiring', 'destroy', 'way', 'difficult', 'repair', 'access', 'multiple', 'unit']

Unnecessary words removed!

processed\_m 131 is:

copy email send comcast email form agreement customer representative wrong recording playback set appointment today d replace cable box tech bring cable box beat old model suggest well go walk station north scituate get offer come tomorrow match cable box well replace call comcast tech leave explain satisfied way handle tell service list cancel ask walk facility north scituate sure unit available say number comcast facility kind treatment customer expect pay month service subscribe comcast

split\_processed\_m 131 is of length < 75 > :

['copy', 'email', 'send', 'comcast', 'email', 'form', 'agreement', 'customer', 'representative', 'wrong', 'recording', 'playback', 'set', 'appointment', 'today', 'd', 'replace', 'cable', 'box', 'tech', 'bring', 'cable', 'box', 'beat', 'old', 'model', 'suggest', 'well', 'go', 'walk', 'station', 'north', 'scituate', 'get', 'offer', 'come', 'tomorrow', 'match', 'cable', 'box', 'well', 'replace', 'call', 'comcast', 'tech', 'leave', 'explain', 'satisfied', 'way', 'handle', 'tell', 'service', 'list', 'cancel', 'ask', 'walk', 'facility', 'north', 'scituate', 'sure', 'unit', 'available', 'say', 'number', 'comcast', 'facility', 'kind', 'treatment', 'customer', 'expect', 'pay', 'month', 'service', 'subscribe', 'comcast']

Removing unnecessary words ...

Updated list of length < 69 > : ['copy', 'email', 'send', 'comcast', 'email', 'form', 'agreement', 'customer', 'representative', 'wrong', 'recording', 'playback', 'set', 'appointment', 'today', 'd', 'replace', 'cable', 'box', 'tech', 'bring', 'cable', 'box', 'beat', 'old', 'model', 'suggest', 'walk', 'station', 'north', 'scituate', 'offer', 'come', 'tomorrow', 'match', 'cable', 'box', 'replace', 'comcast', 'tech', 'leave', 'explain', 'satisfied', 'way', 'handle', 'tell', 'service', 'list', 'cancel', 'ask', 'walk', 'facility', 'north', 'scituate', 'sure', 'unit', 'available', 'number', 'comcast', 'facility', 'kind', 'treatment', 'customer', 'expect', 'pay', 'month', 'service', 'subscribe', 'comcast']

Unnecessary words removed!

processed\_m 132 is:

decide reduce tv service basic cable charge plus bill say agreement year thought safe pay month internet tv tell pay thirty day service shut call billing number charge speak rep add bill charge late fee pro rate plus bill fee reduce service comcast nightmare people fix income try meet bill like rent utility food area try struggle fix income pay monthly bill watch decent program tv complaining contact fcc try find make fee tell company policy utility company thank let vent

split\_processed\_m 132 is of length < 81 > :

['decide', 'reduce', 'tv', 'service', 'basic', 'cable', 'charge', 'plus', 'bill', 'say', 'agreement', 'year', 'thought', 'safe', 'pay', 'month', 'internet', 'tv', 'tell', 'pay', 'thirty', 'day', 'service', 'shut', 'call', 'billing', 'number', 'charge', 'speak', 'rep', 'add', 'bill', 'charge', 'late', 'fee', 'pro', 'rate', 'plus', 'bill', 'fee', 'reduce', 'service', 'comcast', 'nightmare', 'people', 'fix', 'income', 'try', 'meet', 'bill', 'like', 'rent', 'utility', 'food', 'area', 'try', 'struggle', 'fix', 'income', 'pay', 'monthly', 'bill', 'watch', 'decent', 'program', 'tv', 'complaining', 'contact', 'fcc', 'try', 'find', 'make', 'fee', 'tell', 'company', 'policy', 'utility', 'company', 'thank', 'let', 'vent']

Removing unnecessary words ...

Updated list of length < 78 > : ['decide', 'reduce', 'tv', 'service', 'basic', 'cable', 'charge', 'plus', 'bill', 'agreement', 'year', 'thought', 'safe', 'pay', 'month', 'internet', 'tv', 'tell', 'pay', 'thirty', 'day', 'service', 'shut', 'billing', 'number', 'charge', 'speak', 'rep', 'add', 'bill', 'charge', 'late', 'fee', 'pro', 'rate', 'plus', 'bill', 'fee', 'reduce', 'service', 'comcast', 'nightmare', 'people', 'fix', 'income', 'try', 'meet', 'bill', 'like', 'rent', 'utility', 'food', 'area', 'try', 'struggle', 'fix', 'income', 'pay', 'monthly', 'bill', 'watch', 'decent', 'program', 'tv', 'complaining', 'contact', 'fcc', 'try', 'find', 'fee', 'tell', 'company', 'policy', 'utility', 'company', 'thank', 'let', 'vent']

Unnecessary words removed!

processed\_m 133 is:

write complain general problem half channel available pay programming pay basic cable rate dollar comcast profit remove real programming shall advertising producer usually convict fraud larceny kevin allow charge sell programming return pay air reduction rate equal pay programming programming stop bad economic crisis year comcast profit nearly billion dollar late begrudge company make profit suppose similar public utility company let wire city old mayor hometown warn type rampant abuse public trust cable come city

split\_processed\_m 133 is of length < 75 > :

['write', 'complain', 'general', 'problem', 'half', 'channel', 'available', 'pay', 'programming', 'pay', 'basic', 'cable', 'rate', 'dollar', 'comcast', 'profit', 'remove', 'real', 'programming', 'shall', 'advertising', 'producer', 'usually', 'convict', 'fraud', 'larceny', 'kevin', 'allow', 'charge', 'sell', 'programming', 'return', 'pay', 'air', 'reduction', 'rate', 'equal', 'pay', 'programming', 'programming', 'stop', 'bad', 'economic', 'crisis', 'year', 'comcast', 'profit', 'nearly', 'billion', 'dollar', 'late', 'begrudge', 'company', 'make', 'profit', 'suppose', 'similar', 'public', 'utility', 'company', 'let', 'wire', 'city', 'old', 'mayor', 'hometown', 'warn', 'type', 'rampant', 'abuse', 'public', 'trust', 'cable', 'come', 'city']

Removing unnecessary words ...

Updated list of length < 74 > : ['write', 'complain', 'general', 'problem', 'half', 'channel', 'available', 'pay', 'programming', 'pay', 'basic', 'cable', 'rate', 'dollar', 'comcast', 'profit', 'remove', 'real', 'programming', 'shall', 'advertising', 'producer', 'usually', 'convict', 'fraud', 'larceny', 'kevin', 'allow', 'charge', 'sell', 'programming', 'return', 'pay', 'air', 'reduction', 'rate', 'equal', 'pay', 'programming', 'programming', 'stop', 'bad', 'economic', 'crisis', 'year', 'comcast', 'profit', 'nearly', 'billion', 'dollar', 'late', 'begrudge', 'company', 'profit', 'suppose', 'similar', 'public', 'utility', 'company', 'let', 'wire', 'city', 'old', 'mayor', 'hometown', 'warn', 'type', 'rampant', 'abuse', 'public', 'trust', 'cable', 'come', 'city']

Unnecessary words removed!

processed\_m 134 is:

harass comcast threaten internet disconnect supposedly internet usage shoot obscene number gig claim family use space hard drive contain tell sign comcast limit download record download illegal download pay download virus protection soft

ware update ask send writing completely deny say send stuff send customer download limit suppose know tell pay allow br  
each contract comcast fault use computer business purpose majority time disabled child computer dependent severe handwr  
itten skill need computer comcast phone operator wish comply request right

split\_processed\_m 134 is of length < 77 > :

```
['harass', 'comcast', 'threaten', 'internet', 'disconnect', 'supposedly', 'internet', 'usage', 'shoot', 'obscene', 'nu  
mber', 'gig', 'claim', 'family', 'use', 'space', 'hard', 'drive', 'contain', 'tell', 'sign', 'comcast', 'limit', 'downl  
oad', 'record', 'download', 'illegal', 'download', 'pay', 'download', 'virus', 'protection', 'software', 'update', 'as  
k', 'send', 'writing', 'completely', 'deny', 'say', 'send', 'stuff', 'send', 'customer', 'download', 'limit', 'suppos  
e', 'know', 'tell', 'pay', 'allow', 'breach', 'contract', 'comcast', 'fault', 'use', 'computer', 'business', 'purpose',  
'majority', 'time', 'disabled', 'child', 'computer', 'dependent', 'severe', 'handwritten', 'skill', 'need', 'computer',  
'comcast', 'phone', 'operator', 'wish', 'comply', 'request', 'right']
```

Removing unnecessary words ...

```
Updated list of length < 76 > : ['harass', 'comcast', 'threaten', 'internet', 'disconnect', 'supposedly', 'internet',  
'usage', 'shoot', 'obscene', 'number', 'gig', 'claim', 'family', 'use', 'space', 'hard', 'drive', 'contain', 'tell', 's  
ign', 'comcast', 'limit', 'download', 'record', 'download', 'illegal', 'download', 'pay', 'download', 'virus', 'protect  
ion', 'software', 'update', 'ask', 'send', 'writing', 'completely', 'deny', 'send', 'stuff', 'send', 'customer', 'downl  
oad', 'limit', 'suppose', 'know', 'tell', 'pay', 'allow', 'breach', 'contract', 'comcast', 'fault', 'use', 'computer',  
'business', 'purpose', 'majority', 'time', 'disabled', 'child', 'computer', 'dependent', 'severe', 'handwritten', 'skil  
l', 'need', 'computer', 'comcast', 'phone', 'operator', 'wish', 'comply', 'request', 'right']
```

Unnecessary words removed!

processed\_m 135 is:

order comcast triple play month service month total pay total owe double advertised price month service shut cause

split\_processed\_m 135 is of length < 18 > :

```
['order', 'comcast', 'triple', 'play', 'month', 'service', 'month', 'total', 'pay', 'total', 'owe', 'double', 'advertis  
ed', 'price', 'month', 'service', 'shut', 'cause']
```

Removing unnecessary words ...

Updated list of length < 18 > : ['order', 'comcast', 'triple', 'play', 'month', 'service', 'month', 'total', 'pay', 'total', 'owe', 'double', 'advertised', 'price', 'month', 'service', 'shut', 'cause']

Unnecessary words removed!

processed\_m 136 is:

month bombard tv ad countdown clock say tv go analog digital tv cable ready hook coax cable need fine need thing receive letter comcast need dtas digital transport adapter set digital cable box digital adapter free charge need additional adapter month lose station go digital think pick require equipment hook call activation require bam lose hd channel call comcast inform need hd box month additional month pay month extended basic cable additional cost bring monthly bill tell comcast pay channel pay equipment rent equipment lose channel like cable ripoff buy hd tv enjoy pay comcast privilege think stop station go digital government give coupon people afford new tv help defray cost comcast find way undermine disability await lung transplant certainly afford cable bill double actually enjoy hd tv pay stop

split\_processed\_m 136 is of length < 130 > :

['month', 'bombard', 'tv', 'ad', 'countdown', 'clock', 'say', 'tv', 'go', 'analog', 'digital', 'tv', 'cable', 'ready', 'hook', 'coax', 'cable', 'need', 'fine', 'need', 'thing', 'receive', 'letter', 'comcast', 'need', 'dtas', 'digital', 'transport', 'adapter', 'set', 'digital', 'cable', 'box', 'digital', 'adapter', 'free', 'charge', 'need', 'additional', 'adapter', 'month', 'lose', 'station', 'go', 'digital', 'think', 'pick', 'require', 'equipment', 'hook', 'call', 'activation', 'require', 'bam', 'lose', 'hd', 'channel', 'call', 'comcast', 'inform', 'need', 'hd', 'box', 'month', 'additional', 'month', 'pay', 'month', 'extended', 'basic', 'cable', 'additional', 'cost', 'bring', 'monthly', 'bill', 'tell', 'comcast', 'pay', 'channel', 'pay', 'equipment', 'rent', 'equipment', 'lose', 'channel', 'like', 'cable', 'ripoff', 'buy', 'hd', 'tv', 'enjoy', 'pay', 'comcast', 'privilege', 'think', 'stop', 'station', 'go', 'digital', 'government', 'give', 'coupon', 'people', 'afford', 'new', 'tv', 'help', 'defray', 'cost', 'comcast', 'find', 'way', 'undermine', 'disability', 'await', 'lung', 'transplant', 'certainly', 'afford', 'cable', 'bill', 'double', 'actually', 'enjoy', 'hd', 'tv', 'pay', 'stop']

Removing unnecessary words ...

Updated list of length < 123 > : ['month', 'bombard', 'tv', 'ad', 'countdown', 'clock', 'tv', 'analog', 'digital', 'tv', 'cable', 'ready', 'hook', 'coax', 'cable', 'need', 'fine', 'need', 'thing', 'receive', 'letter', 'comcast', 'need', 'dtas', 'digital', 'transport', 'adapter', 'set', 'digital', 'cable', 'box', 'digital', 'adapter', 'free', 'charge', 'need', 'additional', 'adapter', 'month', 'lose', 'station', 'digital', 'think', 'pick', 'require', 'equipment', 'hook', 'activation', 'require', 'bam', 'lose', 'hd', 'channel', 'comcast', 'inform', 'need', 'hd', 'box', 'month', 'additional', 'month', 'pay', 'month', 'extended', 'basic', 'cable', 'additional', 'cost', 'bring', 'monthly', 'bill', 'tell', 'comcast', 'pay', 'channel', 'pay', 'equipment', 'rent', 'equipment', 'lose', 'channel', 'like', 'cable', 'ripoff', 'buy', 'hd', 'tv', 'enjoy', 'pay', 'comcast', 'privilege', 'think', 'stop', 'station', 'go', 'digital', 'government', 'give', 'coupon', 'people', 'afford', 'new', 'tv', 'help', 'defray', 'cost', 'comcast', 'find', 'way', 'undermine', 'disability', 'await', 'lung', 'transplant', 'certainly', 'afford', 'cable', 'bill', 'double', 'actually', 'enjoy', 'hd', 'tv', 'pay', 'stop']



y', 'hd', 'tv', 'enjoy', 'pay', 'comcast', 'privilege', 'think', 'stop', 'station', 'digital', 'government', 'coupon', 'people', 'afford', 'new', 'tv', 'help', 'defray', 'cost', 'comcast', 'find', 'way', 'undermine', 'disability', 'await', 'lung', 'transplant', 'certainly', 'afford', 'cable', 'bill', 'double', 'actually', 'enjoy', 'hd', 'tv', 'pay', 'stop']

Unnecessary words removed!

processed\_m 137 is:

subject inconsistent billing communication charge past month force comcast customer service multiple time rectify error appear time promise new package worry free future last month bill sample different package recommendation customer service rep time tell term contract package exclusion award credit miscommunication rep show find entitle treat valuable customer year count anymore switch majority service try good faith past month loyal customer work like comcast complain time expect response hope fix number bundle condition place customer unclear transition point vary contractual obligation on maze possibly solve rep polite speak rude cocky careless account history adieu comcast monopoly tv area

split\_processed\_m 137 is of length < 98 > :

['subject', 'inconsistent', 'billing', 'communication', 'charge', 'past', 'month', 'force', 'comcast', 'customer', 'service', 'multiple', 'time', 'rectify', 'error', 'appear', 'time', 'promise', 'new', 'package', 'worry', 'free', 'future', 'last', 'month', 'bill', 'sample', 'different', 'package', 'recommendation', 'customer', 'service', 'rep', 'time', 'tell', 'term', 'contract', 'package', 'exclusion', 'award', 'credit', 'miscommunication', 'rep', 'show', 'find', 'entitle', 'treat', 'valuable', 'customer', 'year', 'count', 'anymore', 'switch', 'majority', 'service', 'try', 'good', 'faith', 'past', 'month', 'loyal', 'customer', 'work', 'like', 'comcast', 'complain', 'time', 'expect', 'response', 'hope', 'fix', 'number', 'bundle', 'condition', 'place', 'customer', 'unclear', 'transition', 'point', 'vary', 'contractual', 'obligation', 'maze', 'possibly', 'solve', 'rep', 'polite', 'speak', 'rude', 'cocky', 'careless', 'account', 'history', 'adieu', 'comcast', 'monopoly', 'tv', 'area']

Removing unnecessary words ...

Updated list of length < 96 > : ['subject', 'inconsistent', 'billing', 'communication', 'charge', 'past', 'month', 'force', 'comcast', 'customer', 'service', 'multiple', 'time', 'rectify', 'error', 'appear', 'time', 'promise', 'new', 'package', 'worry', 'free', 'future', 'month', 'bill', 'sample', 'different', 'package', 'recommendation', 'customer', 'service', 'rep', 'time', 'tell', 'term', 'contract', 'package', 'exclusion', 'award', 'credit', 'miscommunication', 'rep', 'find', 'entitle', 'treat', 'valuable', 'customer', 'year', 'count', 'anymore', 'switch', 'majority', 'service', 'try', 'good', 'faith', 'past', 'month', 'loyal', 'customer', 'work', 'like', 'comcast', 'complain', 'time', 'expect', 'response', 'hope', 'fix', 'number', 'bundle', 'condition', 'place', 'customer', 'unclear', 'transition', 'point', 'vary', 'contractual', 'obligation', 'maze', 'possibly', 'solve', 'rep', 'polite', 'speak', 'rude', 'cocky', 'careless', 'account', 'history', 'adieu', 'comcast', 'monopoly', 'tv', 'area']

Unnecessary words removed!

\*\*\*\*\*

The time taken to run this code is: 5.2 seconds

\*\*\*\*\*

```
In [13]: # Printing first 5 elements of list_of_complaints_m, plain_complaints_list_m, processed_tokens_list_m
# and entire vocabulary_m and words_removed_from_list_m lists
print("\nlist_of_complaints_m: \n\n",list_of_complaints_m[:5],
      "\n\nplain_complaints_list_m: \n\n", plain_complaints_list_m[:5],
      "\n\nprocessed_tokens_list_m: \n\n",processed_tokens_list_m[:5],
      "\n\nvocabulary_m is of length : <",len(vocabulary_m),">\n\n", vocabulary_m,
      "\n\nwords_removed_from_list_m: \n\n", words_removed_from_list_m)
```

list\_of\_complaints\_m:

```
[[['comcast overall terrible experience describe provider area time deal ultimately apartment area service provider can
cel account forever finally hardware store receipt deal debt collector month claim owe money return hardware luckily ph
ysical proof honestly pay sure deny liability kick different debt collection agency new month later finally away use co
mcast good customer service accidentally disconnect hint want cancel service complain choose option customer service me
nu add service connect agent immediately ultimately connect right department directly probably disconnect time'], ['exp
erience technical difficulty demand service technical support solution problem reset box couple attempt system run supp
ort rep ask able access movie yes set problem happen redo previous process tell set fiance entirely different issue aut
omate system tell account balance think mistake speak billing dept find demand movie order month confuse lock service c
ode need purchase code apparently tech support reset box wipe parental setting old son able order want watch little mov
ie episode phone issue follow day comcast xfinity refuse remove charge movie episode watch supervisor request speak fin
ally speak rep review account suppose supervisor approve credit account history sort purchase incidence like need split
credit exceed credit apply limit thank loyal customer hang payment early week come home find service interrupt late spe
ak pm following afternoon find hang review lead determine credit apply account movie episode watch technical support wi
pe parental setting tell set dissatisfied experience return equipment comcast xfinity customer'], ['consistently couple
week slow web page loading download upload speed poor reliability packet datagram transmission feel intentionally misre
present operational product hold accountable patronize customer service apparently policy placate cover poor performanc
e'], ['deal nightmare comcast year pay month high speed internet receive half speed pay turn internet speed service wor
k good day right modem wireless internet box problem doubt mind throttle internet service'], ['sign day pass xfinity bo
ston password work reset number email customer service person forward technical support person forward wi fi department
forward suggest number complain send circle guy try help initial number resolve suggest day service find carrier']]
```

plain\_complaints\_list\_m:

```
['comcast overall terrible experience describe provider area time deal ultimately apartment area service provider canc
el account forever finally hardware store receipt deal debt collector month claim owe money return hardware luckily phy
sical proof honestly pay sure deny liability kick different debt collection agency new month later finally away use com
cast good customer service accidentally disconnect hint want cancel service complain choose option customer service men
u add service connect agent immediately ultimately connect right department directly probably disconnect time', 'experi
ence technical difficulty demand service technical support solution problem reset box couple attempt system run support
rep ask able access movie yes set problem happen redo previous process tell set fiance entirely different issue automat
e system tell account balance think mistake speak billing dept find demand movie order month confuse lock service code
need purchase code apparently tech support reset box wipe parental setting old son able order want watch little movie e
pisode phone issue follow day comcast xfinity refuse remove charge movie episode watch supervisor request speak finally
speak rep review account suppose supervisor approve credit account history sort purchase incidence like need split cred
it exceed credit apply limit thank loyal customer hang payment early week come home find service interrupt late speak p
m following afternoon find hang review lead determine credit apply account movie episode watch technical support wipe p
arental setting tell set dissatisfied experience return equipment comcast xfinity customer', 'consistently couple week
slow web page loading download upload speed poor reliability packet datagram transmission feel intentionally misreprese
nt operational product hold accountable patronize customer service apparently policy placate cover poor performance',
'deal nightmare comcast year pay month high speed internet receive half speed pay turn internet speed service work good
day right modem wireless internet box problem doubt mind throttle internet service', 'sign day pass xfinity boston pass
word work reset number email customer service person forward technical support person forward wi fi department forward
suggest number complain send circle guy try help initial number resolve suggest day service find carrier']
```

processed\_tokens\_list\_m:

```
[['comcast', 'overall', 'terrible', 'experience', 'describe', 'provider', 'area', 'time', 'deal', 'ultimately', 'apart
ment', 'area', 'service', 'provider', 'cancel', 'account', 'forever', 'finally', 'hardware', 'store', 'receipt', 'dea
l', 'debt', 'collector', 'month', 'claim', 'owe', 'money', 'return', 'hardware', 'luckily', 'physical', 'proof', 'hones
tly', 'pay', 'sure', 'deny', 'liability', 'kick', 'different', 'debt', 'collection', 'agency', 'new', 'month', 'later',
'finally', 'away', 'use', 'comcast', 'good', 'customer', 'service', 'accidentally', 'disconnect', 'hint', 'want', 'canc
el', 'service', 'complain', 'choose', 'option', 'customer', 'service', 'menu', 'add', 'service', 'connect', 'agent', 'i
mmediately', 'ultimately', 'connect', 'right', 'department', 'directly', 'probably', 'disconnect', 'time'], ['experienc
e', 'technical', 'difficulty', 'demand', 'service', 'technical', 'support', 'solution', 'problem', 'reset', 'box', 'cou
ple', 'attempt', 'system', 'run', 'support', 'rep', 'ask', 'able', 'access', 'movie', 'yes', 'set', 'problem', 'happe
n', 'redo', 'previous', 'process', 'tell', 'set', 'fiance', 'entirely', 'different', 'issue', 'automate', 'system', 'te
ll', 'account', 'balance', 'think', 'mistake', 'speak', 'billing', 'dept', 'find', 'demand', 'movie', 'order', 'month',
'confuse', 'lock', 'service', 'code', 'need', 'purchase', 'code', 'apparently', 'tech', 'support', 'reset', 'box', 'wip
e', 'parental', 'setting', 'old', 'son', 'able', 'order', 'want', 'watch', 'little', 'movie', 'episode', 'phone', 'issu
e', 'follow', 'day', 'comcast', 'xfinity', 'refuse', 'remove', 'charge', 'movie', 'episode', 'watch', 'supervisor', 're
quest', 'speak', 'finally', 'speak', 'rep', 'review', 'account', 'suppose', 'supervisor', 'approve', 'credit', 'accoun
t', 'history', 'sort', 'purchase', 'incidence', 'like', 'need', 'split', 'credit', 'exceed', 'credit', 'apply', 'limi
t', 'thank', 'loyal', 'customer', 'hang', 'payment', 'early', 'week', 'come', 'home', 'find', 'service', 'interrupt',
'late', 'speak', 'pm', 'following', 'afternoon', 'find', 'hang', 'review', 'lead', 'determine', 'credit', 'apply', 'acc
ount', 'movie', 'episode', 'watch', 'technical', 'support', 'wipe', 'parental', 'setting', 'tell', 'set', 'dissatisfie
d', 'experience', 'return', 'equipment', 'comcast', 'xfinity', 'customer'], ['consistently', 'couple', 'week', 'slow',
'web', 'page', 'loading', 'download', 'upload', 'speed', 'poor', 'reliability', 'packet', 'datagram', 'transmission',
'feel', 'intentionally', 'misrepresent', 'operational', 'product', 'hold', 'accountable', 'patronize', 'customer', 'ser
vice', 'apparently', 'policy', 'placate', 'cover', 'poor', 'performance'], ['deal', 'nightmare', 'comcast', 'year', 'pa
y', 'month', 'high', 'speed', 'internet', 'receive', 'half', 'speed', 'pay', 'turn', 'internet', 'speed', 'service', 'w
ork', 'good', 'day', 'right', 'modem', 'wireless', 'internet', 'box', 'problem', 'doubt', 'mind', 'throttle', 'interne
t', 'service'], ['sign', 'day', 'pass', 'xfinity', 'boston', 'password', 'work', 'reset', 'number', 'email', 'custome
r', 'service', 'person', 'forward', 'technical', 'support', 'person', 'forward', 'wi', 'fi', 'department', 'forward',
'suggest', 'number', 'complain', 'send', 'circle', 'guy', 'try', 'help', 'initial', 'number', 'resolve', 'suggest', 'da
y', 'service', 'find', 'carrier']]
```

vocabulary\_m is of length : < 1854 >

```
[['comcast', 'overall', 'terrible', 'experience', 'describe', 'provider', 'area', 'time', 'deal', 'ultimately', 'apartm
ent', 'service', 'cancel', 'account', 'forever', 'finally', 'hardware', 'store', 'receipt', 'debt', 'collector', 'mont
h', 'claim', 'owe', 'money', 'return', 'luckily', 'physical', 'proof', 'honestly', 'pay', 'sure', 'deny', 'liability',
'kick', 'different', 'collection', 'agency', 'new', 'later', 'away', 'use', 'good', 'customer', 'accidentally', 'discon
nect', 'hint', 'want', 'complain', 'choose', 'option', 'menu', 'add', 'connect', 'agent', 'immediately', 'right', 'depa
rtment', 'directly', 'probably', 'technical', 'difficulty', 'demand', 'support', 'solution', 'problem', 'reset', 'box',
'couple', 'attempt', 'system', 'run', 'rep', 'ask', 'able', 'access', 'movie', 'yes', 'set', 'happen', 'redo', 'previou
s', 'process', 'tell', 'fiance', 'entirely', 'issue', 'automate', 'balance', 'think', 'mistake', 'speak', 'billing', 'd
ept', 'find', 'order', 'confuse', 'lock', 'code', 'need', 'purchase', 'apparently', 'tech', 'wipe', 'parental', 'settin
g', 'old', 'son', 'watch', 'little', 'episode', 'phone', 'follow', 'day', 'xfinity', 'refuse', 'remove', 'charge', 'sup
```

ervisor', 'request', 'review', 'suppose', 'approve', 'credit', 'history', 'sort', 'incidence', 'like', 'split', 'exceed', 'apply', 'limit', 'thank', 'loyal', 'hang', 'payment', 'early', 'week', 'come', 'home', 'interrupt', 'late', 'pm', 'following', 'afternoon', 'lead', 'determine', 'dissatisfied', 'equipment', 'consistently', 'slow', 'web', 'page', 'loading', 'download', 'upload', 'speed', 'poor', 'reliability', 'packet', 'datagram', 'transmission', 'feel', 'intentionally', 'misrepresent', 'operational', 'product', 'hold', 'accountable', 'patronize', 'policy', 'placate', 'cover', 'performance', 'nightmare', 'year', 'high', 'internet', 'receive', 'half', 'turn', 'work', 'modem', 'wireless', 'doubt', 'mind', 'throttle', 'sign', 'pass', 'boston', 'password', 'number', 'email', 'person', 'forward', 'wi', 'fi', 'suggest', 'send', 'circle', 'guy', 'try', 'help', 'initial', 'resolve', 'carrier', 'plan', 'cheat', 'pricing', 'package', 'expensively', 'horrible', 'false', 'advertisement', 'fast', 'imagine', 'average', 'thing', 'fluctuate', 'crazy', 'calling', 'damn', 'restart', 'negotiate', 'possibility', 'fix', 'curve', 'direction', 'distract', 'step', 'create', 'wifi', 'consent', 'start', 'leave', 'open', 'people', 'single', 'bill', 'heavy', 'load', 'let', 'explain', 'marketing', 'company', 'bullshit', 'inside', 'modern', 'stuff', 'plastic', 'case', 'state', 'art', 'provide', 'way', 'fact', 'rent', 'bull', 'crap', 'far', 'disrespect', 'midway', 'answer', 'question', 'life', 'falsely', 'advertise', 'look', 'save', 'lot', 'standing', 'sloth', 'promise', 'blast', 'computer', 'peak', 'hour', 'dwindle', 'test', 'excuse', 'include', 'blame', 'laptop', 'transfer', 'cycle', 'cause', 'discrepancy', 'normal', 'monthly', 'simple', 'math', 'justify', 'accurate', 'getting', 'rip', 'change', 'advance', 'fios', 'wish', 'mother', 'victim', 'possible', 'house', 'upgrade', 'mbps', 'lucky', 'point', 'ago', 'replace', 'setup', 'amazing', 'sale', 'economy', 'family', 'stream', 'video', 'roku', 'night', 'small', 'business', 'entire', 'office', 'usual', 'technology', 'device', 'assistance', 'spend', 'seek', 'zero', 'allow', 'monopolize', 'continue', 'long', 'wait', 'helpful', 'choice', 'city', 'bad', 'update', 'crawl', 'nicely', 'dial', 'course', 'soon', 'figure', 'sue', 'usually', 'potential', 'know', 'past', 'triple', 'play', 'maximum', 'beginning', 'pretty', 'till', 'awry', 'browse', 'cricket', 'match', 'world', 'cup', 'live', 'streaming', 'tv', 'technician', 'bloody', 'arrogant', 'low', 'typical', 'attitude', 'stupid', 'fine', 'remain', 'idea', 'bestow', 'huge', 'honor', 'door', 'minute', 'max', 'maybe', 'router', 'install', 'place', 'actually', 'online', 'usb', 'cable', 'amazon', 'absolutely', 'talk', 'connection', 'close', 'decide', 'schedule', 'outstanding', 'consternation', 'navigate', 'cancellation', 'note', 'internally', 'flatly', 'responsibility', 'ridiculous', 'internal', 'communication', 'guess', 'shall', 'sad', 'attend', 'solve', 'file', 'class', 'action', 'suit', 'standard', 'treat', 'hurt', 'regular', 'utility', 'total', 'second', 'voip', 'line', 'impossible', 'conversation', 'min', 'trial', 'contract', 'insist', 'visit', 'matter', 'outcome', 'commit', 'security', 'travel', 'paperwork', 'sit', 'agree', 'major', 'blunder', 'ahead', 'installation', 'drop', 'personally', 'handle', 'competitor', 'install', 'ipad', 'addition', 'bundle', 'cheap', 'hd', 'admit', 'channel', 'price', 'worth', 'properly', 'secondly', 'ruin', 'mood', 'wonderful', 'respect', 'direct', 'advanced', 'whacko', 'pick', 'awake', 'dreadful', 'hello', 'professional', 'sarcasm', 'halfway', 'hear', 'yawn', 'punishment', 'whatsoever', 'hire', 'worker', 'disappointed', 'numerous', 'occasion', 'disable', 'contact', 'fee', 'surprise', 'amend', 'overcharge', 'unfair', 'practice', 'site', 'depend', 'item', 'click', 'buy', 'straight', 'exactly', 'unfortunately', 'register', 'legit', 'reseller', 'advice', 'honey', 'link', 'regionalization', 'market', 'frustrating', 'consumer', 'cut', 'continent', 'land', 'laughably', 'executive', 'useless', 'suggestion', 'unplug', 'plug', 'coach', 'background', 'flat', 'lie', 'merge', 'warner', 'face', 'country', 'reason', 'certainly', 'heartbeat', 'smile', 'public', 'exposure', 'viral', 'bit', 'read', 'statement', 'fiasco', 'response', 'supposedly', 'write', 'tom', 'karinshak', 'senior', 'vp', 'sorry', 'involve', 'debacle', 'likely', 'superior', 'suspect', 'truth', 'assumption', 'begin', 'care', 'corporate', 'assign', 'level', 'employee', 'word', 'reoccur', 'respond', 'mail', 'telephone', 'field', 'frustrated', 'fed', 'lose', 'mid', 'program', 'fashioned', 'letter', 'frustration', 'friend', 'research', 'understand', 'negative', 'feedback', 'insulated', 'poorly', 'fulfil', 'term', 'guarantee', 'mere', 'perform', 'accessible', 'forum', 'post', 'listen', 'crank', 'bent', 'drag', 'mud', 'muck', 'simply', 'desperate', 'effect', 'meaningful', 'urge', 'fourth', 'paragraph', 'protect', 'environment', 'recycle', 'unreturned', 'essentially', 'client', 'migration', 'microsoft', 'exchange', 'sat', 'sun', 'resume', 'server', 'address', 'end', 'drastic', 'manager', 'ms', 'outlook', 'literally', 'list', 'information', 'build', 'subscriber', 'dependent', 'ticket', 'tier', 'sideline', 'abandon', 'big', 'assist', 'buck', 'stop', 'dilly', 'dally', 'promptly', 'negligence', 'fail', 'consider'

er', 'consequence', 'today', 'hand', 'anxious', 'restraint', 'bathroom', 'miss', 'eat', 'meal', 'table', 'stress', 'fault', 'adapter', 'remote', 'tiny', 'writing', 'flap', 'ups', 'parking', 'illegal', 'financial', 'incentive', 'verizon', 'center', 'expense', 'defective', 'unit', 'actual', 'somerville', 'measure', 'fcc', 'confer', 'dead', 'water', 'deliver', 'rate', 'sell', 'tired', 'commitment', 'falsify', 'result', 'promotion', 'visa', 'gift', 'card', 'bundled', 'reschedule', 'record', 'verbal', 'agreement', 'arrive', 'inquire', 'furious', 'man', 'morning', 'brief', 'period', 'qualify', 'extension', 'angry', 'shove', 'shine', 'rcn', 'stay', 'definitely', 'manage', 'husband', 'solo', 'pediatric', 'reliable', 'critical', 'patient', 'responsible', 'unreliable', 'busy', 'bear', 'roughly', 'intermittent', 'folk', 'appointment', 'feb', 'demonstrably', 'bell', 'ring', 'upsetting', 'easy', 'moment', 'boss', 'expect', 'curiosity', 'check', 'cost', 'london', 'pond', 'sterling', 'paris', 'euros', 'berlin', 'wonder', 'expensive', 'servicing', 'force', 'local', 'owner', 'okay', 'terminate', 'ensue', 'madness', 'multiple', 'exist', 'achieve', 'despite', 'wrong', 'inform', 'deduct', 'bank', 'shut', 'india', 'meet', 'robotic', 'scripted', 'misapply', 'pull', 'tooth', 'holder', 'debit', 'verify', 'date', 'cc', 'true', 'cia', 'monitor', 'fraud', 'ramp', 'cellphone', 'surprised', 'impatient', 'display', 'grumble', 'representative', 'appal', 'tracking', 'ship', 'nice', 'apology', 'red', 'wanna', 'hum', 'job', 'training', 'industry', 'whistle', 'script', 'shame', 'handicapped', 'easier', 'wage', 'plus', 'constantly', 'ip', 'filter', 'spam', 'outbound', 'bounce', 'stick', 'notify', 'awful', 'constant', 'subscribe', 'hassle', 'discuss', 'increase', 'available', 'switch', 'fiancé', 'enter', 'website', 'listing', 'base', 'cart', 'bring', 'indicate', 'screenshot', 'image', 'attach', 'clear', 'cookie', 'exact', 'basic', 'threaten', 'lawsuit', 'final', 'quote', 'individually', 'kristin', 'believe', 'relation', 'scam', 'settle', 'necessity', 'location', 'dish', 'network', 'hgtv', 'food', 'child', 'sound', 'perfect', 'taxis', 'extra', 'avoid', 'excite', 'flip', 'apart', 'original', 'yesse', 'completely', 'misinterpret', 'fair', 'ok', 'luxury', 'waise', 'complaint', 'honest', 'upfront', 'installer', 'dvr', 'room', 'yesterday', 'great', 'recording', 'oddness', 'stalling', 'hard', 'reboot', 'loop', 'boot', 'piece', 'break', 'repair', 'sufficient', 'offer', 'refund', 'unbelievably', 'unwarranted', 'satisfaction', 'btw', 'philippines', 'outrageously', 'unresolved', 'cs', 'arrival', 'rescheduled', 'egregious', 'tenant', 'difference', 'recently', 'activate', 'directv', 'satisfied', 'emergency', 'basis', 'retirement', 'community', 'automated', 'voice', 'needless', 'upset', 'real', 'tomorrow', 'totally', 'unacceptable', 'unbelievable', 'recompense', 'count', 'violate', 'reverse', 'legal', 'correct', 'woman', 'error', 'mess', 'investigate', 'lengthy', 'message', 'overdue', 'tone', 'rude', 'personal', 'machine', 'mass', 'laws', 'special', 'nearly', 'shake', 'horrendous', 'brag', 'ad', 'beat', 'submission', 'alternative', 'block', 'incompetent', 'basically', 'mafia', 'mark', 'territory', 'shakedown', 'rely', 'suck', 'advisable', 'creative', 'search', 'headache', 'majority', 'clue', 'reminder', 'affordable', 'discount', 'trump', 'backup', 'ability', 'mean', 'random', 'lady', 'andrea', 'activation', 'team', 'barely', 'recollection', 'remind', 'previously', 'story', 'short', 'roommate', 'smh', 'report', 'free', 'affairs', 'extremely', 'government', 'bed', 'damn', 'printer', 'wee', 'soup', 'string', 'dump', 'delete', 'mailbox', 'joke', 'series', 'selective', 'nsa', 'stressful', 'hardly', 'sleep', 'privacy', 'permission', 'laugh', 'investigation', 'hide', 'pole', 'sick', 'novel', 'salvage', 'value', 'quality', 'best', 'damage', 'incur', 'recourse', 'require', 'bait', 'regulation', 'sampling', 'obtain', 'million', 'attorney', 'news', 'quickly', 'gobble', 'firm', 'exclude', 'antitrust', 'recent', 'confirm', 'pleasant', 'outage', 'restore', 'reasonably', 'quick', 'manner', 'reasonable', 'reduce', 'maintain', 'current', 'currently', 'retail', 'middle', 'road', 'fire', 'safety', 'clueless', 'ripoff', 'pork', 'raise', 'netflix', 'wire', 'kid', 'sport', 'got', 'monopoly', 'hate', 'bedroom', 'reprogram', 'incompatible', 'notice', 'liar', 'warning', 'explanation', 'premium', 'advantage', 'competition', 'isolated', 'decrease', 'programming', 'complex', 'lease', 'building', 'exclusively', 'waste', 'twc', 'share', 'docsis', 'desk', 'unchanged', 'interact', 'aware', 'mislead', 'target', 'gullible', 'theirs', 'kind', 'compatible', 'techno', 'knowledgeable', 'piss', 'baffle', 'spare', 'dirt', 'bag', 'bet', 'anymore', 'roll', 'expire', 'sudden', 'froze', 'repeat', 'main', 'court', 'officer', 'cell', 'chief', 'unprofessional', 'proud', 'shameful', 'arrangement', 'gentleman', 'remember', 'delightful', 'sweet', 'patience', 'phill', 'loud', 'locate', 'imply', 'volume', 'polite', 'friendly', 'represent', 'goal', 'ongoing', 'pressure', 'engage', 'absolute', 'separate', 'thick', 'accent', 'reception', 'net', 'bureau', 'mad', 'necessary', 'con', 'artist', 'gold', 'digger', 'queue', 'chat', 'stuck', 'self', 'commercial', 'virtual', 'greater', 'finish', 'dispute', 'originally', 'initially', 'expiration', 'situation', 'r

ise', 'instead', 'existent', 'bother', 'unobtainable', 'insight', 'rectify', 'future', 'tough', 'luck', 'defensive', 'felt', 'manipulate', 'division', 'tip', 'comparable', 'toxic', 'sewage', 'mission', 'encounter', 'disillusioned', 'model', 'nature', 'maul', 'pack', 'wolf', 'robbed', 'emphatic', 'volcanic', 'eruption', 'rage', 'understatement', 'century', 'foundation', 'definition', 'vile', 'evil', 'relationship', 'hookup', 'easily', 'kit', 'drive', 'discover', 'worry', 'proceed', 'hook', 'neighboring', 'appt', 'success', 'telemarketer', 'realize', 'trip', 'assure', 'acct', 'prior', 'telemarketing', 'overprice', 'opinion', 'rest', 'double', 'approx', 'recommend', 'generous', 'fully', 'mention', 'shipping', 'important', 'sadly', 'instruction', 'manual', 'struggle', 'splitter', 'outlet', 'packaging', 'robot', 'walk', 'young', 'reimburse', 'overcharging', 'appear', 'automatic', 'deduction', 'paper', 'electronic', 'overbilling', 'reimbursement', 'strict', 'essence', 'knowledge', 'star', 'breath', 'remedy', 'operate', 'recognize', 'repay', 'portion', 'sum', 'erroneously', 'salesperson', 'booster', 'reach', 'confused', 'minus', 'buggy', 'evening', 'loose', 'suspicious', 'frozen', 'incorrectly', 'seriously', 'control', 'hidden', 'broadband', 'increasingly', 'reliant', 'corrupt', 'type', 'frustrate', 'incompetency', 'lack', 'rewire', 'incredibly', 'somebody', 'group', 'meantime', 'twice', 'window', 'caution', 'anybody', 'incompetence', 'dysfunctionality', 'duplicate', 'enrol', 'auto', 'checking', 'enrollment', 'partial', 'dozen', 'untrustworthy', 'consideration', 'snow', 'truck', 'fresh', 'fall', 'track', 'techs', 'slot', 'countless', 'supplier', 'horror', 'snowstorm', 'tree', 'nstar', 'climb', 'power', 'driveway', 'plow', 'appoint', 'tag', 'everyday', 'member', 'independent', 'contractor', 'cape', 'cod', 'abuse', 'beg', 'hostage', 'ha', 'yea', 'aspect', 'stink', 'quincy', 'jerk', 'inhome', 'pointless', 'unwilling', 'marginally', 'wake', 'unauthorized', 'finance', 'learn', 'instruct', 'dollar', 'refer', 'additional', 'shield', 'fx', 'gouge', 'western', 'jump', 'continuously', 'ignore', 'complete', 'uninstall', 'arguing', 'shock', 'suspend', 'reconnect', 'adjust', 'termination', 'suspension', 'massachusetts', 'effective', 'reply', 'interested', 'identify', 'advise', 'fill', 'management', 'involvement', 'repetitive', 'square', 'similar', 'platform', 'reconnecte', 'relative', 'relate', 'unpaid', 'clearly', 'social', 'rob', 'horrificed', 'hope', 'burn', 'hell', 'blister', 'entitle', 'rarely', 'automatically', 'hack', 'blacklist', 'suddenly', 'nonpayment', 'silently', 'allege', 'ado', 'reluctantly', 'fraudulent', 'gig', 'town', 'rearrange', 'confirmation', 'hotspot', 'secure', 'x', 'finit', 'y', 'apologize', 'courtesy', 'reflect', 'weekly', 'notification', 'satellite', 'extort', 'function', 'reconsider', 'strategy', 'alas', 'tease', 'wife', 'mgr', 'smarten', 'hdmi', 'port', 'minimal', 'troubleshooting', 'failure', 'adult', 'coaxial', 'wall', 'ide', 'press', 'button', 'directory', 'north', 'east', 'argue', 'livid', 'dare', 'wash', 'strange', 'feeling', 'white', 'noise', 'stoke', 'obviously', 'dense', 'tonight', 'inconsistency', 'handling', 'arise', 'electronics', 'ignorant', 'optimal', 'operator', 'moron', 'fortunate', 'brand', 'chromecast', 'barber', 'barbershop', 'extensive', 'additionally', 'expedited', 'drill', 'hole', 'outside', 'presumably', 'push', 'shingle', 'exterior', 'element', 'england', 'winter', 'staple', 'insult', 'jack', 'homeowner', 'association', 'design', 'log', 'ugly', 'deck', 'despise', 'longtime', 'skip', 'truly', 'concern', 'disgusting', 'quirkiness', 'yeah', 'prove', 'offended', 'sooooo', 'unrealistic', 'ex', 'csr', 'submit', 'decline', 'fit', 'parent', 'text', 'swear', 'better', 'eligible', 'honesty', 'paraphrasing', 'yell', 'anger', 'disgusted', 'willing', 'accept', 'possibly', 'gain', 'prevent', 'conclude', 'corner', 'black', 'screen', 'grey', 'swap', 'delay', 'seasonal', 'nail', 'basement', 'light', 'arrange', 'hrs', 'interface', 'indication', 'belch', 'garbage', 'crm', 'authorize', 'meeting', 'aol', 'slimy', 'squeeze', 'tactic', 'route', 'screw', 'automaton', 'reactivate', 'reactivation', 'phantom', 'liable', 'incredible', 'decade', 'stigma', 'usps', 'deservedly', 'unlawfully', 'repeatedly', 'unable', 'withdraw', 'withdrawal', 'embarrassment', 'intent', 'overage', 'train', 'chuckle', 'outraged', 'significantly', 'user', 'oversee', 'especially', 'paperless', 'procedure', 'webpage', 'outline', 'analyst', 'digit', 'ssn', 'theft', 'physician', 'difficult', 'employ', 'collect', 'datum', 'soapnet', 'showtime', 'maureen', 'harry', 'die', 'death', 'station', 'certificate', 'info', 'rebate', 'forget', 'renew', 'blow', 'ground', 'lovely', 'suffer', 'tivo', 'survey', 'disgrace', 'congress', 'merit', 'licensing', 'digital', 'starter', 'adjustment', 'converter', 'footnote', 'view', 'copy', 'pen', 'successfully', 'specific', 'approximately', 'expose', 'guide', 'storm', 'voila', 'neighbor', 'chance', 'nonworking', 'plain', 'strike', 'decision', 'mile', 'angle', 'ton', 'downright', 'blank', 'scramble', 'announce', 'title', 'interruption', 'certain', 'storage', 'refurbish', 'accord', 'board', 'memory', 'summer', 'inch', 'wprke', 'repairman', 'electrical', 'testing', 'upstairs', 'lg', 'massachusetts', 'tax', 'weekend', 'backlog', 'stock', 'e

liminate', 'timer', 'vhs', 'tape', 'space', 'bleep', 'audio', 'customize', 'sox', 'baseball', 'game', 'bunch', 'spanish', 'pbs', 'patriots', 'football', 'air', 'interpretation', 'rule', 'lawyer', 'stockholder', 'pocket', 'bzb', 'marshfield', 'downsize', 'male', 'approach', 'counter', 'rudely', 'stand', 'stun', 'coworker', 'present', 'evidently', 'grudge', 'reviewing', 'needed', 'loss', 'mistreatment', 'evidence', 'signature', 'ironically', 'yolanda', 'cinemax', 'latin', 'profit', 'section', 'tap', 'disclose', 'party', 'document', 'hbo', 'strong', 'novia', 'scotia', 'sense', 'trouble', 'hurry', 'bar', 'oop', 'incomplete', 'compare', 'contributor', 'impact', 'efficient', 'qualified', 'stre', 'purpose', 'acceptable', 'akidra', 'ebony', 'authority', 'straw', 'subcontractor', 'english', 'dirty', 'foot', 'print', 'sil', 'k', 'chair', 'condo', 'bldg', 'clock', 'surge', 'protector', 'signal', 'source', 'refresh', 'retry', 'lightning', 'protocol', 'insurance', 'co', 'icing', 'cake', 'faulty', 'fry', 'downgrade', 'geez', 'louise', 'fio', 'happy', 'cry', 'cave', 'sup', 'broken', 'examine', 'lousy', 'clicker', 'ft', 'disrupt', 'townhouse', 'wiring', 'satisfactory', 'resolution', 'initiate', 'police', 'willful', 'destruction', 'property', 'states', 'bbb', 'radio', 'newspaper', 'attention', 'behavior', 'contest', 'smart', 'facility', 'destroy', 'form', 'playback', 'd', 'scituate', 'treatment', 'thought', 'safe', 'thirty', 'pro', 'income', 'decent', 'complaining', 'vent', 'general', 'shill', 'advertising', 'producer', 'convict', 'larceny', 'kevin', 'reduction', 'equal', 'economic', 'crisis', 'billion', 'begrudge', 'mayor', 'hometown', 'warn', 'rampant', 'trust', 'harass', 'usage', 'shoot', 'obscene', 'contain', 'virus', 'protection', 'software', 'breach', 'disabled', 'severe', 'handwritten', 'skill', 'comply', 'advertised', 'bombard', 'countdown', 'analog', 'ready', 'coax', 'd', 'tas', 'transport', 'bam', 'extended', 'enjoy', 'privilege', 'coupon', 'afford', 'defray', 'undermine', 'disability', 'await', 'lung', 'transplant', 'subject', 'inconsistent', 'sample', 'recommendation', 'exclusion', 'award', 'miscommunication', 'valuable', 'faith', 'condition', 'unclear', 'transition', 'vary', 'contractual', 'obligation', 'maze', 'cocky', 'careless', 'adieu']

words\_removed\_from\_list\_m:

['move', 'call', 'take', 'go', 'say', 'get', 'show', 'make', 'well', 'm', 'give', 'have', 'see', 'o', 'mp', 'keep', 'y', 'r', 'amount', 'name', 's', 'e', 'will', 'to', 'can', 'down', 'put', 'not', 'someone', 'hundred', 'back', 'one', 'last']

## Creating BoW vectors

### Arizona BoW vectors

```
In [14]: # Unigram implementation - vocabulary used
s_time_ari = time.time()
word_index_dict_a = {}
iterator_a = 0
vector_iterator_a = 0
for word in vocabulary_a:
    word_index_dict_a[iterator_a] = word
    iterator_a += 1
```



```

print("The word index dictionary is: \n\n" , word_index_dict_a, "\n"*2)

# enumerate -> to iterate through the list of reviews so that it is iterable
for iterator, complaint_text in enumerate(list_of_complaints_a):
    vector_a = np.zeros(len(vocabulary_a), dtype = int)
    bow_dictionary_a = defaultdict(int)

    for token_list in processed_tokens_list_a:
        for word in token_list:
            bow_dictionary_a[word] +=1

# Creating a list of values from BoW dictionary
bow_dict_a_values_list = list(bow_dictionary_a.values())
# print("bow_dict_a_values_list: \n\n",bow_dict_a_values_list, "\n"*2)

# Appending the vector_a list to create BoW vectors using the bow_dict_a_values_list
while vector_iterator_a < len(vector_a):
    vector_a[vector_iterator_a] = bow_dict_a_values_list[vector_iterator_a]
    vector_iterator_a += 1
print("The bow dictionary is: \n\n", bow_dictionary_a, "\n"*2)
print("Vector a is: \n\n", vector_a, "\n")

e_time_ari = time.time()
t_time_ari = round(e_time_ari - s_time_ari, 2)
print("\n\n ***** \n\n",
      "Time taken to create BoW vectors = ", t_time_ari,
      " s\n\n ***** \n\n")

```

The word index dictionary is:

{0: 'internet', 1: 'week', 2: 'demand', 3: 'second', 4: 'day', 5: 'work', 6: 'schedule', 7: 'visit', 8: 'automate', 9: 'system', 10: 'outage', 11: 'area', 12: 'resolve', 13: 'later', 14: 'afternoon', 15: 'tell', 16: 'try', 17: 'send', 18: 'signal', 19: 'modem', 20: 'mind', 21: 'option', 22: 'follow', 23: 'freaking', 24: 'way', 25: 'long', 26: 'business', 27: 'run', 28: 'guy', 29: 'come', 30: 'pull', 31: 'sit', 32: 'like', 33: 'minute', 34: 'look', 35: 'freak', 36: 'little', 37: 'hot', 38: 'ask', 39: 'leave', 40: 'lady', 41: 'able', 42: 'door', 43: 'reschedule', 44: 'appointment', 45: 'confirm', 46: 'church', 47: 'wait', 48: 'phone', 49: 'seriously', 50: 'check', 51: 'min', 52: 'local', 53: 'office', 54: 'pick', 55: 'cancel', 56: 'yes', 57: 'correct', 58: 'piss', 59: 'rescheduled', 60: 'time', 61: 'happen', 62: 'guarantee', 63: 'direct', 64: 'having', 65: 'comcast', 66: 'measly', 67: 'data', 68: 'cap', 69: 'year', 70: 'transfer', 71: 'customer', 72: 'retention', 73: 'explain', 74: 'problem', 75: 'sign', 76: 'unlimited', 77: 'change', 78: 'limited', 79: 'people', 80: 'stream', 81: 'netflix', 82: 'download', 83: 'video', 84: 'game', 85: 'know', 86: 'reason', 87: 'wonderful', 88: 'specialist', 89: 'free', 90: 'hbo', 91: 'wow', 92: 'month', 93: 'high', 94: 'package', 95: 'limit', 96: 'residential', 97: 'maybe', 98: 'bill', 99: 'sure', 100: 'charge', 101: 'datum', 102: 'overage', 103: 'plan', 104: 'allot', 105: 'allotment', 106: 'straight', 107: 'begin', 108: 'institute', 109: 'liar', 110: 'let', 111: 'deal', 112: 'record', 113: 'thieving', 114: 'urge', 115: 'catch', 116: 'post', 117: 'disappointed', 118: 'recent', 119: 'experience', 120: 'infinity', 121: 'contact', 122: 'company', 123: 'service', 124: 'commercial', 125: 'assure', 126: 'easy', 127: 'false', 128: 'advertisement', 129: 'despite', 130: 'advance', 131: 'receive', 132: 'different', 133: 'require', 134: 'present', 135: 'arrive', 136: 'courtesy', 137: 'personnel', 138: 'hour', 139: 'late', 140: 'need', 141: 'additional', 142: 'help', 143: 'available', 144: 'treat', 145: 'big', 146: 'concern', 147: 'want', 148: 'middle', 149: 'extra', 150: 'person', 151: 'talk', 152: 'lie', 153: 'cable', 154: 'shut', 155: 'twice', 156: 'agree', 157: 'pay', 158: 'listen', 159: 'conversation', 160: 'crap', 161: 'unbelievable', 162: 'honest', 163: 'reputable', 164: 'crooked', 165: 'meet', 166: 'okay', 167: 'technician', 168: 'ago', 169: 'hook', 170: 'voice', 171: 'small', 172: 'garden', 173: 'block', 174: 'instead', 175: 'avoid', 176: 'plant', 177: 'fool', 178: 'wooden', 179: 'border', 180: 'toss', 181: 'yard', 182: 'stomp', 183: 'heavy', 184: 'large', 185: 'nail', 186: 'stick', 187: 'thing', 188: 'step', 189: 'trip', 190: 'log', 191: 'son', 192: 'find', 193: 'inform', 194: 'finish', 195: 'house', 196: 'discover', 197: 'mess', 198: 'outside', 199: 'job', 200: 'nerve', 201: 'couch', 202: 'certain', 203: 'clock', 204: 'watch', 205: 'tv', 206: 'file', 207: 'complaint', 208: 'hear', 209: 'memorial', 210: 'think', 211: 'damn', 212: 'account', 213: 'train', 214: 'read', 215: 'hand', 216: 'promise', 217: 'deliver', 218: 'believe', 219: 'citizens', 220: 'accent', 221: 'language', 222: 'barrier', 223: 'lack', 224: 'respect', 225: 'interrupt', 226: 'rude', 227: 'undertone', 228: 'polite', 229: 'scripted', 230: 'word', 231: 'untrue', 232: 'demeanor', 233: 'obvious', 234: 'care', 235: 'million', 236: 'hope', 237: 'frustrated', 238: 'hang', 239: 'quota', 240: 'future', 241: 'rep', 242: 'tech', 243: 'morning', 244: 'appt', 245: 'complete', 246: 'living', 247: 'room', 248: 'knock', 249: 'report', 250: 'online', 251: 'college', 252: 'course', 253: 'assignment', 254: 'midnight', 255: 'grade', 256: 'drop', 257: 'inefficient', 258: 'worker', 259: 'thank', 260: 'allow', 261: 'fail', 262: 'exist', 263: 'drive', 264: 'retailer', 265: 'usually', 266: 'end', 267: 'script', 268: 'sense', 269: 'urgency', 270: 'info', 271: 'terrible', 272: 'popping', 273: 'crackling', 274: 'line', 275: 'answer', 276: 'multiple', 277: 'rudely', 278: 'support', 279: 'staff', 280: 'identify', 281: 'wrong', 282: 'state', 283: 'attorney', 284: 'general', 285: 'register', 286: 'past', 287: 'garner', 288: 'response', 289: 'multiply', 290: 'corporate', 291: 'entity', 292: 'issue', 293: 'buy', 294: 'new', 295: 'suggestion', 296: 'equipment', 297: 'waste', 298: 'money', 299: 'appreciate', 300: 'attention', 301: 'matter', 302: 'decide', 303: 'chance', 304: 'order', 305: 'headache', 306: 'place', 307: 'ok', 308: 'welcome', 309: 'email', 310: 'set', 311: 'installation', 312: 'fully', 313: 'process', 314: 'finally', 315: 'date', 316: 'access', 317: 'dvr', 318: 'box', 319: 'hd', 320: 'spend', 321: 'chat', 322: 'representative', 323: 'properly', 324: 'limbo', 325: 'authorize', 326: 'install', 327: 'fee', 328: 'outlet', 329: 'bad', 330: 'employee', 331: 'incompetent', 332: 'approximately', 333: 'replace', 334: 'temporary', 335: 'fix', 336: 'speak', 337: 'manager', 338: 'mix', 339: 'consecutive', 340: 'number', 341: 'continue', 342: 'residence', 343: 'upgrade', 344: 'research', 345: 'previous', 346: 'suppose', 347: 'wall', 348: 'uni

t', 349: 'notice', 350: 'bring', 351: 'home', 352: 'unnoticed', 353: 'add', 354: 'monkey', 355: 'advise', 356: 'getting', 357: 'worry', 358: 'credit', 359: 'installment', 360: 'frame', 361: 'management', 362: 'bank', 363: 'cash', 364: 'hold', 365: 'responsible', 366: 'furious', 367: 'collector', 368: 'owe', 369: 'dollar', 370: 'willing', 371: 'right', 372: 'collect', 373: 'worth', 374: 'handle', 375: 'mean', 376: 'creditor', 377: 'threaten', 378: 'displeased', 379: 'continuously', 380: 'rise', 381: 'type', 382: 'excuse', 383: 'raise', 384: 'recommend', 385: 'enemy', 386: 'stay', 387: 'good', 388: 'stand', 389: 'realize', 390: 'feel', 391: 'huge', 392: 'corporation', 393: 'god', 394: 'low', 395: 'absolute', 396: 'yesterday', 397: 'simple', 398: 'guess', 399: 'young', 400: 'nice', 401: 'screw', 402: 'current', 403: 'location', 404: 'suspend', 405: 'concerned', 406: 'deadbeat', 407: 'baby', 408: 'daddy', 409: 'thirty', 410: 'turn', 411: 'soon', 412: 'pm', 413: 'cst', 414: 'hell', 415: 'break', 416: 'loose', 417: 'shay', 418: 'disconnect', 419: 'stupid', 420: 'supervisor', 421: 'purposely', 422: 'department', 423: 'sale', 424: 'andrew', 425: 'refuse', 426: 'billing', 427: 'balance', 428: 'auto', 429: 'understand', 430: 'english', 431: 'corey', 432: 'repeatedly', 433: 'forget', 434: 'solutions', 435: 'christy', 436: 'deserve', 437: 'promotion', 438: 'space', 439: 'ear', 440: 'admit', 441: 'pissed', 442: 'irritated', 443: 'attitude', 444: 'professional', 445: 'helpful', 446: 'lose', 447: 'patience', 448: 'restart', 449: 'correctly', 450: 'cause', 451: 'ridiculous', 452: 'quality', 453: 'payment', 454: 'slap', 455: 'face', 456: 'feed', 457: 'bunch', 458: 'forever', 459: 'extremely', 460: 'price', 461: 'nightmare', 462: 'somebody', 463: 'start', 464: 'competition', 465: 'eventually', 466: 'live', 467: 'expensive', 468: 'decade', 469: 'stop', 470: 'return', 471: 'thankfully', 472: 'receipt', 473: 'handy', 474: 'copy', 475: 'claim', 476: 'play', 477: 'plead', 478: 'ignorance', 479: 'sue', 480: 'class', 481: 'action', 482: 'ship', 483: 'short', 484: 'adapter', 485: 'remote', 486: 'immediately', 487: 'tiny', 488: 'shipping', 489: 'apply', 490: 'include', 491: 'original', 492: 'today', 493: 'fourth', 494: 'allen', 495: 'review', 496: 'busy', 497: 'discuss', 498: 'ahead', 499: 'submit', 500: 'interruption', 501: 'joancien', 502: 'restore', 503: 'quote', 504: 'request', 505: 'afraid', 506: 'addition', 507: 'reset', 508: 'repair', 509: 'countless', 510: 'devote', 511: 'decent', 512: 'poor', 513: 'sadly', 514: 'satellite', 515: 'steal', 516: 'address', 517: 'reinstall', 518: 'zero', 519: 'deposit', 520: 'consumer', 521: 'fraud', 522: 'adjust', 523: 'angry', 524: 'defraud', 525: 'dsl', 526: 'save', 527: 'especially', 528: 'provider', 529: 'contract', 530: 'figure', 531: 'trust', 532: 'thief', 533: 'inquire', 534: 'neighbor', 535: 'mention', 536: 'safe', 537: 'walk', 538: 'verify', 539: 'bit', 540: 'matt', 541: 'inspection', 542: 'code', 543: 'likely', 544: 'actually', 545: 'todd', 546: 'tomorrow', 547: 'force', 548: 'note', 549: 'survey', 550: 'enter', 551: 'sorry', 552: 'instal', 553: 'discount', 554: 'owner', 555: 'insurance', 556: 'delay', 557: 'hit', 558: 'water', 559: 'trash', 560: 'builder', 561: 'fight', 562: 'damage', 563: 'exclude', 564: 'meeting', 565: 'numbered', 566: 'use', 567: 'apologize', 568: 'expedite', 569: 'chris', 570: 'far', 571: 'alarm', 572: 'drag', 573: 'foot', 574: 'confusion', 575: 'contractor', 576: 'status', 577: 'update', 578: 'patient', 579: 'man', 580: 'rubbish', 581: 'cringe', 582: 'wonder', 583: 'bother', 584: 'personally', 585: 'wiring', 586: 'friend', 587: 'apartment', 588: 'question'}

The bow dictionary is:

```
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```

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```

Vector a is:

```
[12 14 5 4 20 9 8 3 2 7 3 6 5 8 1 39 7 6 1 1 5 3 2 2
 2 3 2 4 3 25 2 7 12 11 5 2 1 1 13 13 3 6 2 4 6 4 1 8
18 2 8 1 3 4 4 9 4 4 1 1 29 3 3 2 1 40 1 4 4 11 12 16
 2 3 10 5 2 3 1 11 1 1 1 1 2 13 2 1 2 1 1 1 23 4 4 1
 1 2 36 1 18 3 2 2 1 1 1 1 1 2 4 3 1 1 1 2 3 1 1 2
 4 9 13 46 1 2 1 1 1 1 4 12 5 3 1 2 1 1 10 4 6 4 4 3
 3 2 2 6 2 4 8 8 5 12 2 4 2 26 2 2 1 1 1 1 1 2 2 15
 2 3 1 1 1 1 5 1 2 1 2 2 1 2 1 1 2 2 1 3 1 1 1 2
 5 2 2 9 2 1 2 1 2 1 1 1 2 6 1 3 5 1 2 1 17 1 4 2
 2 1 4 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 3 3 4 1 2 1
 3 11 5 4 1 3 1 1 1 2 5 1 2 1 1 2 1 1 1 2 3 3 1 1
 1 2 3 1 1 1 1 2 1 1 7 2 1 1 2 1 1 4 5 2 2 1 5 1
 2 1 1 1 10 1 13 1 19 1 5 1 1 2 3 1 8 1 8 1 1 2 8 3
 2 2 4 3 2 3 14 3 3 2 3 1 1 1 3 4 1 4 4 1 2 1 1 5
15 6 1 1 5 1 1 1 1 7 4 1 1 1 1 7 1 3 1 8 1 1 20 1
 1 2 1 1 8 1 1 1 6 3 1 5 2 2 2 2 1 2 1 1 1 2 2 2
 1 1 1 1 1 1 1 1 1 1 1 1 3 2 1 1 1 1 2 1 1 1 1
 1 1 3 2 4 3 1 1 1 1 3 2 10 2 6 1 1 4 3 2 2 1 1 2
 1 2 1 2 1 1 1 1 1 1 1 2 1 1 2 1 1 1 1 1 2 1 1
 1 1 1 1 1 2 1 1 1 1 1 1 1 2 3 1 1 1 1 2 1 1 1
 1 1 2 1 4 1 1 1 4 5 4 2 3 1 1 2 1 2 1 3 1 1 2 1
 1 1 1 1 1 1 1 1 2 2 1 1 10 1 1 1 1 1 1 1 1 1 2
 2 2 1 1 1 1 1 2 1 1 1 1 2 1 2 1 5 1 3 1 2 1 3 2
 2 1 1 1 1 1 2 1 2 1 3 1 1 1 1 2 3 1 1 1 1 1 1
 1 1 1 1 1 1 1 1 1 1 2 1 1]
```

\*\*\*\*\*

Time taken to create BoW vectors = 0.01 s

\*\*\*\*\*

---

## Using sklearn for matrix representaion of BoW vectors (created using CountVectorizer)

---

```
In [15]: # Using sklearn to create a matrix of word occurence frequency using bigrams

# Creating a CountVectorizer model having bigrams
model_a = CountVectorizer(analyzer = 'word', ngram_range = (2, 2), max_features = 50)

# Creating a data array from the plain complaints text data
data_array_a = model_a.fit_transform(plain_complaints_list_a).toarray()

# Creating a data frame/matrix with bigrams as columns and the complaints as rows where data is taken from 'data_array_a'
# data array
df_output_a = pd.DataFrame(data = data_array_a, columns = model_a.get_feature_names_out())

# Storing bigrams as a list
ngram_bow_list_ari = model_a.get_feature_names_out()

print(df_output_a.T, "\n")    # Printing the transpose of matrix 'df_output_a' to swap the rows with columns and vice versa
print(ngram_bow_list_ari)    # Printing bigrams
```

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	\
adapter box	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ask speak	0	0	0	0	0	0	0	0	0	0	1	1	0	0	
attorney general	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
auto pay	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
bill come	0	1	0	1	0	0	0	0	0	0	0	0	0	0	
bill pay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
billing department	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
box leave	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
cable company	0	0	0	0	0	0	0	0	0	1	0	0	1	0	
cable tv	0	0	0	0	0	0	0	1	0	0	0	0	1	0	
cancel service	0	0	0	0	0	0	0	0	0	0	1	0	0	2	
come house	0	0	0	0	1	0	0	0	0	0	1	0	0	0	
credit bill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
customer retention	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
customer service	0	0	0	0	0	1	0	0	1	1	0	1	1	0	
data cap	0	3	0	0	0	0	0	0	0	0	0	0	0	0	
day day	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
day technician	0	0	0	0	0	0	0	0	0	1	1	0	0	0	
different department	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
equipment leave	0	0	0	0	0	0	0	0	0	0	3	0	0	0	
hour late	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
hour minute	0	0	0	0	0	0	0	0	1	0	0	1	0	0	
hour phone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
house leave	0	0	0	0	1	0	0	0	0	0	1	0	0	0	
install fee	0	0	0	0	0	0	0	0	2	0	0	0	0	0	
internet cable	0	0	0	0	0	0	0	0	0	0	0	0	2	0	
internet service	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
month bill	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
new address	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
new home	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
pay bill	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
pay month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
pay owe	0	0	0	0	0	0	0	0	0	0	3	0	0	0	
person talk	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
place hold	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
pm cst	0	0	0	0	0	0	0	0	0	0	0	3	0	0	
schedule appointment	0	0	0	0	0	0	1	0	0	1	0	0	0	0	
speak manager	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
speak supervisor	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
tech come	0	0	0	0	0	0	2	0	0	0	1	0	0	0	
technician come	0	0	0	0	1	0	0	0	1	1	1	0	0	0	
tell week	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
tell yes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
time phone	0	0	0	0	0	0	0	1	0	0	0	1	0	0	

time speak	0	0	0	0	0	0	0	0	0	0	0	1	0	0
time tell	0	1	0	0	0	0	0	0	0	0	1	0	0	0
time time	0	0	0	0	0	0	0	1	0	0	0	0	0	0
time work	0	0	0	0	1	0	0	0	0	0	0	0	0	0
transfer supervisor	0	0	0	0	0	0	0	0	0	0	0	2	0	0
turn service	0	0	0	0	0	0	0	0	0	0	0	2	0	0

	14	15	16
adapter box	3	0	0
ask speak	1	0	1
attorney general	0	1	0
auto pay	0	0	0
bill come	0	1	0
bill pay	0	4	0
billing department	0	0	0
box leave	0	0	0
cable company	0	0	0
cable tv	0	1	0
cancel service	0	0	1
come house	0	0	1
credit bill	2	1	0
customer retention	0	0	0
customer service	3	0	0
data cap	0	0	0
day day	0	0	2
day technician	0	0	0
different department	0	0	1
equipment leave	0	0	0
hour late	0	0	1
hour minute	0	0	0
hour phone	1	0	1
house leave	0	0	0
install fee	0	0	0
internet cable	1	0	0
internet service	1	0	0
month bill	1	2	0
new address	0	1	2
new home	0	2	1
pay bill	2	2	0
pay month	2	2	0
pay owe	0	0	0
person talk	0	0	2
place hold	1	0	0
pm cst	0	0	0
schedule appointment	0	0	0



speak manager	0	0	2
speak supervisor	1	1	0
tech come	0	0	0
technician come	0	0	0
tell week	0	0	2
tell yes	0	1	1
time phone	0	0	0
time speak	0	0	1
time tell	0	0	0
time time	1	0	0
time work	1	0	0
transfer supervisor	0	0	0
turn service	0	0	0

```
[ 'adapter box' 'ask speak' 'attorney general' 'auto pay' 'bill come'
  'bill pay' 'billing department' 'box leave' 'cable company' 'cable tv'
  'cancel service' 'come house' 'credit bill' 'customer retention'
  'customer service' 'data cap' 'day day' 'day technician'
  'different department' 'equipment leave' 'hour late' 'hour minute'
  'hour phone' 'house leave' 'install fee' 'internet cable'
  'internet service' 'month bill' 'new address' 'new home' 'pay bill'
  'pay month' 'pay owe' 'person talk' 'place hold' 'pm cst'
  'schedule appointment' 'speak manager' 'speak supervisor' 'tech come'
  'technician come' 'tell week' 'tell yes' 'time phone' 'time speak'
  'time tell' 'time time' 'time work' 'transfer supervisor' 'turn service']
```

---

## Massachusetts BoW vectors

---

```
In [16]: # Unigram implementation - vocabulary used
s_time_mas = time.time()
word_index_dict_m = {}
iterator_m = 0
vector_iterator_m = 0
for word in vocabulary_m:
    word_index_dict_m[iterator_m] = word
    iterator_m += 1
print("The word index dictionary is: \n\n" , word_index_dict_m, "\n"*2)

# enumerate -> to iterate through the list of reviews so that it is iterable
for iterator, complaint_text in enumerate(list_of_complaints_m):
```

```

vector_m = np.zeros(len(vocabulary_m), dtype = int)
bow_dictionary_m = defaultdict(int)

for token_list in processed_tokens_list_m:
    for word in token_list:
        bow_dictionary_m[word] +=1

# Creating a List of values from BoW dictionary
bow_dict_m_values_list = list(bow_dictionary_m.values())
# print("bow_dict_m_values_list: \n\n", bow_dict_m_values_list, "\n"*2)

# Appending the vector_a list to create BoW vectors using the bow_dict_a_values_list
while vector_iterator_m < len(vector_m):
    vector_m[vector_iterator_m] = bow_dict_m_values_list[vector_iterator_m]
    vector_iterator_m += 1
print("The bow dictionary is: \n\n", bow_dictionary_m, "\n"*2)
print("Vector m is: \n\n", vector_m, "\n")

e_time_mas = time.time()
t_time_mas = round(e_time_mas - s_time_mas, 2)
print("\n\n ***** \n\n",
      "Time taken to create BoW vectors = ", t_time_mas,
      " s\n\n ***** \n\n")

```

The word index dictionary is:

{0: 'comcast', 1: 'overall', 2: 'terrible', 3: 'experience', 4: 'describe', 5: 'provider', 6: 'area', 7: 'time', 8: 'deal', 9: 'ultimately', 10: 'apartment', 11: 'service', 12: 'cancel', 13: 'account', 14: 'forever', 15: 'finally', 16: 'hardware', 17: 'store', 18: 'receipt', 19: 'debt', 20: 'collector', 21: 'month', 22: 'claim', 23: 'owe', 24: 'money', 25: 'return', 26: 'luckily', 27: 'physical', 28: 'proof', 29: 'honestly', 30: 'pay', 31: 'sure', 32: 'deny', 33: 'liability', 34: 'kick', 35: 'different', 36: 'collection', 37: 'agency', 38: 'new', 39: 'later', 40: 'away', 41: 'use', 42: 'good', 43: 'customer', 44: 'accidentally', 45: 'disconnect', 46: 'hint', 47: 'want', 48: 'complain', 49: 'choose', 50: 'option', 51: 'menu', 52: 'add', 53: 'connect', 54: 'agent', 55: 'immediately', 56: 'right', 57: 'department', 58: 'directly', 59: 'probably', 60: 'technical', 61: 'difficulty', 62: 'demand', 63: 'support', 64: 'solution', 65: 'problem', 66: 'reset', 67: 'box', 68: 'couple', 69: 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```

Vector m is:

```
[307  2  8 ...  1  1  1]
```

```
*****
```

Time taken to create BoW vectors = 0.27 s

```
*****
```

---

## Using sklearn for matrix representaion of BoW vectors (created using CountVectorizer)

---

```
In [17]: # Using sklearn to create a matrix of word occurence frequency using bigrams

# Creating a CountVectorizer model having bigrams
model_m = CountVectorizer(analyzer = 'word', ngram_range = (2, 2), max_features = 50)
```

```
# Creating a data array from the plain complaints text data
data_array_m = model_m.fit_transform(plain_complaints_list_m).toarray()

# Creating a data frame/matrix with bigrams as columns and the complaints as rows where data is taken from 'data_array_m'
# data array
df_output_m = pd.DataFrame(data = data_array_m, columns = model_m.get_feature_names_out())

# Storing bigrams as a list
ngram_bow_list_mas = model_m.get_feature_names_out()

print(df_output_m.T, "\n")    # Printing the transpose of matrix 'df_output_m' to swap the rows with columns and vice versa
print(ngram_bow_list_mas)    # Printing bigrams
```

	0	1	2	3	4	5	6	7	8	9	...	\
ask speak	0	0	0	0	0	0	0	0	0	0	...	
basic cable	0	0	0	0	0	0	0	0	0	0	...	
bill comcast	0	0	0	0	0	0	0	0	0	0	...	
bill pay	0	0	0	0	0	1	0	0	0	0	...	
cable box	0	0	0	0	0	0	0	0	0	0	...	
cable internet	0	0	0	0	0	0	0	0	0	0	...	
cable service	0	0	0	0	0	0	0	0	0	0	...	
cable tv	0	0	0	0	0	0	0	0	0	0	...	
cancel service	1	0	0	0	0	0	0	0	0	0	...	
comcast customer	0	0	0	0	0	0	1	0	0	0	...	
comcast send	0	0	0	0	0	0	0	0	0	0	...	
comcast service	0	0	0	0	0	0	0	0	0	0	...	
come house	0	0	0	0	0	0	0	0	0	0	...	
credit account	0	1	0	0	0	0	0	0	0	0	...	
credit card	0	0	0	0	0	0	0	0	0	0	...	
customer service	2	0	1	0	1	0	1	0	0	1	...	
customer year	0	0	0	0	0	0	0	0	0	0	...	
day later	0	0	0	0	0	0	0	0	0	0	...	
department tell	0	0	0	0	0	0	0	0	0	0	...	
gift card	0	0	0	0	0	0	0	0	0	0	...	
half hour	0	0	0	0	0	0	0	0	0	0	...	
hold minute	0	0	0	0	0	0	0	0	0	0	...	
hour phone	0	0	0	0	0	0	0	0	1	0	...	
install kit	0	0	0	0	0	0	0	0	0	0	...	
internet cable	0	0	0	0	0	0	0	0	0	0	...	
internet connection	0	0	0	0	0	0	0	0	0	0	...	
internet service	0	0	0	1	0	2	0	0	3	0	...	
internet speed	0	0	0	1	0	0	0	0	0	0	...	
month later	1	0	0	0	0	0	0	0	0	0	...	
month service	0	0	0	0	0	0	0	0	0	0	...	
multiple time	0	0	0	0	0	0	0	0	0	0	...	
pay bill	0	0	0	0	0	0	0	0	0	0	...	
pay month	0	0	0	1	0	1	0	0	1	0	...	
pay service	0	0	0	0	0	0	0	0	0	0	...	
phone internet	0	0	0	0	0	1	0	0	0	0	...	
receive bill	0	0	0	0	0	0	0	0	0	0	...	
rep tell	0	0	0	0	0	0	0	0	0	0	...	
self install	0	0	0	0	0	0	0	0	0	0	...	
send technician	0	0	0	0	0	0	0	0	0	0	...	
service comcast	0	0	0	0	0	1	1	0	0	0	...	
service customer	0	0	0	0	0	1	0	0	0	0	...	
service day	0	0	0	0	0	0	0	0	0	0	...	
service rep	0	0	0	0	0	0	0	0	0	0	...	
service representative	0	0	0	0	0	0	0	0	0	0	...	

ask speak	0	0	0	0	0	0	0	0	0	...	
ask supervisor	0	0	0	0	0	0	0	0	1	0	...
ask technician	0	0	0	0	0	0	0	0	0	0	...
ask technician come	0	0	0	0	0	0	0	0	0	0	...
ask tell comcast	0	0	0	0	0	0	0	0	0	0	...
ask tv service	0	0	0	0	0	0	0	0	0	0	...

	128	129	130	131	132	133	134	135	136	137
ask speak	0	0	0	0	0	0	0	0	0	0
basic cable	0	0	0	0	1	1	0	0	1	0
bill comcast	0	0	0	0	0	0	0	0	0	0
bill pay	0	0	0	0	0	0	0	0	0	0
cable box	2	0	0	3	0	0	0	0	1	0
cable internet	0	0	0	0	0	0	0	0	0	0
cable service	0	0	0	0	0	0	0	0	0	0
cable tv	0	0	0	0	0	0	0	0	0	0
cancel service	0	0	0	0	0	0	0	0	0	0
comcast customer	0	0	0	0	0	0	0	0	0	1
comcast send	0	0	0	0	0	0	0	0	0	0
comcast service	0	0	0	0	0	0	0	0	0	0
come house	0	0	0	0	0	0	0	0	0	0
credit account	0	0	0	0	0	0	0	0	0	0
credit card	0	0	0	0	0	0	0	0	0	0
customer service	1	0	1	0	0	0	0	0	0	2
customer year	0	0	0	0	0	0	0	0	0	1
day later	0	0	0	0	0	0	0	0	0	0
department tell	0	0	0	0	0	0	0	0	0	0
gift card	0	0	0	0	0	0	0	0	0	0
half hour	0	0	0	0	0	0	0	0	0	0
hold minute	0	0	0	0	0	0	0	0	0	0
hour phone	0	0	0	0	0	0	0	0	0	0
install kit	0	0	0	0	0	0	0	0	0	0
internet cable	0	0	0	0	0	0	0	0	0	0
internet connection	0	0	0	0	0	0	0	0	0	0
internet service	0	0	0	0	0	0	0	0	0	0
internet speed	0	0	0	0	0	0	0	0	0	0
month later	0	0	0	0	0	0	0	0	0	0
month service	0	0	0	1	0	0	0	2	0	0
multiple time	0	0	0	0	0	0	0	0	0	1
pay bill	0	0	0	0	0	0	0	0	0	0
pay month	0	0	0	1	1	0	0	0	1	0
pay service	0	0	0	0	0	0	0	0	0	0
phone internet	0	0	0	0	0	0	0	0	0	0
receive bill	0	0	0	0	0	0	0	0	0	0
rep tell	0	0	0	0	0	0	0	0	0	0



self install	0	0	0	0	0	0	0	0	0	0
send technician	0	0	0	0	0	0	0	0	0	0
service comcast	0	0	0	0	1	0	0	0	0	0
service customer	0	0	0	0	0	0	0	0	0	0
service day	0	0	0	0	0	0	0	0	0	0
service rep	0	0	0	0	0	0	0	0	0	1
service representative	0	0	0	0	0	0	0	0	0	0
speak supervisor	0	0	0	0	0	0	0	0	0	0
spend hour	0	0	0	0	0	0	0	0	0	0
tech come	0	0	0	0	0	0	0	0	0	0
technician come	0	0	0	0	0	0	0	0	0	0
tell comcast	0	0	0	0	0	0	0	0	1	0
tv service	0	0	0	0	1	0	0	0	0	0

[50 rows x 138 columns]

```
[ 'ask speak' 'basic cable' 'bill comcast' 'bill pay' 'cable box'
  'cable internet' 'cable service' 'cable tv' 'cancel service'
  'comcast customer' 'comcast send' 'comcast service' 'come house'
  'credit account' 'credit card' 'customer service' 'customer year'
  'day later' 'department tell' 'gift card' 'half hour' 'hold minute'
  'hour phone' 'install kit' 'internet cable' 'internet connection'
  'internet service' 'internet speed' 'month later' 'month service'
  'multiple time' 'pay bill' 'pay month' 'pay service' 'phone internet'
  'receive bill' 'rep tell' 'self install' 'send technician'
  'service comcast' 'service customer' 'service day' 'service rep'
  'service representative' 'speak supervisor' 'spend hour' 'tech come'
  'technician come' 'tell comcast' 'tv service']
```

## **Brief comparison of results - Text preprocessing and creation of BoW vectors**

```
In [18]: md(f"Text cleaning is an important preprocessing step as it allows a more consistent and accurate result at the end and
```

Out[18]: Text cleaning is an important preprocessing step as it allows a more consistent and accurate result at the end and avoids purposeless results (eg. if the most occurring word is 'the', it is not an important topic and does not indicate anything about the relevant topic in the complaints text). **spaCy** is used for preprocessing the complaints text. Emojis had to be removed as a part of cleaning text so that they are not considered as separate tokens. Stopwords, punctuations and numeric values are also removed and the tokens are lemmatized (while considering the context in which lemmas are used) and turned to lowercase.

The BoW vectors have been created in two ways while using n-grams: one having unigrams (n=1) which is created using while and for loops and the other having bigrams (n=2) created using sklearn's CountVectorizer which is also used to give a matrix representation of the results.

The time taken for text preprocessing is given below (values given to 2 decimal places):

Arizona complaints : **1.17 s**

Massachusetts complaints : **5.2 s**

Text preprocessing was faster for Arizona than Massachusetts due to the smaller number of complaints.

The time taken to create **BoW vectors** is given below (values given to 2 decimal places):

Arizona BoW : **0.01 s**

Massachusetts BoW : **0.27 s**

The creation of **BoW vectors** for Arizona was faster than that for Massachusetts as there were a fewer number of complaints from Arizona compared to those from Massachusetts (hence a fewer number of word frequency assignments had to be made, leading to a smaller matrix as compared to Massachusetts).

## Creating Term Frequency Inverse Document Frequency(TF-IDF) word vectors

## TF-IDF for Arizona

---

```
In [19]: ## TF-IDF using sklearn (while using unigrams and bigrams)
tfidf_s_time_ari = time.time()

tfidf_vectorizer_a = TfidfVectorizer(analyzer = "word", ngram_range=(1,2), min_df=0.1)
tfidf_fit_a = tfidf_vectorizer_a.fit_transform(plain_complaints_list_a)
tfidf_model_a = tfidf_vectorizer_a.fit_transform(plain_complaints_list_a).toarray()
feat_names_a = tfidf_vectorizer_a.get_feature_names_out() # Extracting feature names-> terms- unigrams and bigrams
data_a = pd.DataFrame(data = np.round(tfidf_model_a, 2), columns = feat_names_a)
print("Feature names are: \n", feat_names_a, "\n\n")

# Printing tranpose matrix to represent bigrams as rows and complaint number as columns
print(data_a.T)

tfidf_e_time_ari = time.time()
tfidf_t_time_ari = round(tfidf_e_time_ari - tfidf_s_time_ari, 2)
print("\n\n***** \n\n",
      "Time taken to create TF-TDF vectors = ", tfidf_t_time_ari,
      " s\n\n***** \n\n")
```

Feature names are:

```
[ 'able' 'access' 'access account' 'account' 'add' 'additional' 'address'
'advance' 'ago' 'agree' 'allow' 'answer' 'appointment' 'area' 'ask'
'ask speak' 'assure' 'attorney' 'attorney general' 'automate' 'available'
'bad' 'balance' 'believe' 'big' 'bill' 'bill come' 'bill credit'
'bill equipment' 'box' 'business' 'cable' 'cable company' 'cable tv'
'cancel' 'cancel service' 'care' 'catch' 'change' 'charge'
'charge equipment' 'chat' 'check' 'claim' 'collect' 'comcast'
'comcast service' 'comcast xfinity' 'come' 'come house' 'company'
'company comcast' 'complaint' 'complete' 'concern' 'confirm' 'contact'
'contract' 'conversation' 'correct' 'course' 'credit' 'credit bill'
'current' 'customer' 'customer service' 'date' 'day' 'day day'
'day technician' 'deal' 'deal comcast' 'decide' 'demand' 'department'
'different' 'different department' 'direct' 'disconnect' 'discover'
'dollar' 'door' 'employee' 'end' 'equipment' 'excuse' 'experience'
'experience comcast' 'explain' 'extra' 'fail' 'fee' 'finally' 'find'
'fix' 'fix issue' 'fix problem' 'follow' 'forget' 'fully' 'future' 'game'
'general' 'general office' 'guarantee' 'guy' 'hang' 'happen' 'hd' 'hear'
'help' 'high' 'hold' 'home' 'hook' 'hope' 'hour' 'hour late'
'hour minute' 'hour phone' 'house' 'house leave' 'include' 'inform'
'instead' 'internet' 'internet cable' 'internet service' 'issue' 'know'
'lady' 'large' 'late' 'later' 'leave' 'let' 'lie' 'like' 'line'
'line tell' 'listen' 'local' 'local office' 'long' 'look' 'lose'
'management' 'manager' 'matter' 'maybe' 'meet' 'middle' 'million' 'mind'
'minute' 'minute later' 'minute wait' 'money' 'month' 'month bill'
'month charge' 'morning' 'need' 'nerve' 'new' 'new address' 'new home'
'nightmare' 'number' 'office' 'okay' 'online' 'option' 'order'
'order service' 'outage' 'outside' 'owe' 'package' 'past' 'pay'
'pay bill' 'pay month' 'payment' 'people' 'person' 'person talk' 'phone'
'pick' 'place' 'place hold' 'pm' 'post' 'post account' 'previous'
'problem' 'process' 'promise' 'pull' 'raise' 'read' 'reason' 'receive'
'rep' 'report' 'representative' 'require' 'reschedule' 'resolve'
'response' 'return' 'review' 'right' 'rude' 'run' 'sadly' 'schedule'
'schedule appointment' 'second' 'send' 'seriously' 'service'
'service day' 'service know' 'set' 'shut' 'sign' 'sit' 'soon' 'speak'
'speak management' 'speak manager' 'speak supervisor' 'specialist'
'spend' 'state' 'state attorney' 'stupid' 'supervisor' 'support'
'suppose' 'system' 'talk' 'talk tell' 'tech' 'tech come' 'technician'
'technician come' 'tell' 'tell need' 'tell reschedule' 'tell yes'
'terrible' 'thank' 'thing' 'think' 'threaten' 'time' 'time phone'
'time speak' 'time tell' 'time time' 'time work' 'today' 'transfer'
'transfer customer' 'transfer service' 'treat' 'try' 'tv' 'twice' 'type'
'visit' 'wait' 'want' 'watch' 'week' 'work' 'work comcast' 'worth'
'wrong' 'xfinity' 'year' 'yes']
```

	0	1	2	3	4	5	6	7	8	\
able	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	
access	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	
access account	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	
account	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.08	
add	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
additional	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.19	
address	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
advance	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	
ago	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	
agree	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	
allow	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	
answer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	
appointment	0.07	0.00	0.13	0.00	0.00	0.00	0.25	0.00	0.08	
area	0.16	0.00	0.00	0.00	0.11	0.16	0.00	0.00	0.00	
ask	0.07	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	
ask speak	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
assure	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	
attorney	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	
attorney general	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	
automate	0.10	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	
available	0.00	0.00	0.16	0.00	0.00	0.00	0.15	0.00	0.00	
bad	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
balance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
believe	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.09	
big	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	
bill	0.00	0.06	0.00	0.10	0.08	0.00	0.00	0.00	0.07	
bill come	0.00	0.09	0.00	0.15	0.00	0.00	0.00	0.00	0.00	
bill credit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
bill equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
box	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	
business	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
cable	0.00	0.00	0.00	0.10	0.00	0.12	0.00	0.06	0.00	
cable company	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
cable tv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	
cancel	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
cancel service	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
care	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	
catch	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
change	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
charge	0.00	0.14	0.00	0.10	0.00	0.00	0.00	0.00	0.14	
charge equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
chat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	
check	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	

claim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
collect	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
comcast	0.00	0.08	0.07	0.24	0.05	0.07	0.19	0.04	0.08
comcast service	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
comcast xfinity	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
come	0.20	0.05	0.00	0.08	0.26	0.00	0.17	0.00	0.11
come house	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
company	0.00	0.00	0.21	0.39	0.00	0.00	0.00	0.06	0.00
company comcast	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
complaint	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.09	0.00
complete	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
concern	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
confirm	0.29	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
contact	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00
contract	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
conversation	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
correct	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
course	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
credit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
credit bill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
current	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
customer	0.00	0.25	0.00	0.00	0.00	0.12	0.00	0.19	0.07
customer service	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.08
date	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
day	0.11	0.00	0.30	0.00	0.15	0.00	0.00	0.00	0.00
day day	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
day technician	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
deal	0.00	0.09	0.00	0.15	0.00	0.00	0.00	0.00	0.00
deal comcast	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
decide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
demand	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
department	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
different	0.00	0.00	0.13	0.12	0.00	0.00	0.00	0.00	0.00
different department	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
direct	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
disconnect	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
discover	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
dollar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
door	0.10	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
employee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
end	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00
equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00
excuse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
experience	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
experience comcast	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00

explain	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extra	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
fail	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.09	0.00
fee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
finally	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
find	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
fix	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fix issue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fix problem	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
follow	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
forget	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fully	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
future	0.00	0.00	0.00	0.00	0.00	0.17	0.15	0.00	0.00
game	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
general	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
general office	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
guarantee	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
guy	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hang	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
happen	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
hear	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.17	0.00
help	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
high	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
home	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hook	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
hope	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00
hour	0.00	0.00	0.12	0.00	0.00	0.00	0.12	0.00	0.23
hour late	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
hour minute	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
hour phone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
house	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00
house leave	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
include	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
inform	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
instead	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.09
internet	0.06	0.13	0.00	0.00	0.08	0.00	0.00	0.13	0.00
internet cable	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
internet service	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
issue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00
know	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.08
lady	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
large	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.11	0.00
late	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00

later	0.14	0.07	0.00	0.00	0.18	0.00	0.12	0.00	0.08
leave	0.09	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00
let	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
lie	0.00	0.00	0.00	0.29	0.00	0.17	0.00	0.00	0.00
like	0.41	0.07	0.12	0.11	0.09	0.00	0.00	0.00	0.00
line	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00
line tell	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
listen	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
local	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00
local office	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
long	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
look	0.08	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00
lose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
manager	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
matter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
maybe	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
meet	0.00	0.00	0.00	0.16	0.00	0.19	0.00	0.00	0.00
middle	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
million	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
mind	0.07	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
minute	0.06	0.07	0.00	0.00	0.17	0.00	0.11	0.00	0.07
minute later	0.00	0.00	0.00	0.00	0.13	0.00	0.17	0.00	0.00
minute wait	0.00	0.10	0.00	0.00	0.13	0.00	0.00	0.00	0.00
money	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00
month	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.16	0.00
month bill	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
month charge	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
morning	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
need	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.08
nerve	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
new	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00
new address	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
new home	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
nightmare	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
number	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
office	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00
okay	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
online	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.19
option	0.09	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
order	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
order service	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
outage	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
outside	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
owe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



package	0.00	0.09	0.00	0.00	0.00	0.16	0.00	0.00	0.09
past	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
pay	0.00	0.00	0.00	0.20	0.00	0.00	0.10	0.06	0.00
pay bill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
pay month	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
payment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
people	0.00	0.29	0.00	0.00	0.00	0.27	0.00	0.07	0.00
person	0.00	0.00	0.00	0.26	0.00	0.16	0.00	0.09	0.00
person talk	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
phone	0.06	0.06	0.00	0.00	0.00	0.11	0.00	0.42	0.00
pick	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
place	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
place hold	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
pm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
post	0.00	0.09	0.00	0.00	0.12	0.00	0.00	0.00	0.00
post account	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
previous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
problem	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.32	0.00
process	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
promise	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
pull	0.10	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
raise	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
read	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.09	0.00
reason	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
receive	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.07	0.38
rep	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.16	0.00
report	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.11	0.00
representative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
require	0.00	0.00	0.18	0.00	0.00	0.38	0.00	0.00	0.00
reschedule	0.29	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
resolve	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
response	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
return	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
review	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
right	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
rude	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
run	0.09	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
sadly	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
schedule	0.26	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
schedule appointment	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
second	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.19
send	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seriously	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
service	0.00	0.00	0.15	0.00	0.05	0.08	0.14	0.13	0.09
service day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

service know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
set	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
shut	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
sign	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.09	0.00
sit	0.07	0.00	0.00	0.00	0.18	0.00	0.12	0.00	0.08
soon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
speak	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
speak management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
speak manager	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
speak supervisor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
specialist	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
spend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
state	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08
state attorney	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
stupid	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
supervisor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
support	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
suppose	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
system	0.07	0.00	0.00	0.00	0.00	0.14	0.00	0.08	0.08
talk	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00
talk tell	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
tech	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00
tech come	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00
technician	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.15	0.08
technician come	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.09
tell	0.12	0.13	0.07	0.14	0.05	0.00	0.07	0.04	0.14
tell need	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
tell reschedule	0.10	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
tell yes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
terrible	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
thank	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
thing	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
think	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
threaten	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
time	0.04	0.04	0.00	0.07	0.11	0.16	0.00	0.18	0.05
time phone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
time speak	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
time tell	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
time time	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
time work	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
today	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
transfer	0.00	0.09	0.14	0.00	0.00	0.00	0.00	0.00	0.00
transfer customer	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
transfer service	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
treat	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.09	0.00

try	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
tv	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.07	0.08
twice	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
visit	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
wait	0.07	0.08	0.00	0.00	0.10	0.00	0.13	0.00	0.00
want	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00
watch	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
week	0.14	0.00	0.12	0.00	0.09	0.00	0.00	0.22	0.00
work	0.15	0.00	0.00	0.12	0.29	0.00	0.00	0.00	0.00
work comcast	0.00	0.00	0.00	0.16	0.13	0.00	0.00	0.00	0.00
worth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
wrong	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09
xfinity	0.00	0.00	0.32	0.00	0.12	0.00	0.00	0.00	0.00
year	0.00	0.20	0.11	0.00	0.00	0.00	0.00	0.14	0.00
yes	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	9	10	11	12	13	14	15	16
able	0.10	0.00	0.09	0.00	0.00	0.04	0.00	0.00
access	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
access account	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
account	0.00	0.11	0.26	0.00	0.00	0.23	0.00	0.00
add	0.00	0.04	0.00	0.00	0.00	0.00	0.05	0.05
additional	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
address	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.36
advance	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00
ago	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
agree	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
allow	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
answer	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
appointment	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
ask	0.00	0.14	0.12	0.00	0.00	0.03	0.00	0.11
ask speak	0.00	0.04	0.05	0.00	0.00	0.04	0.00	0.04
assure	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
attorney	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
attorney general	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
automate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
available	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
bad	0.12	0.04	0.10	0.00	0.00	0.00	0.00	0.00
balance	0.00	0.00	0.06	0.00	0.00	0.00	0.06	0.00
believe	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04
big	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
bill	0.00	0.21	0.03	0.00	0.00	0.18	0.61	0.00
bill come	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00

bill credit	0.00	0.05	0.00	0.00	0.00	0.00	0.06	0.00
bill equipment	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.00
box	0.11	0.20	0.00	0.00	0.00	0.21	0.00	0.00
business	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
cable	0.24	0.03	0.00	0.24	0.00	0.03	0.07	0.00
cable company	0.13	0.00	0.00	0.19	0.00	0.00	0.00	0.00
cable tv	0.00	0.00	0.00	0.17	0.00	0.00	0.05	0.00
cancel	0.00	0.03	0.08	0.00	0.36	0.00	0.00	0.04
cancel service	0.00	0.04	0.00	0.00	0.30	0.00	0.00	0.05
care	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.05
catch	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
change	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
charge	0.00	0.03	0.00	0.00	0.44	0.20	0.07	0.00
charge equipment	0.00	0.05	0.00	0.00	0.17	0.00	0.00	0.00
chat	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
check	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.17
claim	0.00	0.00	0.00	0.00	0.17	0.00	0.06	0.00
collect	0.00	0.05	0.00	0.00	0.00	0.00	0.06	0.00
comcast	0.10	0.04	0.06	0.15	0.13	0.04	0.19	0.06
comcast service	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
comcast xfinity	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
come	0.13	0.12	0.00	0.00	0.00	0.03	0.03	0.05
come house	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.05
company	0.08	0.03	0.00	0.12	0.00	0.00	0.03	0.06
company comcast	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
complaint	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
complete	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
concern	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
confirm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
contact	0.00	0.00	0.00	0.00	0.00	0.12	0.05	0.13
contract	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.05
conversation	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
correct	0.00	0.04	0.00	0.00	0.00	0.00	0.10	0.00
course	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
credit	0.00	0.26	0.00	0.00	0.00	0.54	0.10	0.00
credit bill	0.00	0.00	0.00	0.00	0.00	0.10	0.06	0.00
current	0.00	0.00	0.06	0.00	0.00	0.00	0.06	0.00
customer	0.08	0.00	0.07	0.12	0.00	0.09	0.00	0.00
customer service	0.09	0.00	0.04	0.14	0.00	0.10	0.00	0.00
date	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00
day	0.07	0.11	0.06	0.11	0.10	0.00	0.00	0.12
day day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
day technician	0.13	0.05	0.00	0.00	0.00	0.00	0.00	0.00
deal	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
deal comcast	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00

decide	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.05
demand	0.00	0.00	0.09	0.00	0.00	0.00	0.05	0.04
department	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.05
different	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.04
different department	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.05
direct	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
disconnect	0.00	0.00	0.11	0.19	0.00	0.00	0.00	0.00
discover	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
dollar	0.00	0.10	0.00	0.00	0.00	0.00	0.06	0.00
door	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
employee	0.11	0.00	0.05	0.00	0.00	0.04	0.00	0.04
end	0.00	0.04	0.05	0.00	0.00	0.00	0.00	0.00
equipment	0.00	0.41	0.00	0.00	0.26	0.15	0.00	0.04
excuse	0.00	0.05	0.00	0.00	0.00	0.00	0.06	0.00
experience	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
experience comcast	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
explain	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
extra	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
fail	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
fee	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
finally	0.11	0.00	0.05	0.00	0.00	0.04	0.00	0.00
find	0.12	0.13	0.00	0.00	0.00	0.00	0.00	0.00
fix	0.11	0.00	0.05	0.16	0.00	0.00	0.00	0.08
fix issue	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.05
fix problem	0.13	0.00	0.00	0.19	0.00	0.00	0.00	0.00
follow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
forget	0.00	0.00	0.06	0.00	0.00	0.00	0.06	0.00
fully	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
future	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
game	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
general	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
general office	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
guarantee	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
guy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
hang	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
happen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
hd	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hear	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04
help	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
high	0.00	0.04	0.05	0.00	0.00	0.00	0.00	0.00
hold	0.00	0.04	0.23	0.00	0.00	0.04	0.00	0.04
home	0.00	0.18	0.00	0.00	0.00	0.00	0.10	0.05
hook	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
hope	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
hour	0.00	0.00	0.04	0.00	0.00	0.03	0.00	0.11

hour late	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
hour minute	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
hour phone	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
house	0.00	0.12	0.00	0.16	0.00	0.00	0.00	0.08
house leave	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
include	0.00	0.00	0.00	0.00	0.00	0.09	0.05	0.05
inform	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
instead	0.00	0.00	0.05	0.00	0.00	0.00	0.09	0.00
internet	0.08	0.00	0.00	0.24	0.00	0.06	0.00	0.03
internet cable	0.00	0.00	0.00	0.39	0.00	0.05	0.00	0.00
internet service	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
issue	0.09	0.00	0.12	0.00	0.12	0.07	0.00	0.07
know	0.00	0.14	0.00	0.14	0.00	0.00	0.08	0.14
lady	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
large	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
late	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.09
later	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
leave	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00
let	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.09
lie	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00
like	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
line	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.23
line tell	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05
listen	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
local	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
local office	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
long	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05
look	0.00	0.08	0.00	0.00	0.00	0.04	0.00	0.00
lose	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.05
management	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.00
manager	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.26
matter	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
maybe	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
meet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
middle	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
million	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
mind	0.00	0.04	0.04	0.00	0.00	0.04	0.00	0.00
minute	0.08	0.00	0.15	0.00	0.00	0.00	0.00	0.00
minute later	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
minute wait	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
money	0.00	0.04	0.00	0.00	0.00	0.00	0.15	0.00
month	0.10	0.00	0.00	0.00	0.00	0.11	0.38	0.00
month bill	0.00	0.00	0.00	0.00	0.00	0.05	0.10	0.00
month charge	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
morning	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.09

need	0.00	0.04	0.00	0.29	0.13	0.00	0.00	0.00
nerve	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
new	0.00	0.04	0.00	0.15	0.00	0.00	0.21	0.19
new address	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.10
new home	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.05
nightmare	0.00	0.00	0.00	0.19	0.17	0.00	0.00	0.00
number	0.12	0.00	0.00	0.00	0.00	0.05	0.00	0.14
office	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
okay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
online	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
option	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
order	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.14
order service	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
outage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
outside	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
owe	0.00	0.25	0.00	0.00	0.00	0.00	0.06	0.00
package	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
past	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00
pay	0.00	0.21	0.07	0.00	0.00	0.15	0.24	0.03
pay bill	0.00	0.09	0.00	0.00	0.00	0.09	0.10	0.00
pay month	0.00	0.00	0.00	0.00	0.00	0.10	0.11	0.00
payment	0.00	0.00	0.06	0.00	0.00	0.00	0.06	0.00
people	0.00	0.07	0.00	0.00	0.00	0.00	0.04	0.04
person	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
person talk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
phone	0.07	0.03	0.03	0.00	0.00	0.06	0.00	0.09
pick	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
place	0.00	0.00	0.14	0.00	0.00	0.04	0.00	0.13
place hold	0.00	0.00	0.11	0.00	0.00	0.05	0.00	0.00
pm	0.00	0.00	0.17	0.00	0.00	0.05	0.00	0.00
post	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
post account	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
previous	0.00	0.04	0.00	0.00	0.00	0.14	0.15	0.00
problem	0.20	0.00	0.00	0.15	0.00	0.04	0.00	0.00
process	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
promise	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
pull	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
raise	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.00
read	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
reason	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
receive	0.00	0.03	0.00	0.00	0.12	0.10	0.00	0.00
rep	0.10	0.00	0.13	0.00	0.00	0.15	0.00	0.00
report	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
representative	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
require	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

reschedule	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
resolve	0.12	0.00	0.15	0.00	0.00	0.00	0.00	0.00
response	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00
return	0.00	0.00	0.00	0.00	0.34	0.05	0.00	0.00
review	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
right	0.00	0.09	0.10	0.00	0.00	0.00	0.00	0.05
rude	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
run	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
sadly	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
schedule	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00
schedule appointment	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
second	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
send	0.00	0.07	0.00	0.00	0.13	0.00	0.04	0.04
seriously	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00
service	0.06	0.06	0.17	0.08	0.22	0.26	0.02	0.15
service day	0.00	0.00	0.06	0.19	0.00	0.00	0.00	0.00
service know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
set	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.09
shut	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
sign	0.00	0.04	0.00	0.00	0.00	0.00	0.05	0.00
sit	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00
soon	0.00	0.00	0.06	0.00	0.00	0.00	0.06	0.00
speak	0.09	0.07	0.24	0.00	0.00	0.03	0.04	0.14
speak management	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.00
speak manager	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.10
speak supervisor	0.00	0.00	0.05	0.00	0.00	0.05	0.05	0.00
specialist	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
spend	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
state	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04
state attorney	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
stupid	0.00	0.00	0.06	0.00	0.17	0.00	0.00	0.00
supervisor	0.00	0.00	0.20	0.00	0.00	0.23	0.05	0.00
support	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
suppose	0.00	0.09	0.05	0.00	0.00	0.00	0.00	0.05
system	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
talk	0.00	0.00	0.09	0.16	0.00	0.00	0.00	0.13
talk tell	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
tech	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
tech come	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
technician	0.46	0.17	0.00	0.00	0.00	0.03	0.00	0.00
technician come	0.11	0.04	0.00	0.00	0.00	0.00	0.00	0.00
tell	0.00	0.08	0.07	0.00	0.07	0.02	0.02	0.31
tell need	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
tell reschedule	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
tell yes	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.05



terrible	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
thank	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
thing	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.05
think	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
threaten	0.00	0.05	0.00	0.00	0.00	0.00	0.06	0.00
time	0.06	0.04	0.12	0.08	0.07	0.11	0.00	0.04
time phone	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
time speak	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.05
time tell	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
time time	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
time work	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
today	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.10
transfer	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.04
transfer customer	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
transfer service	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
treat	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
try	0.00	0.07	0.00	0.00	0.26	0.04	0.00	0.04
tv	0.00	0.00	0.00	0.14	0.00	0.00	0.04	0.04
twice	0.00	0.00	0.00	0.00	0.00	0.09	0.05	0.00
type	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.00
visit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
wait	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
want	0.00	0.04	0.04	0.00	0.00	0.04	0.00	0.08
watch	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
week	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.22
work	0.00	0.04	0.00	0.00	0.00	0.08	0.00	0.00
work comcast	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
worth	0.00	0.05	0.00	0.19	0.00	0.00	0.00	0.00
wrong	0.11	0.00	0.05	0.00	0.00	0.00	0.00	0.00
xfinity	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
year	0.08	0.06	0.00	0.13	0.00	0.00	0.00	0.03
yes	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.04

\*\*\*\*\*

Time taken to create TF-TDF vectors = 0.13 s

\*\*\*\*\*

```
In [20]: ### Setting n grams to be trigrams ###
tfidf_s_time_aari= time.time()
```

```

vectorizer_a = TfidfVectorizer(ngram_range = (3,3), max_features = 15, norm="l2")
model_a = vectorizer_a.fit_transform(plain_complaints_list_a).A # Creating an array of the model
feature_names_a = vectorizer_a.get_feature_names_out() # Extracting feature names-> terms- trigrams
data_a_vectorizer_a = pd.DataFrame(data = np.round(model_a, 2), columns = vectorizer_a.get_feature_names_out())
# Printing tranpose matrix to represent bigrams as rows and complaint number as columns
print("Feature names are: \n", feature_names_a, "\n\n")
print(data_a_vectorizer_a.T)

tfidf_e_time_aari = time.time()
tfidf_t_time_aari = round(tfidf_e_time_aari - tfidf_s_time_aari, 2)
print("\n\n ***** \n\n",
      "Time taken to create TF-TDF vectors = ", tfidf_t_time_aari,
      " s\n\n ***** ")

```

Feature names are:

```
['account set auto' 'ask speak supervisor' 'attorney general office'
'charge contact customer' 'come house leave' 'contact customer service'
'extra equipment leave' 'pay month bill' 'previous rep submit'
'problem come speak' 'problem disconnect talk' 'rep submit credit'
'set auto pay' 'speak manager tell' 'state attorney general']
```

	0	1	2	3	4	5	6	7	8	9	\
account set auto	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
ask speak supervisor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
attorney general office	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.71	0.0	0.0	
charge contact customer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
come house leave	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.00	0.0	0.0	
contact customer service	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
extra equipment leave	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
pay month bill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
previous rep submit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
problem come speak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	1.0	
problem disconnect talk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
rep submit credit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
set auto pay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
speak manager tell	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	
state attorney general	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.71	0.0	0.0	

	10	11	12	13	14	15	16
account set auto	0.00	0.68	0.0	0.0	0.00	0.00	0.0
ask speak supervisor	0.00	0.29	0.0	0.0	0.23	0.00	0.0
attorney general office	0.00	0.00	0.0	0.0	0.00	0.58	0.0
charge contact customer	0.00	0.00	0.0	0.0	0.52	0.00	0.0
come house leave	0.40	0.00	0.0	0.0	0.00	0.00	0.0
contact customer service	0.00	0.00	0.0	0.0	0.52	0.00	0.0
extra equipment leave	0.92	0.00	0.0	0.0	0.00	0.00	0.0
pay month bill	0.00	0.00	0.0	0.0	0.23	0.58	0.0
previous rep submit	0.00	0.00	0.0	0.0	0.26	0.00	0.0
problem come speak	0.00	0.00	0.0	0.0	0.00	0.00	0.0
problem disconnect talk	0.00	0.00	1.0	0.0	0.00	0.00	0.0
rep submit credit	0.00	0.00	0.0	0.0	0.52	0.00	0.0
set auto pay	0.00	0.68	0.0	0.0	0.00	0.00	0.0
speak manager tell	0.00	0.00	0.0	0.0	0.00	0.00	1.0
state attorney general	0.00	0.00	0.0	0.0	0.00	0.58	0.0

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Time taken to create TF-TDF vectors = 0.13 s

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## TF-IDF for Massachusetts

```
In [21]: ## TF-IDF using sklearn (while using unigrams and bigrams)
tfidf_s_time_mas= time.time()

tfidf_vectorizer_m = TfidfVectorizer(analyzer = "word", ngram_range=(1,2), min_df=0.1)
tfidf_fit_m = tfidf_vectorizer_m.fit_transform(plain_complaints_list_m)
tfidf_model_m = tfidf_vectorizer_m.fit_transform(plain_complaints_list_m).toarray()
feat_names_m = tfidf_vectorizer_m.get_feature_names_out() # Extracting feature names-> terms- unigrams and bigrams
data_m = pd.DataFrame(data = np.round(tfidf_model_m, 2), columns = feat_names_m)
print("Feature names are: \n", feat_names_m, "\n\n")

# Printing tranpose matrix to represent bigrams as rows and complaint number as columns
print(data_m.T)

tfidf_e_time_mas = time.time()
tfidf_t_time_mas = round(tfidf_e_time_mas - tfidf_s_time_mas, 2)
print("\n\n ***** \n\n",
      "Time taken to create TF-TDF vectors = ", tfidf_t_time_mas,
      " s\n\n ***** \n\n")
```

Feature names are:

```
['account' 'address' 'answer' 'area' 'ask' 'available' 'bad' 'bill' 'box'
'business' 'cable' 'cable box' 'cancel' 'change' 'channel' 'charge'
'comcast' 'comcast customer' 'come' 'company' 'contact' 'credit'
'customer' 'customer service' 'day' 'deal' 'department' 'equipment'
'experience' 'explain' 'fee' 'finally' 'find' 'fix' 'good' 'happen'
'help' 'high' 'hold' 'home' 'hour' 'house' 'internet' 'internet service'
'issue' 'know' 'later' 'leave' 'let' 'like' 'line' 'look' 'minute'
'modem' 'money' 'month' 'need' 'new' 'number' 'order' 'package' 'pay'
'pay month' 'people' 'person' 'phone' 'price' 'problem' 'provider'
'receive' 'rep' 'representative' 'resolve' 'return' 'right' 'send'
'service' 'set' 'sign' 'speak' 'spend' 'start' 'state' 'supervisor'
'sure' 'switch' 'tech' 'technician' 'tell' 'thing' 'think' 'time' 'today'
'try' 'tv' 'use' 'wait' 'want' 'watch' 'way' 'week' 'work' 'year']
```

	0	1	2	3	4	5	6	7	8	9	\
account	0.13	0.32	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	
address	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
answer	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	
area	0.30	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.15	0.00	
ask	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.00	
available	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
bad	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	
bill	0.00	0.00	0.00	0.00	0.00	0.05	0.33	0.00	0.00	0.00	
box	0.00	0.16	0.00	0.18	0.00	0.11	0.00	0.00	0.00	0.00	
business	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	
cable	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
cable box	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
cancel	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
change	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	
channel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
charge	0.00	0.07	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	
comcast	0.13	0.08	0.00	0.09	0.00	0.08	0.19	0.10	0.13	0.00	
comcast customer	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	
come	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
company	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.30	
contact	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
credit	0.00	0.35	0.00	0.00	0.00	0.00	0.21	0.42	0.00	0.00	
customer	0.17	0.11	0.34	0.00	0.12	0.04	0.13	0.00	0.00	0.40	
customer service	0.21	0.00	0.42	0.00	0.14	0.00	0.15	0.00	0.00	0.24	
day	0.00	0.06	0.00	0.13	0.26	0.00	0.00	0.14	0.00	0.00	
deal	0.29	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	
department	0.17	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	
equipment	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

experience	0.15	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
explain	0.00	0.00	0.00	0.00	0.00	0.07	0.24	0.00	0.00	0.00
fee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
finally	0.34	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
find	0.00	0.27	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00
fix	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.21	0.00	0.00
good	0.16	0.00	0.00	0.23	0.00	0.07	0.00	0.00	0.00	0.38
happen	0.00	0.09	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00
help	0.00	0.00	0.00	0.00	0.22	0.14	0.00	0.00	0.00	0.00
high	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
hold	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
home	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hour	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.13	0.00
house	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00
internet	0.00	0.00	0.00	0.58	0.00	0.63	0.00	0.00	0.42	0.00
internet service	0.00	0.00	0.00	0.24	0.00	0.15	0.00	0.00	0.52	0.00
issue	0.00	0.18	0.00	0.00	0.00	0.06	0.00	0.00	0.15	0.00
know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
later	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
leave	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
let	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
like	0.00	0.08	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00
line	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
look	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
minute	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
modem	0.00	0.00	0.00	0.24	0.00	0.37	0.00	0.26	0.17	0.00
money	0.16	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
month	0.19	0.06	0.00	0.14	0.00	0.04	0.14	0.15	0.10	0.00
need	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
new	0.11	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00
number	0.00	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.00	0.00
order	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
package	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.25	0.00	0.00
pay	0.09	0.00	0.00	0.26	0.00	0.32	0.00	0.14	0.19	0.00
pay month	0.00	0.00	0.00	0.23	0.00	0.07	0.00	0.00	0.16	0.00
people	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
person	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00
phone	0.00	0.07	0.00	0.00	0.00	0.05	0.00	0.00	0.11	0.00
price	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
problem	0.00	0.15	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00
provider	0.32	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.16	0.38
receive	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00
rep	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
representative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
resolve	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.17	0.00

return	0.15	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
right	0.15	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
send	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00
service	0.33	0.12	0.27	0.18	0.18	0.09	0.49	0.00	0.33	0.15
set	0.00	0.30	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
sign	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00
speak	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
spend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00
start	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
state	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
supervisor	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sure	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
switch	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
tech	0.00	0.10	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
technician	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
tell	0.00	0.15	0.00	0.00	0.00	0.04	0.00	0.12	0.00	0.00
thing	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
think	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
time	0.19	0.00	0.00	0.00	0.00	0.04	0.00	0.42	0.00	0.22
today	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
try	0.00	0.00	0.00	0.00	0.17	0.11	0.18	0.18	0.12	0.00
tv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
use	0.16	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
wait	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
want	0.12	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
watch	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00
way	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
week	0.00	0.08	0.51	0.00	0.00	0.00	0.37	0.00	0.13	0.00
work	0.00	0.00	0.00	0.16	0.15	0.19	0.00	0.34	0.00	0.00
year	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.19	0.00	0.00

	...	128	129	130	131	132	133	134	135	136	\
account	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
address	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
answer	...	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
area	...	0.10	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	
ask	...	0.00	0.00	0.00	0.11	0.00	0.00	0.15	0.00	0.00	
available	...	0.11	0.00	0.00	0.16	0.00	0.26	0.00	0.00	0.00	
bad	...	0.18	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	
bill	...	0.07	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.13	
box	...	0.25	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.15	
business	...	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	
cable	...	0.21	0.00	0.49	0.31	0.09	0.33	0.00	0.00	0.37	
cable box	...	0.22	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.10	
cancel	...	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	

change	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
channel	...	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.26
charge	...	0.07	0.00	0.00	0.00	0.28	0.17	0.00	0.00	0.07
comcast	...	0.04	0.18	0.12	0.24	0.05	0.19	0.33	0.16	0.18
comcast customer	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
come	...	0.07	0.00	0.00	0.11	0.00	0.17	0.00	0.00	0.00
company	...	0.00	0.00	0.00	0.00	0.21	0.38	0.00	0.00	0.00
contact	...	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
credit	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
customer	...	0.05	0.00	0.23	0.16	0.00	0.00	0.11	0.00	0.00
customer service	...	0.07	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
day	...	0.00	0.00	0.09	0.00	0.08	0.00	0.00	0.00	0.00
deal	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
department	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
equipment	...	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
experience	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
explain	...	0.10	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
fee	...	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00
finally	...	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
find	...	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.08
fix	...	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.00
good	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
happen	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
help	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
high	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hold	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
home	...	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hour	...	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
house	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
internet	...	0.00	0.00	0.00	0.00	0.08	0.00	0.27	0.00	0.00
internet service	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
issue	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
know	...	0.17	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
later	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
leave	...	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
let	...	0.00	0.00	0.00	0.00	0.13	0.24	0.00	0.00	0.00
like	...	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.08
line	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
look	...	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
minute	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
modem	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
money	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
month	...	0.00	0.00	0.00	0.09	0.08	0.00	0.00	0.73	0.28
need	...	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.40
new	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06



number	...	0.00	0.00	0.00	0.13	0.11	0.00	0.18	0.00	0.00
order	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00
package	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
pay	...	0.06	0.00	0.00	0.09	0.22	0.55	0.24	0.23	0.26
pay month	...	0.00	0.00	0.00	0.16	0.13	0.00	0.00	0.00	0.09
people	...	0.00	0.00	0.14	0.00	0.12	0.00	0.00	0.00	0.09
person	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
phone	...	0.07	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00
price	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00
problem	...	0.16	0.00	0.11	0.00	0.00	0.19	0.00	0.00	0.00
provider	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
receive	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
rep	...	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00
representative	...	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
resolve	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
return	...	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00
right	...	0.10	0.88	0.00	0.00	0.00	0.00	0.20	0.00	0.00
send	...	0.24	0.00	0.00	0.12	0.00	0.00	0.48	0.00	0.00
service	...	0.04	0.19	0.30	0.13	0.16	0.00	0.00	0.33	0.00
set	...	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.09
sign	...	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00
speak	...	0.00	0.00	0.12	0.00	0.10	0.00	0.00	0.00	0.00
spend	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
start	...	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
state	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
supervisor	...	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sure	...	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
switch	...	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
tech	...	0.31	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00
technician	...	0.00	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00
tell	...	0.11	0.23	0.00	0.08	0.13	0.00	0.22	0.00	0.05
thing	...	0.18	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.08
think	...	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
time	...	0.06	0.00	0.09	0.00	0.00	0.00	0.12	0.00	0.00
today	...	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
try	...	0.08	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00
tv	...	0.51	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.46
use	...	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.00
wait	...	0.09	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00
want	...	0.15	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
watch	...	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
way	...	0.00	0.00	0.15	0.16	0.00	0.00	0.00	0.00	0.09
week	...	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
work	...	0.07	0.32	0.10	0.00	0.00	0.00	0.00	0.00	0.00
year	...	0.00	0.00	0.00	0.00	0.11	0.19	0.00	0.00	0.00

	137
account	0.11
address	0.00
answer	0.00
area	0.13
ask	0.00
available	0.00
bad	0.00
bill	0.10
box	0.00
business	0.00
cable	0.00
cable box	0.00
cancel	0.00
change	0.00
channel	0.00
charge	0.10
comcast	0.17
comcast customer	0.15
come	0.00
company	0.00
contact	0.00
credit	0.12
customer	0.37
customer service	0.18
day	0.00
deal	0.00
department	0.00
equipment	0.00
experience	0.00
explain	0.00
fee	0.00
finally	0.00
find	0.13
fix	0.12
good	0.14
happen	0.00
help	0.00
high	0.00
hold	0.00
home	0.00
hour	0.00
house	0.00
internet	0.00

internet service	0.00
issue	0.00
know	0.00
later	0.00
leave	0.00
let	0.00
like	0.12
line	0.00
look	0.00
minute	0.00
modem	0.00
money	0.00
month	0.26
need	0.00
new	0.10
number	0.12
order	0.00
package	0.44
pay	0.00
pay month	0.00
people	0.00
person	0.00
phone	0.00
price	0.00
problem	0.00
provider	0.00
receive	0.00
rep	0.37
representative	0.00
resolve	0.00
return	0.00
right	0.00
send	0.00
service	0.17
set	0.00
sign	0.00
speak	0.11
spend	0.00
start	0.00
state	0.00
supervisor	0.00
sure	0.00
switch	0.14
tech	0.00
technician	0.00

tell	0.07
thing	0.00
think	0.00
time	0.33
today	0.00
try	0.11
tv	0.12
use	0.00
wait	0.00
want	0.00
watch	0.00
way	0.00
week	0.00
work	0.10
year	0.11

[103 rows x 138 columns]

\*\*\*\*\*

Time taken to create TF-TDF vectors = 0.09 s

\*\*\*\*\*

```
In [22]: ### Setting n grams to be trigrams ###
tfidf_s_time_mmas= time.time()

vectorizer_m = TfidfVectorizer(ngram_range = (3,3), max_features = 15, norm="l2")
model_m = vectorizer_m.fit_transform(plain_complaints_list_m).A # Creating an array of the model
feature_names_m = vectorizer_m.get_feature_names_out() # Extracting feature names-> terms- trigrams
data_m_vectorizer_m = pd.DataFrame(data = np.round(model_m, 2), columns = vectorizer_m.get_feature_names_out())
# Printing tranpose matrix to represent bigrams as rows and complaint number as columns
print("Feature names are: \n", feature_names_m, "\n\n")
print(data_m_vectorizer_m.T)

tfidf_e_time_mmas = time.time()
tfidf_t_time_mmas = round(tfidf_e_time_mmas - tfidf_s_time_mmas, 2)
print("\n\n ***** \n\n",
      "Time taken to create TF-TDF vectors = ", tfidf_t_time_mmas,
      " s\n\n ***** ")
```

Feature names are:

```
['ask speak supervisor' 'bad customer service' 'comcast customer service'
'come house install' 'customer service experience' 'customer service rep'
'customer service representative' 'local comcast store' 'new credit card'
'pay month service' 'pay past bill' 'self install kit'
'service customer service' 'service representative tell'
'spend hour phone']
```

	0	1	2	3	4	5	6	7	8	\
ask speak supervisor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
bad customer service	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
comcast customer service	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	
come house install	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
customer service experience	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
customer service rep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
customer service representative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
local comcast store	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
new credit card	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
pay month service	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
pay past bill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
self install kit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
service customer service	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
service representative tell	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
spend hour phone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	

	9	...	128	129	130	131	132	133	134	\
ask speak supervisor	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
bad customer service	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
comcast customer service	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
come house install	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
customer service experience	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
customer service rep	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
customer service representative	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
local comcast store	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
new credit card	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
pay month service	0.0	...	0.0	0.0	0.0	1.0	0.0	0.0	0.0	
pay past bill	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
self install kit	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
service customer service	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
service representative tell	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
spend hour phone	0.0	...	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

	135	136	137
ask speak supervisor	0.0	0.0	0.00

bad customer service	0.0	0.0	0.00
comcast customer service	0.0	0.0	0.71
come house install	0.0	0.0	0.00
customer service experience	0.0	0.0	0.00
customer service rep	0.0	0.0	0.71
customer service representative	0.0	0.0	0.00
local comcast store	0.0	0.0	0.00
new credit card	0.0	0.0	0.00
pay month service	0.0	0.0	0.00
pay past bill	0.0	0.0	0.00
self install kit	0.0	0.0	0.00
service customer service	0.0	0.0	0.00
service representative tell	0.0	0.0	0.00
spend hour phone	0.0	0.0	0.00

[15 rows x 138 columns]

\*\*\*\*\*

Time taken to create TF-TDF vectors = 0.05 s

\*\*\*\*\*

In [23]:

```

                                ### Comparison calculations ###
# Ratio of how fast is BoW compared to TF-IDF in case of Arizona
ari_tf_bow_ratio = round(tfidf_t_time_ari/t_time_ari, 2)

# Ratio of how fast is the algorithm used in Massachusetts
mas_tf_bow_ratio = round(t_time_mas/tfidf_t_time_mas, 2)

```

## **Brief comparison of the results obtained from BoW and TF-IDF models**

In [24]:

```
md(f"The results of <b>TF-IDF</b> are better than <b>BoW</b> as the relevance of a term/word to the document/complaint :
```

Out[24]: The results of **TF-IDF** are better than **BoW** as the relevance of a term/word to the document/complaint is considered which is helpful in identifying the most important terms in the corpus(which is later helpful in finding the most prevalent topics in the corpus/sample data).

Unlike **TF-IDF**, context related information is not retained in the **BoW vector** as it only shows the word occurrence frequency in a document/customer complaint which doesn't really contribute to the identification of relevance of the term to the document (although when **BoW vectors** are considered individually, the term with the highest occurring frequency is considered to be of highest importance which semantically, might not be the case).

Considering the results for '*customer service*' in Arizona,

- 1) The **BoW** and **TF-IDF** values for complaint 12 are '1' and '0.14' respectively.
- 2) The **BoW** and **TF-IDF** values for complaint 14 are '3' and '0.10' respectively.

Considering the results for '*internet service*' in Massachusetts,

- 1) The **BoW** and **TF-IDF** values for complaint 3 are '1' and '0.24' respectively.
- 2) The **BoW** and **TF-IDF** values for complaint 5 are '2' and '0.15' respectively.

As can be seen from the results above, the word frequency value of the **BoW vector** does not indicate its degree of relevance. Considering the term '*customer service*' in complaints from Arizona, it is more relevant to complaint 12 compared to complaint 14 despite of complaint 14 having a greater **BoW value** than complaint 12. Similarly, in the Massachusetts complaints text, the term '*internet service*' is more relevant to complaint 3 compared to complaint 5 despite of complaint 5 having a larger BoW value than complaint 3.

Note: The complaint numbers are according to Python indexing, where the 1st element has an index of 0

The **BoW** and **TF-IDF** models of Arizona take **0.01 s** and **0.13 s** respectively.

The **BoW** and **TF-IDF** models of Massachusetts take **0.27 s** and **0.09 s** respectively.

Comparatively, the **BoW model** is about **13.0 times** faster than the **TF-IDF model** in case of Arizona but in case of Massachusetts, the **BoW model** is about **3.0 times** slower than the **TF-IDF model**.

For further analysis and processing, the TF-IDF model used (for both Arizona and Massachusetts) is the one that utilizes unigrams and bigrams.

## Topic extraction using different semantic analysis techniques

```
In [25]: ## Defining a function to display top n words for each topic ##
# The function arguments are:
# components -< LDA/LSA components
# n -> number of words to be displayed for each topic

def topic_displayer(components, n):
    n_words = n # Variable to store number of words to be displayed

    for topic_id, topic_name in enumerate(components):
        top_n_words = feat_names_a[topic_name.argsort()[-n_words:][::-1]]
        top_features = ' '.join(top_n_words)
        print("Topic ", topic_id, " : ", top_features)
```

## Using Latent Semantic Analysis (LSA)

### LSA for Arizona

```
In [26]: lsa_start_time_a = time.time()

# Setting number of topics to be 5 and number of iterations to be 500
lsa_model_a = TruncatedSVD(n_components = 5, algorithm = 'randomized', random_state=50, n_iter=500)
lsa_a = lsa_model_a.fit_transform(tfidf_model_a)
lsa_components_a = lsa_model_a.components_
print("The results of LSA are:\n\n", lsa_a, "\n\n")
print("The LSA components are:\n\n", lsa_components_a, "\n\n")

counter_a = 0
complaints_list_length_a = len(plain_complaints_list_a)
```



```

while counter_a < complaints_list_length_a:
    l_a = lsa_a[counter_a]
    print(l_a, "\n")
    print("Complaint ", counter_a, " : ")

    for counter,topic in enumerate(l_a):
        print("Topic ",counter+1," : ",round(topic*100, 3),"%")
        if counter == 4:
            print()
        else:
            continue
        counter += 1
    counter_a +=1

lsa_end_time_a = time.time()
lsa_total_time_a = round(lsa_end_time_a - lsa_start_time_a, 2)
print("\n\n ***** \n\n")
print("Total time taken: ", lsa_total_time_a,
      " s\n\n ***** \n\n")

```

The results of LSA are:

```
[ [ 0.39859846  0.59274744  0.03170351 -0.18434943  0.15595883]
[ 0.44433995 -0.3479146  0.3437029 -0.30068193  0.05072858]
[ 0.36506165  0.15548863 -0.02632745  0.51569845  0.09302873]
[ 0.40632699 -0.01618082  0.06745908  0.23284707  0.50332167]
[ 0.44579591  0.37421109 -0.16704077 -0.27916563  0.11557304]
[ 0.28610036 -0.09836072  0.38014609  0.26451725  0.16378106]
[ 0.3609915  0.48521867 -0.11811222 -0.17012643  0.01575923]
[ 0.51654838 -0.12320423  0.48348303 -0.16291673 -0.1597934 ]
[ 0.44695447  0.0069802 -0.24513643  0.19101819 -0.46019915]
[ 0.47517318  0.24256902  0.30618523 -0.22965483 -0.34708362]
[ 0.57947136 -0.07543095 -0.43854179 -0.24860252  0.12152632]
[ 0.45139415  0.00381719 -0.0757168  0.39523964 -0.0696852 ]
[ 0.37979174 -0.012006  0.37458906  0.09920264 -0.25610323]
[ 0.35236216 -0.16618318 -0.29963019  0.12308666 -0.28295279]
[ 0.59419831 -0.38417912 -0.33888955 -0.04897007 -0.15812452]
[ 0.49243735 -0.45954095 -0.07799409 -0.26456928  0.36702667]
[ 0.54929332  0.10783191  0.05626454  0.33913841  0.17682167]]
```

The LSA components are:

```
[ [ 0.04999928  0.02135775  0.02135775 ...  0.05535003  0.09998951
  0.02835744]
[ 0.03932211  0.00071437  0.00071437 ...  0.05112335 -0.03815789
  0.022612 ]
[-0.00539253 -0.0246303 -0.0246303 ... -0.02526886  0.14409517
 -0.00174526]
[ 0.00975826  0.03692053  0.03692053 ...  0.10043055 -0.03084007
  0.00514028]
[-0.06911492 -0.05147674 -0.05147674 ...  0.05862788 -0.04698075
  0.03194747]]
```

```
[ 0.39859846  0.59274744  0.03170351 -0.18434943  0.15595883]
```

Complaint 0 :

```
Topic 1 : 39.86 %
Topic 2 : 59.275 %
Topic 3 : 3.17 %
Topic 4 : -18.435 %
Topic 5 : 15.596 %
```

```
[ 0.44433995 -0.3479146  0.3437029 -0.30068193  0.05072858]
```

Complaint 1 :

Topic 1 : 44.434 %  
Topic 2 : -34.791 %  
Topic 3 : 34.37 %  
Topic 4 : -30.068 %  
Topic 5 : 5.073 %

[ 0.36506165 0.15548863 -0.02632745 0.51569845 0.09302873]

Complaint 2 :

Topic 1 : 36.506 %  
Topic 2 : 15.549 %  
Topic 3 : -2.633 %  
Topic 4 : 51.57 %  
Topic 5 : 9.303 %

[ 0.40632699 -0.01618082 0.06745908 0.23284707 0.50332167]

Complaint 3 :

Topic 1 : 40.633 %  
Topic 2 : -1.618 %  
Topic 3 : 6.746 %  
Topic 4 : 23.285 %  
Topic 5 : 50.332 %

[ 0.44579591 0.37421109 -0.16704077 -0.27916563 0.11557304]

Complaint 4 :

Topic 1 : 44.58 %  
Topic 2 : 37.421 %  
Topic 3 : -16.704 %  
Topic 4 : -27.917 %  
Topic 5 : 11.557 %

[ 0.28610036 -0.09836072 0.38014609 0.26451725 0.16378106]

Complaint 5 :

Topic 1 : 28.61 %  
Topic 2 : -9.836 %  
Topic 3 : 38.015 %  
Topic 4 : 26.452 %  
Topic 5 : 16.378 %

[ 0.3609915 0.48521867 -0.11811222 -0.17012643 0.01575923]

Complaint 6 :

Topic 1 : 36.099 %  
Topic 2 : 48.522 %  
Topic 3 : -11.811 %  
Topic 4 : -17.013 %  
Topic 5 : 1.576 %

[ 0.51654838 -0.12320423 0.48348303 -0.16291673 -0.1597934 ]

Complaint 7 :

Topic 1 : 51.655 %  
Topic 2 : -12.32 %  
Topic 3 : 48.348 %  
Topic 4 : -16.292 %  
Topic 5 : -15.979 %

[ 0.44695447 0.0069802 -0.24513643 0.19101819 -0.46019915]

Complaint 8 :

Topic 1 : 44.695 %  
Topic 2 : 0.698 %  
Topic 3 : -24.514 %  
Topic 4 : 19.102 %  
Topic 5 : -46.02 %

[ 0.47517318 0.24256902 0.30618523 -0.22965483 -0.34708362]

Complaint 9 :

Topic 1 : 47.517 %  
Topic 2 : 24.257 %  
Topic 3 : 30.619 %  
Topic 4 : -22.965 %  
Topic 5 : -34.708 %

[ 0.57947136 -0.07543095 -0.43854179 -0.24860252 0.12152632]

Complaint 10 :

Topic 1 : 57.947 %  
Topic 2 : -7.543 %  
Topic 3 : -43.854 %  
Topic 4 : -24.86 %  
Topic 5 : 12.153 %

[ 0.45139415 0.00381719 -0.0757168 0.39523964 -0.0696852 ]

Complaint 11 :

Topic 1 : 45.139 %  
Topic 2 : 0.382 %  
Topic 3 : -7.572 %  
Topic 4 : 39.524 %  
Topic 5 : -6.969 %

[ 0.37979174 -0.012006 0.37458906 0.09920264 -0.25610323]

Complaint 12 :

Topic 1 : 37.979 %  
Topic 2 : -1.201 %  
Topic 3 : 37.459 %  
Topic 4 : 9.92 %  
Topic 5 : -25.61 %

[ 0.35236216 -0.16618318 -0.29963019 0.12308666 -0.28295279]

Complaint 13 :

Topic 1 : 35.236 %  
Topic 2 : -16.618 %  
Topic 3 : -29.963 %  
Topic 4 : 12.309 %  
Topic 5 : -28.295 %

[ 0.59419831 -0.38417912 -0.33888955 -0.04897007 -0.15812452]

Complaint 14 :

Topic 1 : 59.42 %  
Topic 2 : -38.418 %  
Topic 3 : -33.889 %  
Topic 4 : -4.897 %  
Topic 5 : -15.812 %

[ 0.49243735 -0.45954095 -0.07799409 -0.26456928 0.36702667]

Complaint 15 :

Topic 1 : 49.244 %  
Topic 2 : -45.954 %  
Topic 3 : -7.799 %  
Topic 4 : -26.457 %  
Topic 5 : 36.703 %

[0.54929332 0.10783191 0.05626454 0.33913841 0.17682167]

```

Complaint 16 :
Topic 1 : 54.929 %
Topic 2 : 10.783 %
Topic 3 : 5.626 %
Topic 4 : 33.914 %
Topic 5 : 17.682 %

```

```

*****

```

```

Total time taken: 0.17 s

```

```

*****

```

```

In [27]: # Printing top 10 words in each topic
topic_displayer(lsa_components_a, 10)

```

```

Topic 0 : service bill comcast month tell come pay credit time charge
Topic 1 : schedule come like reschedule confirm appointment sit day later work
Topic 2 : problem phone month customer cable people internet year read require
Topic 3 : transfer require company contact service help talk lie set person
Topic 4 : bill pay company person lie like address meet work talk

```

## LSA for Massachusetts

```

In [28]: lsa_start_time_m = time.time()

# Setting number of topics to be 5 and number of iterations to be 500
lsa_model_m = TruncatedSVD(n_components = 5, algorithm = 'randomized', random_state=50, n_iter=500)
lsa_m = lsa_model_m.fit_transform(tfidf_model_m)
lsa_components_m = lsa_model_m.components_
print("The results of LSA are:\n\n", lsa_m, "\n\n")
print("The LSA components are:\n\n", lsa_components_m, "\n\n")

counter_m = 0
complaints_list_length_m = len(plain_complaints_list_m)

while counter_m < complaints_list_length_m:
    l_m = lsa_m[counter_m]
    print(l_m, "\n")

```

```
print("Complaint ", counter_m, " : ")

for counter,topic in enumerate(l_m):
    print("Topic ",counter+1," : ",round(topic*100, 3),"%")
    if counter == 4:
        print()
    else:
        continue
    counter += 1
counter_m +=1

lsa_end_time_m = time.time()
lsa_total_time_m = round(lsa_end_time_m - lsa_start_time_m, 2)
print("\n\n ***** \n\n")
    "Total time taken: ", lsa_total_time_m,
    " s\n\n ***** \n\n")
```

The results of LSA are:

```
[ [ 4.89429923e-01 -4.15370949e-02 -1.95554722e-01  6.41390027e-02
  -2.28404823e-01]
[ 4.88179879e-01  6.50049259e-02 -1.42432501e-01 -2.43476466e-01
  1.51808085e-01]
[ 2.93614639e-01 -2.63906976e-01 -2.52019634e-01  2.00765713e-02
  -2.36739094e-01]
[ 4.83437980e-01  5.78186813e-03  2.36747542e-01  4.87817314e-01
  2.22024787e-01]
[ 3.14195782e-01 -1.49556908e-01 -2.54009474e-01 -1.13664974e-01
  1.58311674e-02]
[ 5.12130184e-01  2.15388271e-02  1.77322321e-01  5.58406941e-01
  2.10359003e-01]
[ 5.10910398e-01  1.09779289e-01 -1.89519030e-01 -2.12022694e-02
  -1.61383306e-01]
[ 4.35289533e-01  1.50029420e-01 -1.43412856e-01 -4.22241626e-02
  1.26557247e-01]
[ 4.56923501e-01 -1.99157396e-02  7.98628409e-02  5.83947638e-01
  1.04606938e-01]
[ 3.46523169e-01 -3.06707908e-01 -2.94425294e-01  3.06098080e-06
  -3.27790821e-01]
[ 3.40321019e-01  8.90016063e-02 -6.09905311e-02  6.07044747e-02
  -1.91304960e-01]
[ 6.74735354e-01 -1.07149473e-01 -1.60750193e-01 -1.48691715e-02
  -1.23876355e-02]
[ 6.24829025e-01 -1.76417339e-01  2.34732874e-01  1.96478132e-01
  9.89635482e-02]
[ 4.16177797e-01 -3.29716382e-01 -1.96502960e-01  2.10188472e-01
  -3.33094276e-02]
[ 3.58580796e-01  1.36516576e-01 -4.27857864e-02  3.87971935e-02
  -6.41621422e-03]
[ 3.10213329e-01  5.65880899e-02 -3.31445180e-02  9.36955779e-02
  1.29820003e-01]
[ 4.89943968e-01 -1.22837340e-01  1.57095663e-01  4.76571239e-01
  1.63253920e-01]
[ 4.65495909e-01 -6.84750069e-02 -1.85992599e-01  6.06126587e-02
  -4.15954278e-02]
[ 5.90752735e-01 -3.05995560e-02 -6.69330397e-02 -5.94370673e-02
  -1.71093596e-01]
[ 2.11177471e-01  1.79805520e-01 -5.81025194e-02 -7.27452816e-03
  2.76598626e-01]
[ 3.88550288e-01 -2.58629100e-02  2.80714221e-02 -2.00757718e-03
  -1.07960942e-02]
[ 4.02478094e-01 -6.92959382e-02  6.55069412e-02 -1.39383513e-01
```



1.22479298e-01]  
[ 4.66332754e-01 2.06542669e-02 -5.92106938e-02 -9.61281298e-02  
5.84542313e-03]  
[ 1.91697282e-01 2.15038340e-02 -1.28286023e-01 -6.62389240e-02  
8.71794623e-03]  
[ 4.83959889e-01 -1.76220119e-02 -1.98243303e-01 -1.09198467e-01  
1.48346734e-01]  
[ 4.73991448e-01 -1.16857923e-01 4.43934270e-02 4.73759250e-01  
1.43818854e-01]  
[ 4.38872157e-01 -3.08604061e-01 -7.42213381e-02 -6.24740533e-02  
-5.88947242e-02]  
[ 3.05936991e-01 -1.05331205e-02 2.39329509e-01 6.66254363e-01  
2.55299340e-01]  
[ 5.49138785e-01 3.11235594e-01 -2.47450780e-01 -2.35568557e-02  
4.70570539e-02]  
[ 5.19449145e-01 -4.28277792e-01 -2.36211310e-01 1.36292245e-02  
-8.03498365e-02]  
[ 4.61949815e-01 -1.72136350e-01 -1.45268033e-01 -4.69280652e-02  
6.29877869e-02]  
[ 3.88614141e-01 -2.86813942e-02 1.44329688e-02 2.71285031e-01  
7.07187860e-02]  
[ 2.20851784e-01 6.22035266e-02 2.69135519e-01 -8.10913380e-02  
-2.45362718e-01]  
[ 4.76795131e-01 9.77084722e-03 3.40153928e-02 9.05104029e-02  
-1.87437744e-01]  
[ 4.54427555e-01 1.06885330e-01 1.08221592e-01 -2.28273970e-01  
3.75567278e-02]  
[ 4.65326018e-01 9.88027339e-02 3.16967380e-01 -7.95244215e-03  
-3.18091451e-01]  
[ 4.37224082e-01 -3.77902809e-01 1.27831837e-01 -2.92082263e-01  
1.03474404e-01]  
[ 5.71264369e-01 -1.84475117e-01 -1.99480391e-01 3.41940719e-02  
-7.31293403e-02]  
[ 5.09998862e-01 3.32330149e-02 2.31362390e-01 1.15225277e-02  
3.46244021e-01]  
[ 5.27685612e-01 -3.57878588e-01 -1.44870979e-01 -5.65057184e-02  
2.48102587e-02]  
[ 4.55889180e-01 4.25484153e-01 -2.58573101e-01 -8.56784069e-02  
5.80567167e-02]  
[ 5.22982224e-01 -1.41872520e-01 -8.90655296e-02 -4.30387494e-02  
-2.18489536e-01]  
[ 5.85177355e-01 3.55789667e-01 3.65408827e-02 2.72608597e-02  
-4.74292649e-02]  
[ 4.71601769e-01 -1.54894091e-01 -1.20303312e-02 -4.08358026e-02  
-3.77397608e-02]

[ 4.41872984e-01 7.62562851e-02 -2.71336942e-01 -1.30378861e-01  
1.56014969e-02]  
[ 4.17218983e-01 2.30069661e-01 1.95889000e-03 7.89066568e-02  
-1.48964182e-01]  
[ 4.13579840e-01 1.57717657e-01 4.64726280e-01 -1.31247621e-01  
-2.44411323e-01]  
[ 5.08213332e-01 -1.67583534e-01 1.84932256e-02 4.33049239e-02  
-1.63351262e-01]  
[ 4.32707413e-01 1.90603909e-01 -1.59953898e-01 -1.11312675e-01  
3.87941548e-02]  
[ 4.22095391e-01 -1.42199898e-01 1.19822590e-01 -3.38257948e-01  
4.57714669e-02]  
[ 4.32703688e-01 3.98280781e-01 1.25236254e-01 3.77498344e-02  
-3.83287693e-01]  
[ 3.02938109e-01 1.57425579e-01 2.03388406e-02 -2.37855657e-02  
-1.94094244e-01]  
[ 2.50260826e-01 -7.03949326e-02 8.64389448e-02 7.20517841e-02  
2.59805563e-02]  
[ 5.22002658e-01 -7.18192793e-02 -1.71012691e-01 -9.21754856e-02  
2.49445521e-02]  
[ 3.55504282e-01 -5.31250892e-02 5.45832685e-03 1.19764006e-02  
2.47710799e-01]  
[ 4.33233738e-01 2.30022540e-01 -9.76574744e-02 -4.61431981e-02  
-2.62535348e-01]  
[ 5.43306141e-01 -3.47378922e-02 9.98835652e-02 8.77601582e-02  
1.96925202e-02]  
[ 4.35692347e-01 -3.19715644e-02 -2.60549600e-01 -6.60392617e-02  
-1.13190094e-01]  
[ 3.48481448e-01 -1.81091285e-01 -1.79030288e-01 6.05174972e-02  
-2.65729607e-01]  
[ 4.51426658e-01 4.50672295e-01 -1.93822992e-01 -6.40437037e-03  
1.18153698e-01]  
[ 2.98884185e-01 1.24738305e-01 -4.00699139e-02 -7.28021799e-02  
3.23646744e-02]  
[ 2.81763005e-01 3.41350812e-01 8.57887919e-02 -7.77112031e-02  
-1.47727567e-01]  
[ 3.97656906e-01 -3.70339572e-01 -5.33097380e-04 3.99636005e-02  
2.30369065e-02]  
[ 4.71472994e-01 -1.82390314e-01 -3.12907753e-01 1.26495477e-02  
-2.69016103e-01]  
[ 5.60910415e-01 2.86277053e-01 -9.02508882e-02 4.97634963e-02  
9.24621991e-02]  
[ 7.07434598e-01 -3.41705126e-03 1.39922493e-01 9.73663660e-02  
6.64820084e-03]  
[ 5.18631669e-01 -1.64229748e-01 2.91201513e-01 -6.85548499e-02

3.90674132e-01]  
[ 4.99172383e-01 4.04998833e-01 -1.38919394e-01 -2.63281417e-01  
1.85805754e-01]  
[ 6.00195325e-01 -1.96414434e-01 -8.92920962e-02 1.12277371e-01  
9.22125806e-02]  
[ 5.05702409e-01 -2.35965973e-01 3.28574025e-02 2.62598438e-01  
-1.78678840e-01]  
[ 7.23979162e-01 -1.96755564e-01 3.24259063e-01 -1.16794236e-01  
1.21747039e-01]  
[ 5.66691655e-01 -3.03892312e-01 -1.70342679e-01 -4.77292749e-02  
1.37560473e-01]  
[ 5.67070410e-01 2.94902024e-01 -1.32459953e-01 1.09387358e-01  
1.18946834e-02]  
[ 4.11285816e-01 -2.35804418e-01 8.23780862e-02 -1.07036777e-01  
1.36354993e-01]  
[ 4.86885425e-01 -1.67920017e-01 -1.23256861e-01 2.20351334e-01  
-2.94960302e-02]  
[ 5.27377980e-01 -3.37583393e-01 -8.72441398e-02 -3.55721572e-02  
-2.82279461e-02]  
[ 4.47322135e-01 2.01489680e-02 -2.37428720e-01 -5.14139051e-02  
6.95572925e-02]  
[ 2.84882151e-01 2.99638902e-02 4.63666954e-02 1.33193161e-02  
-9.27700170e-02]  
[ 4.73193029e-01 2.95415833e-01 1.54058712e-01 3.38848764e-01  
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```

```
[ 0.48942992 -0.04153709 -0.19555472 0.064139 -0.22840482]
```

```
Complaint 0 :
Topic 1 : 48.943 %
Topic 2 : -4.154 %
Topic 3 : -19.555 %
Topic 4 : 6.414 %
Topic 5 : -22.84 %
```

```
[ 0.48817988 0.06500493 -0.1424325 -0.24347647 0.15180809]
```

```
Complaint 1 :
Topic 1 : 48.818 %
Topic 2 : 6.5 %
Topic 3 : -14.243 %
Topic 4 : -24.348 %
Topic 5 : 15.181 %
```

```
[ 0.29361464 -0.26390698 -0.25201963 0.02007657 -0.23673909]
```

```
Complaint 2 :
Topic 1 : 29.361 %
Topic 2 : -26.391 %
Topic 3 : -25.202 %
Topic 4 : 2.008 %
Topic 5 : -23.674 %
```

```
[0.48343798 0.00578187 0.23674754 0.48781731 0.22202479]
```

```
Complaint 3 :
Topic 1 : 48.344 %
Topic 2 : 0.578 %
Topic 3 : 23.675 %
Topic 4 : 48.782 %
Topic 5 : 22.202 %
```

[ 0.31419578 -0.14955691 -0.25400947 -0.11366497 0.01583117]

Complaint 4 :

Topic 1 : 31.42 %  
Topic 2 : -14.956 %  
Topic 3 : -25.401 %  
Topic 4 : -11.366 %  
Topic 5 : 1.583 %

[0.51213018 0.02153883 0.17732232 0.55840694 0.210359 ]

Complaint 5 :

Topic 1 : 51.213 %  
Topic 2 : 2.154 %  
Topic 3 : 17.732 %  
Topic 4 : 55.841 %  
Topic 5 : 21.036 %

[ 0.5109104 0.10977929 -0.18951903 -0.02120227 -0.16138331]

Complaint 6 :

Topic 1 : 51.091 %  
Topic 2 : 10.978 %  
Topic 3 : -18.952 %  
Topic 4 : -2.12 %  
Topic 5 : -16.138 %

[ 0.43528953 0.15002942 -0.14341286 -0.04222416 0.12655725]

Complaint 7 :

Topic 1 : 43.529 %  
Topic 2 : 15.003 %  
Topic 3 : -14.341 %  
Topic 4 : -4.222 %  
Topic 5 : 12.656 %

[ 0.4569235 -0.01991574 0.07986284 0.58394764 0.10460694]

Complaint 8 :

Topic 1 : 45.692 %  
Topic 2 : -1.992 %  
Topic 3 : 7.986 %  
Topic 4 : 58.395 %  
Topic 5 : 10.461 %

[ 3.46523169e-01 -3.06707908e-01 -2.94425294e-01 3.06098080e-06  
-3.27790821e-01]

Complaint 9 :  
Topic 1 : 34.652 %  
Topic 2 : -30.671 %  
Topic 3 : -29.443 %  
Topic 4 : 0.0 %  
Topic 5 : -32.779 %

[ 0.34032102 0.08900161 -0.06099053 0.06070447 -0.19130496]

Complaint 10 :  
Topic 1 : 34.032 %  
Topic 2 : 8.9 %  
Topic 3 : -6.099 %  
Topic 4 : 6.07 %  
Topic 5 : -19.13 %

[ 0.67473535 -0.10714947 -0.16075019 -0.01486917 -0.01238764]

Complaint 11 :  
Topic 1 : 67.474 %  
Topic 2 : -10.715 %  
Topic 3 : -16.075 %  
Topic 4 : -1.487 %  
Topic 5 : -1.239 %

[ 0.62482902 -0.17641734 0.23473287 0.19647813 0.09896355]

Complaint 12 :  
Topic 1 : 62.483 %  
Topic 2 : -17.642 %  
Topic 3 : 23.473 %  
Topic 4 : 19.648 %  
Topic 5 : 9.896 %

[ 0.4161778 -0.32971638 -0.19650296 0.21018847 -0.03330943]

Complaint 13 :  
Topic 1 : 41.618 %  
Topic 2 : -32.972 %  
Topic 3 : -19.65 %  
Topic 4 : 21.019 %  
Topic 5 : -3.331 %

[ 0.3585808 0.13651658 -0.04278579 0.03879719 -0.00641621]

Complaint 14 :

Topic 1 : 35.858 %  
Topic 2 : 13.652 %  
Topic 3 : -4.279 %  
Topic 4 : 3.88 %  
Topic 5 : -0.642 %

[ 0.31021333 0.05658809 -0.03314452 0.09369558 0.12982 ]

Complaint 15 :

Topic 1 : 31.021 %  
Topic 2 : 5.659 %  
Topic 3 : -3.314 %  
Topic 4 : 9.37 %  
Topic 5 : 12.982 %

[ 0.48994397 -0.12283734 0.15709566 0.47657124 0.16325392]

Complaint 16 :

Topic 1 : 48.994 %  
Topic 2 : -12.284 %  
Topic 3 : 15.71 %  
Topic 4 : 47.657 %  
Topic 5 : 16.325 %

[ 0.46549591 -0.06847501 -0.1859926 0.06061266 -0.04159543]

Complaint 17 :

Topic 1 : 46.55 %  
Topic 2 : -6.848 %  
Topic 3 : -18.599 %  
Topic 4 : 6.061 %  
Topic 5 : -4.16 %

[ 0.59075274 -0.03059956 -0.06693304 -0.05943707 -0.1710936 ]

Complaint 18 :

Topic 1 : 59.075 %  
Topic 2 : -3.06 %  
Topic 3 : -6.693 %  
Topic 4 : -5.944 %  
Topic 5 : -17.109 %

[ 0.21117747 0.17980552 -0.05810252 -0.00727453 0.27659863]

Complaint 19 :

Topic 1 : 21.118 %  
Topic 2 : 17.981 %  
Topic 3 : -5.81 %  
Topic 4 : -0.727 %  
Topic 5 : 27.66 %

[ 0.38855029 -0.02586291 0.02807142 -0.00200758 -0.01079609]

Complaint 20 :

Topic 1 : 38.855 %  
Topic 2 : -2.586 %  
Topic 3 : 2.807 %  
Topic 4 : -0.201 %  
Topic 5 : -1.08 %

[ 0.40247809 -0.06929594 0.06550694 -0.13938351 0.1224793 ]

Complaint 21 :

Topic 1 : 40.248 %  
Topic 2 : -6.93 %  
Topic 3 : 6.551 %  
Topic 4 : -13.938 %  
Topic 5 : 12.248 %

[ 0.46633275 0.02065427 -0.05921069 -0.09612813 0.00584542]

Complaint 22 :

Topic 1 : 46.633 %  
Topic 2 : 2.065 %  
Topic 3 : -5.921 %  
Topic 4 : -9.613 %  
Topic 5 : 0.585 %

[ 0.19169728 0.02150383 -0.12828602 -0.06623892 0.00871795]

Complaint 23 :

Topic 1 : 19.17 %  
Topic 2 : 2.15 %  
Topic 3 : -12.829 %  
Topic 4 : -6.624 %  
Topic 5 : 0.872 %

[ 0.48395989 -0.01762201 -0.1982433 -0.10919847 0.14834673]

Complaint 24 :

Topic 1 : 48.396 %  
Topic 2 : -1.762 %  
Topic 3 : -19.824 %  
Topic 4 : -10.92 %  
Topic 5 : 14.835 %

[ 0.47399145 -0.11685792 0.04439343 0.47375925 0.14381885]

Complaint 25 :

Topic 1 : 47.399 %  
Topic 2 : -11.686 %  
Topic 3 : 4.439 %  
Topic 4 : 47.376 %  
Topic 5 : 14.382 %

[ 0.43887216 -0.30860406 -0.07422134 -0.06247405 -0.05889472]

Complaint 26 :

Topic 1 : 43.887 %  
Topic 2 : -30.86 %  
Topic 3 : -7.422 %  
Topic 4 : -6.247 %  
Topic 5 : -5.889 %

[ 0.30593699 -0.01053312 0.23932951 0.66625436 0.25529934]

Complaint 27 :

Topic 1 : 30.594 %  
Topic 2 : -1.053 %  
Topic 3 : 23.933 %  
Topic 4 : 66.625 %  
Topic 5 : 25.53 %

[ 0.54913879 0.31123559 -0.24745078 -0.02355686 0.04705705]

Complaint 28 :

Topic 1 : 54.914 %  
Topic 2 : 31.124 %  
Topic 3 : -24.745 %  
Topic 4 : -2.356 %  
Topic 5 : 4.706 %

[ 0.51944914 -0.42827779 -0.23621131 0.01362922 -0.08034984]

Complaint 29 :  
Topic 1 : 51.945 %  
Topic 2 : -42.828 %  
Topic 3 : -23.621 %  
Topic 4 : 1.363 %  
Topic 5 : -8.035 %

[ 0.46194982 -0.17213635 -0.14526803 -0.04692807 0.06298779]

Complaint 30 :  
Topic 1 : 46.195 %  
Topic 2 : -17.214 %  
Topic 3 : -14.527 %  
Topic 4 : -4.693 %  
Topic 5 : 6.299 %

[ 0.38861414 -0.02868139 0.01443297 0.27128503 0.07071879]

Complaint 31 :  
Topic 1 : 38.861 %  
Topic 2 : -2.868 %  
Topic 3 : 1.443 %  
Topic 4 : 27.129 %  
Topic 5 : 7.072 %

[ 0.22085178 0.06220353 0.26913552 -0.08109134 -0.24536272]

Complaint 32 :  
Topic 1 : 22.085 %  
Topic 2 : 6.22 %  
Topic 3 : 26.914 %  
Topic 4 : -8.109 %  
Topic 5 : -24.536 %

[ 0.47679513 0.00977085 0.03401539 0.0905104 -0.18743774]

Complaint 33 :  
Topic 1 : 47.68 %  
Topic 2 : 0.977 %  
Topic 3 : 3.402 %  
Topic 4 : 9.051 %  
Topic 5 : -18.744 %

[ 0.45442755 0.10688533 0.10822159 -0.22827397 0.03755673]

Complaint 34 :  
Topic 1 : 45.443 %  
Topic 2 : 10.689 %  
Topic 3 : 10.822 %  
Topic 4 : -22.827 %  
Topic 5 : 3.756 %

[ 0.46532602 0.09880273 0.31696738 -0.00795244 -0.31809145]

Complaint 35 :  
Topic 1 : 46.533 %  
Topic 2 : 9.88 %  
Topic 3 : 31.697 %  
Topic 4 : -0.795 %  
Topic 5 : -31.809 %

[ 0.43722408 -0.37790281 0.12783184 -0.29208226 0.1034744 ]

Complaint 36 :  
Topic 1 : 43.722 %  
Topic 2 : -37.79 %  
Topic 3 : 12.783 %  
Topic 4 : -29.208 %  
Topic 5 : 10.347 %

[ 0.57126437 -0.18447512 -0.19948039 0.03419407 -0.07312934]

Complaint 37 :  
Topic 1 : 57.126 %  
Topic 2 : -18.448 %  
Topic 3 : -19.948 %  
Topic 4 : 3.419 %  
Topic 5 : -7.313 %

[0.50999886 0.03323301 0.23136239 0.01152253 0.34624402]

Complaint 38 :  
Topic 1 : 51.0 %  
Topic 2 : 3.323 %  
Topic 3 : 23.136 %  
Topic 4 : 1.152 %  
Topic 5 : 34.624 %



[ 0.52768561 -0.35787859 -0.14487098 -0.05650572 0.02481026]

Complaint 39 :  
Topic 1 : 52.769 %  
Topic 2 : -35.788 %  
Topic 3 : -14.487 %  
Topic 4 : -5.651 %  
Topic 5 : 2.481 %

[ 0.45588918 0.42548415 -0.2585731 -0.08567841 0.05805672]

Complaint 40 :  
Topic 1 : 45.589 %  
Topic 2 : 42.548 %  
Topic 3 : -25.857 %  
Topic 4 : -8.568 %  
Topic 5 : 5.806 %

[ 0.52298222 -0.14187252 -0.08906553 -0.04303875 -0.21848954]

Complaint 41 :  
Topic 1 : 52.298 %  
Topic 2 : -14.187 %  
Topic 3 : -8.907 %  
Topic 4 : -4.304 %  
Topic 5 : -21.849 %

[ 0.58517736 0.35578967 0.03654088 0.02726086 -0.04742926]

Complaint 42 :  
Topic 1 : 58.518 %  
Topic 2 : 35.579 %  
Topic 3 : 3.654 %  
Topic 4 : 2.726 %  
Topic 5 : -4.743 %

[ 0.47160177 -0.15489409 -0.01203033 -0.0408358 -0.03773976]

Complaint 43 :  
Topic 1 : 47.16 %  
Topic 2 : -15.489 %  
Topic 3 : -1.203 %  
Topic 4 : -4.084 %  
Topic 5 : -3.774 %

[ 0.44187298 0.07625629 -0.27133694 -0.13037886 0.0156015 ]

Complaint 44 :

Topic 1 : 44.187 %  
Topic 2 : 7.626 %  
Topic 3 : -27.134 %  
Topic 4 : -13.038 %  
Topic 5 : 1.56 %

[ 0.41721898 0.23006966 0.00195889 0.07890666 -0.14896418]

Complaint 45 :

Topic 1 : 41.722 %  
Topic 2 : 23.007 %  
Topic 3 : 0.196 %  
Topic 4 : 7.891 %  
Topic 5 : -14.896 %

[ 0.41357984 0.15771766 0.46472628 -0.13124762 -0.24441132]

Complaint 46 :

Topic 1 : 41.358 %  
Topic 2 : 15.772 %  
Topic 3 : 46.473 %  
Topic 4 : -13.125 %  
Topic 5 : -24.441 %

[ 0.50821333 -0.16758353 0.01849323 0.04330492 -0.16335126]

Complaint 47 :

Topic 1 : 50.821 %  
Topic 2 : -16.758 %  
Topic 3 : 1.849 %  
Topic 4 : 4.33 %  
Topic 5 : -16.335 %

[ 0.43270741 0.19060391 -0.1599539 -0.11131268 0.03879415]

Complaint 48 :

Topic 1 : 43.271 %  
Topic 2 : 19.06 %  
Topic 3 : -15.995 %  
Topic 4 : -11.131 %  
Topic 5 : 3.879 %

[ 0.42209539 -0.1421999 0.11982259 -0.33825795 0.04577147]

Complaint 49 :

Topic 1 : 42.21 %  
Topic 2 : -14.22 %  
Topic 3 : 11.982 %  
Topic 4 : -33.826 %  
Topic 5 : 4.577 %

[ 0.43270369 0.39828078 0.12523625 0.03774983 -0.38328769]

Complaint 50 :

Topic 1 : 43.27 %  
Topic 2 : 39.828 %  
Topic 3 : 12.524 %  
Topic 4 : 3.775 %  
Topic 5 : -38.329 %

[ 0.30293811 0.15742558 0.02033884 -0.02378557 -0.19409424]

Complaint 51 :

Topic 1 : 30.294 %  
Topic 2 : 15.743 %  
Topic 3 : 2.034 %  
Topic 4 : -2.379 %  
Topic 5 : -19.409 %

[ 0.25026083 -0.07039493 0.08643894 0.07205178 0.02598056]

Complaint 52 :

Topic 1 : 25.026 %  
Topic 2 : -7.039 %  
Topic 3 : 8.644 %  
Topic 4 : 7.205 %  
Topic 5 : 2.598 %

[ 0.52200266 -0.07181928 -0.17101269 -0.09217549 0.02494455]

Complaint 53 :

Topic 1 : 52.2 %  
Topic 2 : -7.182 %  
Topic 3 : -17.101 %  
Topic 4 : -9.218 %  
Topic 5 : 2.494 %

[ 0.35550428 -0.05312509 0.00545833 0.0119764 0.2477108 ]

Complaint 54 :

Topic 1 : 35.55 %  
Topic 2 : -5.313 %  
Topic 3 : 0.546 %  
Topic 4 : 1.198 %  
Topic 5 : 24.771 %

[ 0.43323374 0.23002254 -0.09765747 -0.0461432 -0.26253535]

Complaint 55 :

Topic 1 : 43.323 %  
Topic 2 : 23.002 %  
Topic 3 : -9.766 %  
Topic 4 : -4.614 %  
Topic 5 : -26.254 %

[ 0.54330614 -0.03473789 0.09988357 0.08776016 0.01969252]

Complaint 56 :

Topic 1 : 54.331 %  
Topic 2 : -3.474 %  
Topic 3 : 9.988 %  
Topic 4 : 8.776 %  
Topic 5 : 1.969 %

[ 0.43569235 -0.03197156 -0.2605496 -0.06603926 -0.11319009]

Complaint 57 :

Topic 1 : 43.569 %  
Topic 2 : -3.197 %  
Topic 3 : -26.055 %  
Topic 4 : -6.604 %  
Topic 5 : -11.319 %

[ 0.34848145 -0.18109129 -0.17903029 0.0605175 -0.26572961]

Complaint 58 :

Topic 1 : 34.848 %  
Topic 2 : -18.109 %  
Topic 3 : -17.903 %  
Topic 4 : 6.052 %  
Topic 5 : -26.573 %

[ 0.45142666 0.45067229 -0.19382299 -0.00640437 0.1181537 ]

Complaint 59 :

Topic 1 : 45.143 %  
Topic 2 : 45.067 %  
Topic 3 : -19.382 %  
Topic 4 : -0.64 %  
Topic 5 : 11.815 %

[ 0.29888418 0.1247383 -0.04006991 -0.07280218 0.03236467]

Complaint 60 :

Topic 1 : 29.888 %  
Topic 2 : 12.474 %  
Topic 3 : -4.007 %  
Topic 4 : -7.28 %  
Topic 5 : 3.236 %

[ 0.28176301 0.34135081 0.08578879 -0.0777112 -0.14772757]

Complaint 61 :

Topic 1 : 28.176 %  
Topic 2 : 34.135 %  
Topic 3 : 8.579 %  
Topic 4 : -7.771 %  
Topic 5 : -14.773 %

[ 0.39765691 -0.37033957 -0.0005331 0.0399636 0.02303691]

Complaint 62 :

Topic 1 : 39.766 %  
Topic 2 : -37.034 %  
Topic 3 : -0.053 %  
Topic 4 : 3.996 %  
Topic 5 : 2.304 %

[ 0.47147299 -0.18239031 -0.31290775 0.01264955 -0.2690161 ]

Complaint 63 :

Topic 1 : 47.147 %  
Topic 2 : -18.239 %  
Topic 3 : -31.291 %  
Topic 4 : 1.265 %  
Topic 5 : -26.902 %

[ 0.56091041 0.28627705 -0.09025089 0.0497635 0.0924622 ]

Complaint 64 :

Topic 1 : 56.091 %  
Topic 2 : 28.628 %  
Topic 3 : -9.025 %  
Topic 4 : 4.976 %  
Topic 5 : 9.246 %

[ 0.7074346 -0.00341705 0.13992249 0.09736637 0.0066482 ]

Complaint 65 :

Topic 1 : 70.743 %  
Topic 2 : -0.342 %  
Topic 3 : 13.992 %  
Topic 4 : 9.737 %  
Topic 5 : 0.665 %

[ 0.51863167 -0.16422975 0.29120151 -0.06855485 0.39067413 ]

Complaint 66 :

Topic 1 : 51.863 %  
Topic 2 : -16.423 %  
Topic 3 : 29.12 %  
Topic 4 : -6.855 %  
Topic 5 : 39.067 %

[ 0.49917238 0.40499883 -0.13891939 -0.26328142 0.18580575 ]

Complaint 67 :

Topic 1 : 49.917 %  
Topic 2 : 40.5 %  
Topic 3 : -13.892 %  
Topic 4 : -26.328 %  
Topic 5 : 18.581 %

[ 0.60019533 -0.19641443 -0.0892921 0.11227737 0.09221258 ]

Complaint 68 :

Topic 1 : 60.02 %  
Topic 2 : -19.641 %  
Topic 3 : -8.929 %  
Topic 4 : 11.228 %  
Topic 5 : 9.221 %

[ 0.50570241 -0.23596597 0.0328574 0.26259844 -0.17867884]

Complaint 69 :  
Topic 1 : 50.57 %  
Topic 2 : -23.597 %  
Topic 3 : 3.286 %  
Topic 4 : 26.26 %  
Topic 5 : -17.868 %

[ 0.72397916 -0.19675556 0.32425906 -0.11679424 0.12174704]

Complaint 70 :  
Topic 1 : 72.398 %  
Topic 2 : -19.676 %  
Topic 3 : 32.426 %  
Topic 4 : -11.679 %  
Topic 5 : 12.175 %

[ 0.56669166 -0.30389231 -0.17034268 -0.04772927 0.13756047]

Complaint 71 :  
Topic 1 : 56.669 %  
Topic 2 : -30.389 %  
Topic 3 : -17.034 %  
Topic 4 : -4.773 %  
Topic 5 : 13.756 %

[ 0.56707041 0.29490202 -0.13245995 0.10938736 0.01189468]

Complaint 72 :  
Topic 1 : 56.707 %  
Topic 2 : 29.49 %  
Topic 3 : -13.246 %  
Topic 4 : 10.939 %  
Topic 5 : 1.189 %

[ 0.41128582 -0.23580442 0.08237809 -0.10703678 0.13635499]

Complaint 73 :  
Topic 1 : 41.129 %  
Topic 2 : -23.58 %  
Topic 3 : 8.238 %  
Topic 4 : -10.704 %  
Topic 5 : 13.635 %

[ 0.48688542 -0.16792002 -0.12325686 0.22035133 -0.02949603]

Complaint 74 :

Topic 1 : 48.689 %  
Topic 2 : -16.792 %  
Topic 3 : -12.326 %  
Topic 4 : 22.035 %  
Topic 5 : -2.95 %

[ 0.52737798 -0.33758339 -0.08724414 -0.03557216 -0.02822795]

Complaint 75 :

Topic 1 : 52.738 %  
Topic 2 : -33.758 %  
Topic 3 : -8.724 %  
Topic 4 : -3.557 %  
Topic 5 : -2.823 %

[ 0.44732213 0.02014897 -0.23742872 -0.05141391 0.06955729]

Complaint 76 :

Topic 1 : 44.732 %  
Topic 2 : 2.015 %  
Topic 3 : -23.743 %  
Topic 4 : -5.141 %  
Topic 5 : 6.956 %

[ 0.28488215 0.02996389 0.0463667 0.01331932 -0.09277002]

Complaint 77 :

Topic 1 : 28.488 %  
Topic 2 : 2.996 %  
Topic 3 : 4.637 %  
Topic 4 : 1.332 %  
Topic 5 : -9.277 %

[ 0.47319303 0.29541583 0.15405871 0.33884876 -0.1132669 ]

Complaint 78 :

Topic 1 : 47.319 %  
Topic 2 : 29.542 %  
Topic 3 : 15.406 %  
Topic 4 : 33.885 %  
Topic 5 : -11.327 %



[ 0.46381876 0.1550116 0.02855201 -0.19074971 0.15103387 ]

Complaint 79 :

Topic 1 : 46.382 %  
Topic 2 : 15.501 %  
Topic 3 : 2.855 %  
Topic 4 : -19.075 %  
Topic 5 : 15.103 %

[ 0.28214491 0.28350683 -0.06560885 -0.01396252 -0.0540468 ]

Complaint 80 :

Topic 1 : 28.214 %  
Topic 2 : 28.351 %  
Topic 3 : -6.561 %  
Topic 4 : -1.396 %  
Topic 5 : -5.405 %

[ 0.32525802 -0.0147903 -0.09034157 -0.0760043 -0.03212915 ]

Complaint 81 :

Topic 1 : 32.526 %  
Topic 2 : -1.479 %  
Topic 3 : -9.034 %  
Topic 4 : -7.6 %  
Topic 5 : -3.213 %

[ 0.37063238 0.4767341 -0.19074696 -0.08454742 0.14094996 ]

Complaint 82 :

Topic 1 : 37.063 %  
Topic 2 : 47.673 %  
Topic 3 : -19.075 %  
Topic 4 : -8.455 %  
Topic 5 : 14.095 %

[ 0.32838936 -0.22045857 -0.27747631 0.02997724 -0.36250754 ]

Complaint 83 :

Topic 1 : 32.839 %  
Topic 2 : -22.046 %  
Topic 3 : -27.748 %  
Topic 4 : 2.998 %  
Topic 5 : -36.251 %

[0.43413538 0.00179856 0.08369366 0.58721453 0.25185839]

Complaint 84 :  
Topic 1 : 43.414 %  
Topic 2 : 0.18 %  
Topic 3 : 8.369 %  
Topic 4 : 58.721 %  
Topic 5 : 25.186 %

[ 0.49697533 0.27144877 -0.16836386 -0.06949501 0.04715782]

Complaint 85 :  
Topic 1 : 49.698 %  
Topic 2 : 27.145 %  
Topic 3 : -16.836 %  
Topic 4 : -6.95 %  
Topic 5 : 4.716 %

[0.64919379 0.0539676 0.08035053 0.19994551 0.18163162]

Complaint 86 :  
Topic 1 : 64.919 %  
Topic 2 : 5.397 %  
Topic 3 : 8.035 %  
Topic 4 : 19.995 %  
Topic 5 : 18.163 %

[ 0.58636363 -0.09232184 -0.02377569 -0.04489962 -0.21825726]

Complaint 87 :  
Topic 1 : 58.636 %  
Topic 2 : -9.232 %  
Topic 3 : -2.378 %  
Topic 4 : -4.49 %  
Topic 5 : -21.826 %

[ 0.36455745 0.05228331 0.09792223 -0.03568163 -0.31771241]

Complaint 88 :  
Topic 1 : 36.456 %  
Topic 2 : 5.228 %  
Topic 3 : 9.792 %  
Topic 4 : -3.568 %  
Topic 5 : -31.771 %

[ 0.4762245 -0.16203794 -0.1676854 0.1603878 -0.09511592]

Complaint 89 :

Topic 1 : 47.622 %  
Topic 2 : -16.204 %  
Topic 3 : -16.769 %  
Topic 4 : 16.039 %  
Topic 5 : -9.512 %

[ 0.37217246 -0.25447168 0.08700372 -0.24572869 0.25881989]

Complaint 90 :

Topic 1 : 37.217 %  
Topic 2 : -25.447 %  
Topic 3 : 8.7 %  
Topic 4 : -24.573 %  
Topic 5 : 25.882 %

[ 0.4991303 -0.07543719 0.04379123 -0.11438115 0.1560203 ]

Complaint 91 :

Topic 1 : 49.913 %  
Topic 2 : -7.544 %  
Topic 3 : 4.379 %  
Topic 4 : -11.438 %  
Topic 5 : 15.602 %

[ 0.46252807 -0.14791843 0.06677744 0.06417309 -0.0518453 ]

Complaint 92 :

Topic 1 : 46.253 %  
Topic 2 : -14.792 %  
Topic 3 : 6.678 %  
Topic 4 : 6.417 %  
Topic 5 : -5.185 %

[ 0.67270644 -0.2116442 -0.14745343 -0.06432282 -0.05389824]

Complaint 93 :

Topic 1 : 67.271 %  
Topic 2 : -21.164 %  
Topic 3 : -14.745 %  
Topic 4 : -6.432 %  
Topic 5 : -5.39 %

[ 0.49109894 -0.1088358 0.05866388 -0.18107471 0.05423595]

Complaint 94 :  
Topic 1 : 49.11 %  
Topic 2 : -10.884 %  
Topic 3 : 5.866 %  
Topic 4 : -18.107 %  
Topic 5 : 5.424 %

[ 0.53178477 0.04209021 -0.20630379 0.04566019 -0.01404211]

Complaint 95 :  
Topic 1 : 53.178 %  
Topic 2 : 4.209 %  
Topic 3 : -20.63 %  
Topic 4 : 4.566 %  
Topic 5 : -1.404 %

[ 0.51010338 0.34356484 -0.01612332 0.06142858 -0.07503197]

Complaint 96 :  
Topic 1 : 51.01 %  
Topic 2 : 34.356 %  
Topic 3 : -1.612 %  
Topic 4 : 6.143 %  
Topic 5 : -7.503 %

[ 0.51237422 0.16300543 -0.29260472 -0.14846079 0.16679362]

Complaint 97 :  
Topic 1 : 51.237 %  
Topic 2 : 16.301 %  
Topic 3 : -29.26 %  
Topic 4 : -14.846 %  
Topic 5 : 16.679 %

[ 0.29236897 -0.07581653 0.59085183 -0.38076765 -0.02548985]

Complaint 98 :  
Topic 1 : 29.237 %  
Topic 2 : -7.582 %  
Topic 3 : 59.085 %  
Topic 4 : -38.077 %  
Topic 5 : -2.549 %

[ 0.47515166 0.09264035 -0.07471169 -0.26848513 0.2288518 ]

Complaint 99 :  
Topic 1 : 47.515 %  
Topic 2 : 9.264 %  
Topic 3 : -7.471 %  
Topic 4 : -26.849 %  
Topic 5 : 22.885 %

[ 0.55310353 0.32260697 -0.13271055 0.00442195 0.15526183]

Complaint 100 :  
Topic 1 : 55.31 %  
Topic 2 : 32.261 %  
Topic 3 : -13.271 %  
Topic 4 : 0.442 %  
Topic 5 : 15.526 %

[ 0.54378034 0.20175661 -0.05654789 -0.09187157 0.28526188]

Complaint 101 :  
Topic 1 : 54.378 %  
Topic 2 : 20.176 %  
Topic 3 : -5.655 %  
Topic 4 : -9.187 %  
Topic 5 : 28.526 %

[ 0.38912947 0.25405331 -0.16304668 -0.13747259 0.20293313]

Complaint 102 :  
Topic 1 : 38.913 %  
Topic 2 : 25.405 %  
Topic 3 : -16.305 %  
Topic 4 : -13.747 %  
Topic 5 : 20.293 %

[ 0.51695641 0.16669962 0.29934235 0.29212108 -0.20216918]

Complaint 103 :  
Topic 1 : 51.696 %  
Topic 2 : 16.67 %  
Topic 3 : 29.934 %  
Topic 4 : 29.212 %  
Topic 5 : -20.217 %

[ 0.54592567 0.08286406 -0.21617732 0.05185901 -0.14823353]

Complaint 104 :  
Topic 1 : 54.593 %  
Topic 2 : 8.286 %  
Topic 3 : -21.618 %  
Topic 4 : 5.186 %  
Topic 5 : -14.823 %

[ 0.07731445 -0.04312728 0.05036236 -0.03015649 -0.019196 ]

Complaint 105 :  
Topic 1 : 7.731 %  
Topic 2 : -4.313 %  
Topic 3 : 5.036 %  
Topic 4 : -3.016 %  
Topic 5 : -1.92 %

[0.37066461 0.08226617 0.04079326 0.08581607 0.18285435]

Complaint 106 :  
Topic 1 : 37.066 %  
Topic 2 : 8.227 %  
Topic 3 : 4.079 %  
Topic 4 : 8.582 %  
Topic 5 : 18.285 %

[ 0.48400909 0.07281304 -0.24538338 -0.14860729 0.19166893]

Complaint 107 :  
Topic 1 : 48.401 %  
Topic 2 : 7.281 %  
Topic 3 : -24.538 %  
Topic 4 : -14.861 %  
Topic 5 : 19.167 %

[ 0.33282003 -0.11424659 0.20513567 -0.1996865 0.03315394]

Complaint 108 :  
Topic 1 : 33.282 %  
Topic 2 : -11.425 %  
Topic 3 : 20.514 %  
Topic 4 : -19.969 %  
Topic 5 : 3.315 %

[ 0.53008952 -0.06125443 0.08118174 0.02581972 -0.18602592]

Complaint 109 :  
Topic 1 : 53.009 %  
Topic 2 : -6.125 %  
Topic 3 : 8.118 %  
Topic 4 : 2.582 %  
Topic 5 : -18.603 %

[ 0.36281421 0.08895005 0.5180639 -0.115409 -0.33621856]

Complaint 110 :  
Topic 1 : 36.281 %  
Topic 2 : 8.895 %  
Topic 3 : 51.806 %  
Topic 4 : -11.541 %  
Topic 5 : -33.622 %

[ 0.35654839 -0.05852065 -0.21628733 -0.13771355 0.11315635]

Complaint 111 :  
Topic 1 : 35.655 %  
Topic 2 : -5.852 %  
Topic 3 : -21.629 %  
Topic 4 : -13.771 %  
Topic 5 : 11.316 %

[ 0.26998468 0.1974034 0.19319055 -0.033585 -0.24381321]

Complaint 112 :  
Topic 1 : 26.998 %  
Topic 2 : 19.74 %  
Topic 3 : 19.319 %  
Topic 4 : -3.358 %  
Topic 5 : -24.381 %

[ 0.3074085 0.02556843 -0.12985518 -0.02356972 0.00760647]

Complaint 113 :  
Topic 1 : 30.741 %  
Topic 2 : 2.557 %  
Topic 3 : -12.986 %  
Topic 4 : -2.357 %  
Topic 5 : 0.761 %

[ 0.45992515 -0.34056222 -0.11279368 -0.10545656 -0.06571917]

Complaint 114 :  
Topic 1 : 45.993 %  
Topic 2 : -34.056 %  
Topic 3 : -11.279 %  
Topic 4 : -10.546 %  
Topic 5 : -6.572 %

[ 0.22967343 -0.03968848 0.27947678 -0.24598577 0.00116487]

Complaint 115 :  
Topic 1 : 22.967 %  
Topic 2 : -3.969 %  
Topic 3 : 27.948 %  
Topic 4 : -24.599 %  
Topic 5 : 0.116 %

[ 0.60190174 0.08020468 0.32227134 0.1826272 -0.21899444]

Complaint 116 :  
Topic 1 : 60.19 %  
Topic 2 : 8.02 %  
Topic 3 : 32.227 %  
Topic 4 : 18.263 %  
Topic 5 : -21.899 %

[ 0.43341205 -0.15160463 0.45918269 -0.29408584 0.05875934]

Complaint 117 :  
Topic 1 : 43.341 %  
Topic 2 : -15.16 %  
Topic 3 : 45.918 %  
Topic 4 : -29.409 %  
Topic 5 : 5.876 %

[ 0.40443186 -0.2410121 0.16724751 0.05524053 -0.0134623 ]

Complaint 118 :  
Topic 1 : 40.443 %  
Topic 2 : -24.101 %  
Topic 3 : 16.725 %  
Topic 4 : 5.524 %  
Topic 5 : -1.346 %



[ 0.41535826 -0.18317435 0.33901327 -0.37364596 0.2842812 ]

Complaint 119 :  
Topic 1 : 41.536 %  
Topic 2 : -18.317 %  
Topic 3 : 33.901 %  
Topic 4 : -37.365 %  
Topic 5 : 28.428 %

[ 0.12939652 0.04995503 0.15912104 -0.12458933 -0.16683164]

Complaint 120 :  
Topic 1 : 12.94 %  
Topic 2 : 4.996 %  
Topic 3 : 15.912 %  
Topic 4 : -12.459 %  
Topic 5 : -16.683 %

[ 0.36704876 0.17118223 0.48980493 -0.05618061 -0.19169661]

Complaint 121 :  
Topic 1 : 36.705 %  
Topic 2 : 17.118 %  
Topic 3 : 48.98 %  
Topic 4 : -5.618 %  
Topic 5 : -19.17 %

[ 0.47614097 -0.05695979 0.0074672 -0.15994566 -0.01459642]

Complaint 122 :  
Topic 1 : 47.614 %  
Topic 2 : -5.696 %  
Topic 3 : 0.747 %  
Topic 4 : -15.995 %  
Topic 5 : -1.46 %

[ 0.39510527 0.23317809 -0.1555786 -0.12371897 0.21560687]

Complaint 123 :  
Topic 1 : 39.511 %  
Topic 2 : 23.318 %  
Topic 3 : -15.558 %  
Topic 4 : -12.372 %  
Topic 5 : 21.561 %

[ 0.41532933 0.04040287 -0.07250082 -0.00543499 -0.28992355]

Complaint 124 :  
Topic 1 : 41.533 %  
Topic 2 : 4.04 %  
Topic 3 : -7.25 %  
Topic 4 : -0.543 %  
Topic 5 : -28.992 %

[ 0.62877634 -0.119579 0.23138998 0.04906808 0.03866711]

Complaint 125 :  
Topic 1 : 62.878 %  
Topic 2 : -11.958 %  
Topic 3 : 23.139 %  
Topic 4 : 4.907 %  
Topic 5 : 3.867 %

[ 0.41256236 -0.13219573 -0.00062115 -0.02714686 0.1256898 ]

Complaint 126 :  
Topic 1 : 41.256 %  
Topic 2 : -13.22 %  
Topic 3 : -0.062 %  
Topic 4 : -2.715 %  
Topic 5 : 12.569 %

[ 0.37649351 0.15824395 -0.07166802 -0.18503057 0.20107295]

Complaint 127 :  
Topic 1 : 37.649 %  
Topic 2 : 15.824 %  
Topic 3 : -7.167 %  
Topic 4 : -18.503 %  
Topic 5 : 20.107 %

[ 0.50557678 -0.19149725 0.28471995 -0.30431979 0.09851476]

Complaint 128 :  
Topic 1 : 50.558 %  
Topic 2 : -19.15 %  
Topic 3 : 28.472 %  
Topic 4 : -30.432 %  
Topic 5 : 9.851 %

[ 0.24219541 -0.03598608 -0.04670402 0.04808302 0.12245444]

Complaint 129 :  
Topic 1 : 24.22 %  
Topic 2 : -3.599 %  
Topic 3 : -4.67 %  
Topic 4 : 4.808 %  
Topic 5 : 12.245 %

[ 0.45304266 -0.28866726 0.05987206 -0.07268393 -0.11074236]

Complaint 130 :  
Topic 1 : 45.304 %  
Topic 2 : -28.867 %  
Topic 3 : 5.987 %  
Topic 4 : -7.268 %  
Topic 5 : -11.074 %

[ 0.47889007 -0.11733417 0.29862873 -0.30711248 0.13208856]

Complaint 131 :  
Topic 1 : 47.889 %  
Topic 2 : -11.733 %  
Topic 3 : 29.863 %  
Topic 4 : -30.711 %  
Topic 5 : 13.209 %

[ 0.53060698 0.37252953 0.01404414 -0.03520329 -0.01499356]

Complaint 132 :  
Topic 1 : 53.061 %  
Topic 2 : 37.253 %  
Topic 3 : 1.404 %  
Topic 4 : -3.52 %  
Topic 5 : -1.499 %

[ 0.41227993 0.17689896 0.2635551 0.03927855 -0.1287733 ]

Complaint 133 :  
Topic 1 : 41.228 %  
Topic 2 : 17.69 %  
Topic 3 : 26.356 %  
Topic 4 : 3.928 %  
Topic 5 : -12.877 %

[ 0.46971537 0.03539974 -0.03144887 0.22276234 0.25051684]

Complaint 134 :  
Topic 1 : 46.972 %  
Topic 2 : 3.54 %  
Topic 3 : -3.145 %  
Topic 4 : 22.276 %  
Topic 5 : 25.052 %

[ 0.37402455 0.27673857 0.07726826 0.05909521 -0.25785496]

Complaint 135 :  
Topic 1 : 37.402 %  
Topic 2 : 27.674 %  
Topic 3 : 7.727 %  
Topic 4 : 5.91 %  
Topic 5 : -25.785 %

[ 0.47346095 0.24179682 0.46139164 -0.15784904 -0.07868019]

Complaint 136 :  
Topic 1 : 47.346 %  
Topic 2 : 24.18 %  
Topic 3 : 46.139 %  
Topic 4 : -15.785 %  
Topic 5 : -7.868 %

[ 0.57160641 0.03362533 -0.20522126 -0.05620857 -0.37636266]

Complaint 137 :  
Topic 1 : 57.161 %  
Topic 2 : 3.363 %  
Topic 3 : -20.522 %  
Topic 4 : -5.621 %  
Topic 5 : -37.636 %

\*\*\*\*\*

Total time taken: 0.16 s

\*\*\*\*\*

```
In [29]: # Printing top 10 words in each topic
topic_displayer(lsa_components_m, 10)
```

```
Topic 0 : different department assure balance check explain credit allow confirm fee advance
Topic 1 : advance credit confirm able business bad ask employee assure date
Topic 2 : allow ask ago fix check answer date experience area credit
Topic 3 : check claim credit different department customer service fix issue complete assure agree course
Topic 4 : check ago complete explain different day technician bad direct big department
```

## Using Latent Dirichlet Allocation(LDA)

### LDA for Arizona

```
In [30]: ### Implementing LDA using sklearn
lda_start_time_a = time.time()

# Extracting 5 topics
lda_model_a = LatentDirichletAllocation(n_components=5, learning_method='online', random_state=50 ,max_iter=500)
lda_top_a = lda_model_a.fit_transform(tfidf_model_a)
lda_components_a = lda_model_a.components_
#print("The LDA model is: \n",lda_model_a)
print("The results of LDA are: \n\n" , lda_top_a, "\n\n")
print("lda_components_a is: \n",lda_components_a, "\n\n")
lda_counter_a = 0

while lda_counter_a < complaints_list_length_a:
    print("Review ", lda_counter_a, " : \n")
    for i,topic in enumerate(lda_top_a[lda_counter_a]):
        print("Topic ",i+1," : ",round(topic*100,3),"%")
    print(" ")
    lda_counter_a += 1

lda_end_time_a = time.time()
lda_total_time_a = round(lda_end_time_a - lda_start_time_a, 2)
print("\n\n ***** \n\n",
      "Total time taken: ", lda_total_time_a,
      "s\n\n ***** \n\n")
```

The results of LDA are:

```
[[0.02739021 0.88860889 0.02865045 0.02782579 0.02752466]
[0.03300747 0.03378756 0.0335744 0.86597421 0.03365637]
[0.03095768 0.87532967 0.03120357 0.03134664 0.03116244]
[0.03163743 0.03202856 0.87253842 0.03190953 0.03188606]
[0.02740636 0.02789129 0.88941343 0.02772831 0.02756061]
[0.03586212 0.0360426 0.03612344 0.8559793 0.03599254]
[0.03063212 0.03103506 0.87675541 0.0308241 0.03075332]
[0.02615922 0.02656633 0.02667861 0.89407534 0.02652051]
[0.02830044 0.02860961 0.02907577 0.88513434 0.02887983]
[0.03000053 0.03026946 0.87736065 0.03190802 0.03046133]
[0.02490086 0.02571044 0.89819669 0.02563581 0.02555619]
[0.02421967 0.02497577 0.02463268 0.0247306 0.90144128]
[0.03245333 0.03291999 0.03300754 0.86904692 0.03257223]
[0.03851544 0.84481649 0.03888756 0.03900921 0.0387713 ]
[0.02481282 0.02531364 0.0256611 0.02623423 0.89797821]
[0.0286613 0.02938526 0.02940009 0.02965877 0.88289457]
[0.02190618 0.91059181 0.02246615 0.02273273 0.02230313]]
```

lda\_components\_a is:

```
[[0.20008528 0.20003968 0.20003971 ... 0.20005748 0.20005241 0.20003724]
[0.27279081 0.20003079 0.20003081 ... 0.51674463 0.34708956 0.32149389]
[0.29833579 0.2000292 0.2000292 ... 0.31563743 0.34776757 0.20002847]
[0.28115967 0.3080778 0.30807777 ... 0.200043 0.66751252 0.20002853]
[0.32342846 0.25674853 0.25674858 ... 0.24947742 0.20004141 0.29193791]]
```

Review 0 :

```
Topic 1 : 2.739 %
Topic 2 : 88.861 %
Topic 3 : 2.865 %
Topic 4 : 2.783 %
Topic 5 : 2.752 %
```

Review 1 :

```
Topic 1 : 3.301 %
Topic 2 : 3.379 %
Topic 3 : 3.357 %
Topic 4 : 86.597 %
Topic 5 : 3.366 %
```

Review 2 :

Topic 1 : 3.096 %  
Topic 2 : 87.533 %  
Topic 3 : 3.12 %  
Topic 4 : 3.135 %  
Topic 5 : 3.116 %

Review 3 :

Topic 1 : 3.164 %  
Topic 2 : 3.203 %  
Topic 3 : 87.254 %  
Topic 4 : 3.191 %  
Topic 5 : 3.189 %

Review 4 :

Topic 1 : 2.741 %  
Topic 2 : 2.789 %  
Topic 3 : 88.941 %  
Topic 4 : 2.773 %  
Topic 5 : 2.756 %

Review 5 :

Topic 1 : 3.586 %  
Topic 2 : 3.604 %  
Topic 3 : 3.612 %  
Topic 4 : 85.598 %  
Topic 5 : 3.599 %

Review 6 :

Topic 1 : 3.063 %  
Topic 2 : 3.104 %  
Topic 3 : 87.676 %  
Topic 4 : 3.082 %  
Topic 5 : 3.075 %

Review 7 :

Topic 1 : 2.616 %  
Topic 2 : 2.657 %  
Topic 3 : 2.668 %

Topic 4 : 89.408 %  
Topic 5 : 2.652 %

Review 8 :

Topic 1 : 2.83 %  
Topic 2 : 2.861 %  
Topic 3 : 2.908 %  
Topic 4 : 88.513 %  
Topic 5 : 2.888 %

Review 9 :

Topic 1 : 3.0 %  
Topic 2 : 3.027 %  
Topic 3 : 87.736 %  
Topic 4 : 3.191 %  
Topic 5 : 3.046 %

Review 10 :

Topic 1 : 2.49 %  
Topic 2 : 2.571 %  
Topic 3 : 89.82 %  
Topic 4 : 2.564 %  
Topic 5 : 2.556 %

Review 11 :

Topic 1 : 2.422 %  
Topic 2 : 2.498 %  
Topic 3 : 2.463 %  
Topic 4 : 2.473 %  
Topic 5 : 90.144 %

Review 12 :

Topic 1 : 3.245 %  
Topic 2 : 3.292 %  
Topic 3 : 3.301 %  
Topic 4 : 86.905 %  
Topic 5 : 3.257 %

Review 13 :



Topic 1 : 3.852 %  
Topic 2 : 84.482 %  
Topic 3 : 3.889 %  
Topic 4 : 3.901 %  
Topic 5 : 3.877 %

Review 14 :

Topic 1 : 2.481 %  
Topic 2 : 2.531 %  
Topic 3 : 2.566 %  
Topic 4 : 2.623 %  
Topic 5 : 89.798 %

Review 15 :

Topic 1 : 2.866 %  
Topic 2 : 2.939 %  
Topic 3 : 2.94 %  
Topic 4 : 2.966 %  
Topic 5 : 88.289 %

Review 16 :

Topic 1 : 2.191 %  
Topic 2 : 91.059 %  
Topic 3 : 2.247 %  
Topic 4 : 2.273 %  
Topic 5 : 2.23 %

\*\*\*\*\*

Total time taken: 1.32 s

\*\*\*\*\*

```
In [31]: # Printing top 10 words in each topic  
topic_displayer(lda_components_a, 10)
```

Topic 0 : mind able fix issue cancel later like tv hour minute  
 Topic 1 : day tell like service week cancel charge contact try address  
 Topic 2 : come leave technician comcast schedule pay company tech work house  
 Topic 3 : month customer people problem phone time internet year receive read  
 Topic 4 : bill credit month account supervisor pay service transfer speak comcast

## LDA for Massachusetts

```
In [32]: ### Implementing LDA using sklearn
lda_start_time_m = time.time()

# Extracting 5 topics
lda_model_m = LatentDirichletAllocation(n_components=5, learning_method='online', random_state=50 ,max_iter=500)
lda_top_m = lda_model_m.fit_transform(tfidf_model_m)
lda_components_m = lda_model_m.components_
# print("The LDA model is: \n",lda_model_m)
print("The results of LDA are: \n\n" , lda_top_m, "\n\n")
print("lda_components_m is: \n",lda_components_m, "\n\n")
lda_counter_m = 0

while lda_counter_m < complaints_list_length_m:
    print("Review ", lda_counter_m, " : \n")
    for i,topic in enumerate(lda_top_m[lda_counter_m]):
        print("Topic ",i+1," : ",round(topic*100,3),"%")
    print(" ")
    lda_counter_m += 1

lda_end_time_m = time.time()
lda_total_time_m = round(lda_end_time_m - lda_start_time_m, 2)
print("\n\n ***** \n\n",
      "Total time taken: ", lda_total_time_m,
      "s\n\n ***** \n\n")
```

The results of LDA are:

```
[[0.03633688 0.03637021 0.81791815 0.0363343 0.07304046]
[0.0341078 0.03405799 0.86519564 0.0333849 0.03325367]
[0.0637712 0.06380947 0.74474156 0.06402309 0.06365467]
[0.0420173 0.04182007 0.76630851 0.0419721 0.10788202]
[0.04675077 0.04649133 0.81216829 0.04638299 0.04820662]
[0.03683634 0.03665998 0.85252042 0.036882 0.03710127]
[0.0436799 0.0428499 0.82835695 0.0426184 0.04249485]
[0.04355691 0.04303448 0.82654382 0.04323838 0.04362641]
[0.04280145 0.04186467 0.83064971 0.04188856 0.04279562]
[0.04952997 0.04951447 0.80089006 0.05078446 0.04928105]
[0.06185211 0.06085435 0.75451152 0.06260062 0.0601814 ]
[0.02904842 0.02925371 0.88280197 0.02985157 0.02904433]
[0.03388483 0.03432384 0.86457064 0.03365162 0.03356908]
[0.04711236 0.04770505 0.80934153 0.04792601 0.04791506]
[0.34099073 0.04668179 0.51765816 0.04719775 0.04747157]
[0.05505527 0.05364104 0.78331808 0.05447253 0.05351308]
[0.0476539 0.04788903 0.80355891 0.04836953 0.05252863]
[0.03709313 0.03681983 0.8239683 0.03687332 0.06524543]
[0.03205485 0.0320329 0.8721678 0.0321291 0.03161535]
[0.05645651 0.05692562 0.77583533 0.05582588 0.05495666]
[0.03870476 0.03867944 0.84465615 0.03871553 0.03924412]
[0.04196062 0.04074739 0.83545539 0.0405865 0.0412501 ]
[0.04141613 0.04136543 0.8341823 0.04183764 0.04119849]
[0.06169658 0.06246159 0.75066937 0.06301135 0.06216111]
[0.03960216 0.03985873 0.84091576 0.03972993 0.03989341]
[0.04719348 0.04719987 0.81028595 0.04755998 0.04776072]
[0.039625 0.04034046 0.83997268 0.03996957 0.04009229]
[0.07472254 0.07424032 0.0748639 0.0747667 0.70140654]
[0.03598141 0.03581039 0.8568445 0.03566746 0.03569623]
[0.04035986 0.04058289 0.83552983 0.04274573 0.04078169]
[0.03561701 0.03529807 0.85807815 0.03507738 0.03592939]
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Topic 2 : 3.406 %  
Topic 3 : 86.52 %  
Topic 4 : 3.338 %  
Topic 5 : 3.325 %

Review 2 :

Topic 1 : 6.377 %  
Topic 2 : 6.381 %  
Topic 3 : 74.474 %  
Topic 4 : 6.402 %  
Topic 5 : 6.365 %

Review 3 :

Topic 1 : 4.202 %  
Topic 2 : 4.182 %  
Topic 3 : 76.631 %  
Topic 4 : 4.197 %  
Topic 5 : 10.788 %

Review 4 :

Topic 1 : 4.675 %



Topic 2 : 4.649 %  
Topic 3 : 81.217 %  
Topic 4 : 4.638 %  
Topic 5 : 4.821 %

Review 5 :

Topic 1 : 3.684 %  
Topic 2 : 3.666 %  
Topic 3 : 85.252 %  
Topic 4 : 3.688 %  
Topic 5 : 3.71 %

Review 6 :

Topic 1 : 4.368 %  
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Topic 3 : 82.836 %  
Topic 4 : 4.262 %  
Topic 5 : 4.249 %

Review 7 :

Topic 1 : 4.356 %  
Topic 2 : 4.303 %  
Topic 3 : 82.654 %  
Topic 4 : 4.324 %  
Topic 5 : 4.363 %

Review 8 :

Topic 1 : 4.28 %  
Topic 2 : 4.186 %  
Topic 3 : 83.065 %  
Topic 4 : 4.189 %  
Topic 5 : 4.28 %

Review 9 :

Topic 1 : 4.953 %  
Topic 2 : 4.951 %  
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Review 10 :

Topic 1 : 6.185 %  
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Topic 4 : 6.26 %  
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Review 11 :

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Review 12 :

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Review 13 :

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Review 14 :

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Review 15 :

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Topic 4 : 5.447 %  
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Review 16 :

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Review 17 :

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Review 18 :

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Review 20 :

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Review 21 :

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Review 24 :

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Topic 5 : 70.141 %

Review 28 :

Topic 1 : 3.598 %  
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Topic 4 : 3.567 %  
Topic 5 : 3.57 %

Review 29 :

Topic 1 : 4.036 %  
Topic 2 : 4.058 %  
Topic 3 : 83.553 %  
Topic 4 : 4.275 %  
Topic 5 : 4.078 %

Review 30 :

Topic 1 : 3.562 %  
Topic 2 : 3.53 %  
Topic 3 : 85.808 %  
Topic 4 : 3.508 %  
Topic 5 : 3.593 %

Review 31 :

Topic 1 : 4.452 %  
Topic 2 : 4.433 %  
Topic 3 : 82.315 %  
Topic 4 : 4.415 %  
Topic 5 : 4.385 %

Review 32 :

Topic 1 : 35.345 %  
Topic 2 : 46.416 %

Topic 3 : 6.202 %  
Topic 4 : 6.078 %  
Topic 5 : 5.959 %

Review 33 :

Topic 1 : 3.481 %  
Topic 2 : 3.49 %  
Topic 3 : 86.032 %  
Topic 4 : 3.507 %  
Topic 5 : 3.49 %

Review 34 :

Topic 1 : 4.039 %  
Topic 2 : 3.983 %  
Topic 3 : 84.027 %  
Topic 4 : 3.966 %  
Topic 5 : 3.986 %

Review 35 :

Topic 1 : 3.706 %  
Topic 2 : 3.808 %  
Topic 3 : 85.028 %  
Topic 4 : 3.789 %  
Topic 5 : 3.669 %

Review 36 :

Topic 1 : 4.3 %  
Topic 2 : 4.371 %  
Topic 3 : 82.458 %  
Topic 4 : 4.358 %  
Topic 5 : 4.513 %

Review 37 :

Topic 1 : 3.755 %  
Topic 2 : 3.745 %  
Topic 3 : 84.926 %  
Topic 4 : 3.798 %  
Topic 5 : 3.776 %

Review 38 :

Topic 1 : 3.972 %  
Topic 2 : 3.949 %  
Topic 3 : 79.246 %  
Topic 4 : 3.924 %  
Topic 5 : 8.909 %

Review 39 :

Topic 1 : 3.77 %  
Topic 2 : 3.836 %  
Topic 3 : 84.723 %  
Topic 4 : 3.862 %  
Topic 5 : 3.81 %

Review 40 :

Topic 1 : 3.756 %  
Topic 2 : 3.684 %  
Topic 3 : 85.226 %  
Topic 4 : 3.672 %  
Topic 5 : 3.662 %

Review 41 :

Topic 1 : 3.395 %  
Topic 2 : 3.369 %  
Topic 3 : 86.43 %  
Topic 4 : 3.462 %  
Topic 5 : 3.344 %

Review 42 :

Topic 1 : 3.595 %  
Topic 2 : 3.543 %  
Topic 3 : 85.657 %  
Topic 4 : 3.64 %  
Topic 5 : 3.565 %

Review 43 :

Topic 1 : 3.714 %  
Topic 2 : 3.792 %  
Topic 3 : 85.161 %  
Topic 4 : 3.685 %

Topic 5 : 3.647 %

Review 44 :

Topic 1 : 3.871 %

Topic 2 : 3.824 %

Topic 3 : 84.627 %

Topic 4 : 3.86 %

Topic 5 : 3.818 %

Review 45 :

Topic 1 : 4.6 %

Topic 2 : 4.448 %

Topic 3 : 82.019 %

Topic 4 : 4.503 %

Topic 5 : 4.431 %

Review 46 :

Topic 1 : 4.414 %

Topic 2 : 4.322 %

Topic 3 : 82.658 %

Topic 4 : 4.333 %

Topic 5 : 4.272 %

Review 47 :

Topic 1 : 3.769 %

Topic 2 : 3.754 %

Topic 3 : 84.945 %

Topic 4 : 3.82 %

Topic 5 : 3.711 %

Review 48 :

Topic 1 : 3.813 %

Topic 2 : 3.759 %

Topic 3 : 84.91 %

Topic 4 : 3.771 %

Topic 5 : 3.748 %

Review 49 :

Topic 1 : 4.155 %



Topic 2 : 4.145 %  
Topic 3 : 83.467 %  
Topic 4 : 4.119 %  
Topic 5 : 4.114 %

Review 50 :

Topic 1 : 4.639 %  
Topic 2 : 4.507 %  
Topic 3 : 82.003 %  
Topic 4 : 4.486 %  
Topic 5 : 4.365 %

Review 51 :

Topic 1 : 6.197 %  
Topic 2 : 5.939 %  
Topic 3 : 75.659 %  
Topic 4 : 6.259 %  
Topic 5 : 5.945 %

Review 52 :

Topic 1 : 6.117 %  
Topic 2 : 6.302 %  
Topic 3 : 45.109 %  
Topic 4 : 6.093 %  
Topic 5 : 36.379 %

Review 53 :

Topic 1 : 3.809 %  
Topic 2 : 3.936 %  
Topic 3 : 84.72 %  
Topic 4 : 3.777 %  
Topic 5 : 3.758 %

Review 54 :

Topic 1 : 4.206 %  
Topic 2 : 4.251 %  
Topic 3 : 78.409 %  
Topic 4 : 4.277 %  
Topic 5 : 8.857 %

Review 55 :

Topic 1 : 4.411 %  
Topic 2 : 4.257 %  
Topic 3 : 82.772 %  
Topic 4 : 4.322 %  
Topic 5 : 4.237 %

Review 56 :

Topic 1 : 3.391 %  
Topic 2 : 3.431 %  
Topic 3 : 86.393 %  
Topic 4 : 3.374 %  
Topic 5 : 3.411 %

Review 57 :

Topic 1 : 3.54 %  
Topic 2 : 3.549 %  
Topic 3 : 85.79 %  
Topic 4 : 3.574 %  
Topic 5 : 3.547 %

Review 58 :

Topic 1 : 4.613 %  
Topic 2 : 4.715 %  
Topic 3 : 81.361 %  
Topic 4 : 4.694 %  
Topic 5 : 4.617 %

Review 59 :

Topic 1 : 4.538 %  
Topic 2 : 4.483 %  
Topic 3 : 82.082 %  
Topic 4 : 4.449 %  
Topic 5 : 4.447 %

Review 60 :

Topic 1 : 4.935 %  
Topic 2 : 4.854 %  
Topic 3 : 80.554 %

Topic 4 : 4.883 %  
Topic 5 : 4.774 %

Review 61 :

Topic 1 : 76.756 %  
Topic 2 : 5.988 %  
Topic 3 : 5.868 %  
Topic 4 : 5.671 %  
Topic 5 : 5.717 %

Review 62 :

Topic 1 : 4.824 %  
Topic 2 : 4.855 %  
Topic 3 : 80.649 %  
Topic 4 : 4.838 %  
Topic 5 : 4.833 %

Review 63 :

Topic 1 : 5.407 %  
Topic 2 : 5.374 %  
Topic 3 : 78.374 %  
Topic 4 : 5.402 %  
Topic 5 : 5.444 %

Review 64 :

Topic 1 : 3.403 %  
Topic 2 : 3.38 %  
Topic 3 : 76.126 %  
Topic 4 : 3.377 %  
Topic 5 : 13.715 %

Review 65 :

Topic 1 : 2.998 %  
Topic 2 : 3.015 %  
Topic 3 : 87.992 %  
Topic 4 : 3.008 %  
Topic 5 : 2.987 %

Review 66 :

Topic 1 : 3.336 %  
Topic 2 : 3.458 %  
Topic 3 : 82.878 %  
Topic 4 : 3.376 %  
Topic 5 : 6.952 %

Review 67 :

Topic 1 : 3.486 %  
Topic 2 : 3.495 %  
Topic 3 : 86.105 %  
Topic 4 : 3.451 %  
Topic 5 : 3.463 %

Review 68 :

Topic 1 : 3.732 %  
Topic 2 : 3.678 %  
Topic 3 : 85.08 %  
Topic 4 : 3.798 %  
Topic 5 : 3.713 %

Review 69 :

Topic 1 : 4.438 %  
Topic 2 : 4.539 %  
Topic 3 : 82.068 %  
Topic 4 : 4.525 %  
Topic 5 : 4.43 %

Review 70 :

Topic 1 : 2.936 %  
Topic 2 : 2.955 %  
Topic 3 : 88.198 %  
Topic 4 : 2.994 %  
Topic 5 : 2.917 %

Review 71 :

Topic 1 : 3.36 %  
Topic 2 : 3.386 %  
Topic 3 : 83.906 %  
Topic 4 : 3.472 %  
Topic 5 : 5.876 %

Review 72 :

Topic 1 : 3.578 %  
Topic 2 : 3.578 %  
Topic 3 : 85.719 %  
Topic 4 : 3.576 %  
Topic 5 : 3.549 %

Review 73 :

Topic 1 : 3.96 %  
Topic 2 : 4.029 %  
Topic 3 : 83.96 %  
Topic 4 : 4.087 %  
Topic 5 : 3.964 %

Review 74 :

Topic 1 : 4.072 %  
Topic 2 : 4.096 %  
Topic 3 : 83.668 %  
Topic 4 : 4.088 %  
Topic 5 : 4.076 %

Review 75 :

Topic 1 : 3.821 %  
Topic 2 : 3.908 %  
Topic 3 : 84.72 %  
Topic 4 : 3.799 %  
Topic 5 : 3.752 %

Review 76 :

Topic 1 : 3.81 %  
Topic 2 : 3.763 %  
Topic 3 : 84.834 %  
Topic 4 : 3.758 %  
Topic 5 : 3.834 %

Review 77 :

Topic 1 : 52.438 %  
Topic 2 : 5.883 %

Topic 3 : 6.039 %  
Topic 4 : 29.805 %  
Topic 5 : 5.834 %

Review 78 :

Topic 1 : 4.676 %  
Topic 2 : 4.766 %  
Topic 3 : 81.256 %  
Topic 4 : 4.665 %  
Topic 5 : 4.637 %

Review 79 :

Topic 1 : 3.659 %  
Topic 2 : 3.626 %  
Topic 3 : 85.551 %  
Topic 4 : 3.639 %  
Topic 5 : 3.525 %

Review 80 :

Topic 1 : 5.51 %  
Topic 2 : 5.283 %  
Topic 3 : 78.688 %  
Topic 4 : 5.258 %  
Topic 5 : 5.262 %

Review 81 :

Topic 1 : 4.704 %  
Topic 2 : 4.73 %  
Topic 3 : 81.084 %  
Topic 4 : 4.761 %  
Topic 5 : 4.721 %

Review 82 :

Topic 1 : 35.734 %  
Topic 2 : 5.527 %  
Topic 3 : 47.628 %  
Topic 4 : 5.501 %  
Topic 5 : 5.611 %

Review 83 :

Topic 1 : 5.742 %  
Topic 2 : 5.757 %  
Topic 3 : 76.757 %  
Topic 4 : 5.771 %  
Topic 5 : 5.972 %

Review 84 :

Topic 1 : 5.093 %  
Topic 2 : 5.055 %  
Topic 3 : 79.492 %  
Topic 4 : 5.206 %  
Topic 5 : 5.154 %

Review 85 :

Topic 1 : 4.507 %  
Topic 2 : 4.459 %  
Topic 3 : 82.204 %  
Topic 4 : 4.399 %  
Topic 5 : 4.431 %

Review 86 :

Topic 1 : 3.288 %  
Topic 2 : 3.247 %  
Topic 3 : 87.033 %  
Topic 4 : 3.216 %  
Topic 5 : 3.217 %

Review 87 :

Topic 1 : 3.414 %  
Topic 2 : 3.362 %  
Topic 3 : 86.51 %  
Topic 4 : 3.341 %  
Topic 5 : 3.374 %

Review 88 :

Topic 1 : 3.799 %  
Topic 2 : 3.842 %  
Topic 3 : 84.671 %  
Topic 4 : 3.829 %

Topic 5 : 3.859 %

Review 89 :

Topic 1 : 4.739 %

Topic 2 : 4.736 %

Topic 3 : 80.991 %

Topic 4 : 4.731 %

Topic 5 : 4.804 %

Review 90 :

Topic 1 : 4.192 %

Topic 2 : 4.286 %

Topic 3 : 83.044 %

Topic 4 : 4.25 %

Topic 5 : 4.227 %

Review 91 :

Topic 1 : 3.428 %

Topic 2 : 3.563 %

Topic 3 : 84.346 %

Topic 4 : 3.417 %

Topic 5 : 5.246 %

Review 92 :

Topic 1 : 3.664 %

Topic 2 : 3.797 %

Topic 3 : 85.091 %

Topic 4 : 3.773 %

Topic 5 : 3.676 %

Review 93 :

Topic 1 : 3.337 %

Topic 2 : 3.298 %

Topic 3 : 86.691 %

Topic 4 : 3.377 %

Topic 5 : 3.296 %

Review 94 :

Topic 1 : 3.667 %



Topic 2 : 3.692 %  
Topic 3 : 85.274 %  
Topic 4 : 3.705 %  
Topic 5 : 3.661 %

Review 95 :

Topic 1 : 3.953 %  
Topic 2 : 3.922 %  
Topic 3 : 79.828 %  
Topic 4 : 3.966 %  
Topic 5 : 8.331 %

Review 96 :

Topic 1 : 4.509 %  
Topic 2 : 4.37 %  
Topic 3 : 78.692 %  
Topic 4 : 4.402 %  
Topic 5 : 8.027 %

Review 97 :

Topic 1 : 3.198 %  
Topic 2 : 3.273 %  
Topic 3 : 86.241 %  
Topic 4 : 3.198 %  
Topic 5 : 4.089 %

Review 98 :

Topic 1 : 5.379 %  
Topic 2 : 56.013 %  
Topic 3 : 27.417 %  
Topic 4 : 5.459 %  
Topic 5 : 5.732 %

Review 99 :

Topic 1 : 3.845 %  
Topic 2 : 3.87 %  
Topic 3 : 84.633 %  
Topic 4 : 3.812 %  
Topic 5 : 3.84 %

Review 100 :

Topic 1 : 3.691 %  
Topic 2 : 3.544 %  
Topic 3 : 81.822 %  
Topic 4 : 3.553 %  
Topic 5 : 7.39 %

Review 101 :

Topic 1 : 3.976 %  
Topic 2 : 3.943 %  
Topic 3 : 83.988 %  
Topic 4 : 4.051 %  
Topic 5 : 4.041 %

Review 102 :

Topic 1 : 4.313 %  
Topic 2 : 4.224 %  
Topic 3 : 83.077 %  
Topic 4 : 4.195 %  
Topic 5 : 4.191 %

Review 103 :

Topic 1 : 3.962 %  
Topic 2 : 3.909 %  
Topic 3 : 84.384 %  
Topic 4 : 3.887 %  
Topic 5 : 3.858 %

Review 104 :

Topic 1 : 3.792 %  
Topic 2 : 3.787 %  
Topic 3 : 84.819 %  
Topic 4 : 3.809 %  
Topic 5 : 3.794 %

Review 105 :

Topic 1 : 8.374 %  
Topic 2 : 8.453 %  
Topic 3 : 8.574 %

Topic 4 : 66.226 %  
Topic 5 : 8.374 %

Review 106 :

Topic 1 : 4.409 %  
Topic 2 : 4.351 %  
Topic 3 : 82.541 %  
Topic 4 : 4.344 %  
Topic 5 : 4.355 %

Review 107 :

Topic 1 : 3.512 %  
Topic 2 : 3.55 %  
Topic 3 : 85.866 %  
Topic 4 : 3.511 %  
Topic 5 : 3.561 %

Review 108 :

Topic 1 : 4.347 %  
Topic 2 : 4.655 %  
Topic 3 : 82.332 %  
Topic 4 : 4.397 %  
Topic 5 : 4.269 %

Review 109 :

Topic 1 : 4.076 %  
Topic 2 : 4.054 %  
Topic 3 : 83.791 %  
Topic 4 : 3.986 %  
Topic 5 : 4.092 %

Review 110 :

Topic 1 : 17.185 %  
Topic 2 : 65.885 %  
Topic 3 : 5.658 %  
Topic 4 : 5.673 %  
Topic 5 : 5.598 %

Review 111 :

Topic 1 : 4.508 %  
Topic 2 : 4.201 %  
Topic 3 : 82.805 %  
Topic 4 : 4.186 %  
Topic 5 : 4.3 %

Review 112 :

Topic 1 : 25.441 %  
Topic 2 : 4.81 %  
Topic 3 : 60.405 %  
Topic 4 : 4.715 %  
Topic 5 : 4.629 %

Review 113 :

Topic 1 : 5.414 %  
Topic 2 : 5.384 %  
Topic 3 : 61.548 %  
Topic 4 : 5.31 %  
Topic 5 : 22.345 %

Review 114 :

Topic 1 : 4.472 %  
Topic 2 : 4.512 %  
Topic 3 : 81.949 %  
Topic 4 : 4.608 %  
Topic 5 : 4.458 %

Review 115 :

Topic 1 : 6.864 %  
Topic 2 : 72.827 %  
Topic 3 : 6.816 %  
Topic 4 : 6.791 %  
Topic 5 : 6.701 %

Review 116 :

Topic 1 : 3.758 %  
Topic 2 : 3.807 %  
Topic 3 : 84.982 %  
Topic 4 : 3.758 %  
Topic 5 : 3.695 %

Review 117 :

Topic 1 : 4.922 %  
Topic 2 : 4.961 %  
Topic 3 : 80.225 %  
Topic 4 : 5.075 %  
Topic 5 : 4.818 %

Review 118 :

Topic 1 : 4.661 %  
Topic 2 : 4.773 %  
Topic 3 : 81.039 %  
Topic 4 : 4.811 %  
Topic 5 : 4.716 %

Review 119 :

Topic 1 : 4.168 %  
Topic 2 : 4.373 %  
Topic 3 : 83.037 %  
Topic 4 : 4.132 %  
Topic 5 : 4.291 %

Review 120 :

Topic 1 : 6.803 %  
Topic 2 : 6.65 %  
Topic 3 : 73.376 %  
Topic 4 : 6.646 %  
Topic 5 : 6.525 %

Review 121 :

Topic 1 : 5.533 %  
Topic 2 : 5.538 %  
Topic 3 : 35.748 %  
Topic 4 : 47.757 %  
Topic 5 : 5.425 %

Review 122 :

Topic 1 : 3.855 %  
Topic 2 : 3.86 %

Topic 3 : 84.599 %  
Topic 4 : 3.863 %  
Topic 5 : 3.823 %

Review 123 :

Topic 1 : 4.118 %  
Topic 2 : 4.167 %  
Topic 3 : 83.667 %  
Topic 4 : 3.983 %  
Topic 5 : 4.065 %

Review 124 :

Topic 1 : 4.322 %  
Topic 2 : 4.289 %  
Topic 3 : 82.837 %  
Topic 4 : 4.301 %  
Topic 5 : 4.251 %

Review 125 :

Topic 1 : 3.113 %  
Topic 2 : 3.19 %  
Topic 3 : 87.437 %  
Topic 4 : 3.152 %  
Topic 5 : 3.108 %

Review 126 :

Topic 1 : 3.997 %  
Topic 2 : 4.019 %  
Topic 3 : 79.622 %  
Topic 4 : 4.15 %  
Topic 5 : 8.211 %

Review 127 :

Topic 1 : 3.871 %  
Topic 2 : 3.883 %  
Topic 3 : 84.471 %  
Topic 4 : 3.912 %  
Topic 5 : 3.864 %

Review 128 :

Topic 1 : 3.263 %  
Topic 2 : 86.784 %  
Topic 3 : 3.335 %  
Topic 4 : 3.29 %  
Topic 5 : 3.328 %

Review 129 :

Topic 1 : 7.223 %  
Topic 2 : 7.167 %  
Topic 3 : 7.229 %  
Topic 4 : 7.201 %  
Topic 5 : 71.181 %

Review 130 :

Topic 1 : 4.974 %  
Topic 2 : 4.981 %  
Topic 3 : 5.056 %  
Topic 4 : 80.004 %  
Topic 5 : 4.986 %

Review 131 :

Topic 1 : 3.803 %  
Topic 2 : 3.887 %  
Topic 3 : 84.642 %  
Topic 4 : 3.853 %  
Topic 5 : 3.815 %

Review 132 :

Topic 1 : 85.142 %  
Topic 2 : 3.707 %  
Topic 3 : 3.732 %  
Topic 4 : 3.73 %  
Topic 5 : 3.689 %

Review 133 :

Topic 1 : 4.656 %  
Topic 2 : 4.651 %  
Topic 3 : 4.653 %  
Topic 4 : 81.411 %

Topic 5 : 4.628 %

Review 134 :

Topic 1 : 4.308 %

Topic 2 : 4.32 %

Topic 3 : 4.352 %

Topic 4 : 4.32 %

Topic 5 : 82.701 %

Review 135 :

Topic 1 : 74.732 %

Topic 2 : 6.294 %

Topic 3 : 6.334 %

Topic 4 : 6.319 %

Topic 5 : 6.32 %

Review 136 :

Topic 1 : 4.095 %

Topic 2 : 83.74 %

Topic 3 : 4.077 %

Topic 4 : 4.061 %

Topic 5 : 4.027 %

Review 137 :

Topic 1 : 3.732 %

Topic 2 : 3.685 %

Topic 3 : 85.252 %

Topic 4 : 3.664 %

Topic 5 : 3.667 %

\*\*\*\*\*

Total time taken: 9.78 s

\*\*\*\*\*



```
In [33]: # Printing top 10 words in each topic
topic_displayer(lda_components_m, 10)
```

```
Topic 0 : confirm different department advance credit correct date business ask speak fix find
Topic 1 : fix allow ago bill credit contact ask answer credit experience confirm
Topic 2 : different department assure balance fee confirm allow explain ago check believe
Topic 3 : allow experience comcast credit automate assure different department day additional ask come
Topic 4 : department assure fix issue different explain check game credit disconnect agree
```

## Using Hierarchical Dirichlet Process (HDP)

```
In [34]: # Defining a function to get the top 10 words in each topic extracted through HDP

def get_top_10_hdp_topic_words(hdp, n=10):
    # Getting most important topics by the number of times they were assigned i.e. counts
    sorted_topics = [key for key, value in sorted(enumerate(hdp.get_count_by_topics()), key = lambda x:x[1], reverse = True)]

    topics = dict()

    # For topics found, extract only those that are still assigned
    for key in sorted_topics:
        # To remove unassigned topics(those that aren't alive) at the end
        if not hdp.is_live_topic(key):
            continue
        topic_word_prob = []
        for word, prob in hdp.get_topic_words(key, n):
            topic_word_prob.append((word, prob))

        topics[key] = topic_word_prob # Store array of topic word/frequency

    return topics
```

## HDP for Arizona

```
In [35]: ## This HDP code is inspired by
## https://towardsdatascience.com/dont-be-afraid-of-nonparametric-topic-models-part-2-python-e5666db347a

# The HDP model is defined using the tomotopy library(extension of Topic Modelling Tool-->tomoto)
# Inverse Document Frequency term weighting is used to assign higher weight to fewer occurring topics and vice versa
# Minimum collection frequency is set to 0 to prevent exclusion of words
```

```

# Minimum document frequency is set to 3 for exclusion of words that have a document frequency less than the set value
# Number of top words to be removed is set to 0 to keep the most frequently occurring words
# Initial k number of topics is set to 3 which is later adjusted during training
# alpha is set to 0.1 so that individual documents have a very few set of topics
# gamma is set to 1 so that documents share a lot of topics
# corpus is the list of docs to be added to model

start_time_hdp_ari_one = time.time()

hdp_model = tp.HDPModel(tw=tp.TermWeight.IDF,min_cf=0,min_df=3,rm_top=0,initial_k=3,alpha=0.1,gamma=1)

for token in processed_tokens_list_a:
    hdp_model.add_doc(token)

# Initiating Markov Chain Monte Carlo MCMC burn in to discard the first 7000 iterations and allow the model to stabilize
# and converge i.e 'get into working condition'
hdp_model.burn_in = 7000
hdp_model.train(0)

print("No. of complaints: ", len(hdp_model.docs), "\nVocab size: ", hdp_model.num_vocabs,"\nNum words: ",
      hdp_model.num_words)
print("Removed top words: ", hdp_model.removed_top_words)

end_time_hdp_ari_one = time.time()
total_time_hdp_ari_one = round(end_time_hdp_ari_one - start_time_hdp_ari_one, 2)
print("\n\n ***** \n\n",
      "Total time taken: ", total_time_hdp_ari_one,
      "s\n\n ***** \n\n")

```

```

No. of complaints: 17
Vocab size: 119
Num words: 1077
Removed top words: []

```

```

*****

```

```

Total time taken: 0.0 s

```

```

*****

```

```
In [36]: start_time_hdp_ari_two = time.time()
# Training the HDP model
mcmc_iter = 5000
for i in range(0, mcmc_iter, 200):
    hdp_model.train(100, workers = 1000)
    print("Iteration: ", i, "\tLog-likelihood: ", hdp_model.ll_per_word, "\tNo. of topics: ", hdp_model.live_k)

end_time_hdp_ari_two = time.time()
total_time_hdp_ari_two = round(end_time_hdp_ari_two - start_time_hdp_ari_two, 2)
print("\n\n ***** \n\n",
      "Total time taken: ", total_time_hdp_ari_two,
      "s\n\n ***** \n\n")
```

Iteration:	Log-likelihood:	No. of topics:
0	-5.7096360888823146	26
200	-5.457375252778922	26
400	-5.331756047250016	21
600	-5.3133020956583135	22
800	-5.312958430793359	18
1000	-5.347128996632864	20
1200	-5.333075047322407	24
1400	-5.381848139738314	21
1600	-5.265177242245005	21
1800	-5.443217474960686	19
2000	-5.240191822849641	20
2200	-5.301034200394044	16
2400	-5.289512934758238	16
2600	-5.326158319976014	13
2800	-5.22139423246238	16
3000	-5.328265449196892	16
3200	-5.296789336415046	16
3400	-5.31224055848584	16
3600	-5.174736812186604	15
3800	-5.159190197231527	17
4000	-5.127936058245935	16
4200	-5.091812449641523	14
4400	-5.088310617309858	12
4600	-5.093551638860561	12
4800	-5.084542088487274	11

\*\*\*\*\*

Total time taken: 0.63 s

\*\*\*\*\*

```
In [37]: hdp_topics_a = get_top_10_hdp_topic_words(hdp_model)
         print(hdp_topics_a)
```

```
{5: [('account', 0.06841529160737991), ('transfer', 0.06067153438925743), ('set', 0.04849667474627495), ('speak', 0.047317024320364), ('ask', 0.04731662571430206), ('place', 0.04045933485031128), ('hold', 0.04045933485031128), ('talk', 0.030353235080838203), ('supervisor', 0.030323518440127373), ('resolve', 0.030323518440127373)], 3: [('new', 0.0763866975903511), ('week', 0.07001093775033951), ('house', 0.06253451108932495), ('home', 0.0583115853369236), ('check', 0.05559156835079193), ('day', 0.039720989763736725), ('hear', 0.03476272523403168), ('xfinity', 0.03334147110581398), ('money', 0.03334147110581398), ('office', 0.03334147110581398)], 22: [('schedule', 0.08189976215362549), ('rep', 0.07945065200328827), ('problem', 0.0650157481431961), ('customer', 0.05340491235256195), ('minute', 0.052389197051525116), ('technician', 0.04919615387916565), ('phone', 0.045069362968206406), ('month', 0.04336348921060562), ('able', 0.036146070808172226), ('post', 0.03074927255511284)], 9: [('order', 0.1099681705236435), ('contact', 0.09174319356679916), ('hour', 0.07430366426706314), ('box', 0.06882718950510025), ('online', 0.06875980645418167), ('receive', 0.0660564973950386), ('additional', 0.0550236813724041), ('morning', 0.041287560015916824), ('available', 0.041287560015916824), ('complete', 0.041287560015916824)], 2: [('credit', 0.27602142095565796), ('bill', 0.18594133853912354), ('pay', 0.10200369358062744), ('previous', 0.09665925800800323), ('supervisor', 0.06906505674123764), ('charge', 0.06359852105379105), ('twice', 0.055267952382564545), ('include', 0.04147085174918175), ('work', 0.03901542350649834), ('date', 0.027673745527863503)], 16: [('line', 0.1458786427974701), ('person', 0.1390739381313324), ('read', 0.08341067284345627), ('people', 0.07513153553009033), ('system', 0.07357282936573029), ('care', 0.06258801370859146), ('company', 0.05441102385520935), ('area', 0.05222775414586067), ('believe', 0.05222775414586067), ('phone', 0.045927610248327255)], 4: [('leave', 0.25916194915771484), ('equipment', 0.22349512577056885), ('box', 0.1201891154050827), ('technician', 0.08655542880296707), ('find', 0.08649792522192001), ('know', 0.06927752494812012), ('run', 0.05772057920694351), ('year', 0.029606936499476433), ('money', 0.028943240642547607), ('try', 0.02046855166554451)], 19: [('month', 0.5497573018074036), ('people', 0.13780179619789124), ('sign', 0.1149149239063263), ('charge', 0.07057218998670578), ('later', 0.055279187858104706), ('tell', 0.01564864069223404), ('comcast', 0.014675426296889782), ('come', 0.01176202017813921), ('year', 0.0002641293976921588), ('bill', 0.0002641262544784695)], 1: [('leave', 0.19675487279891968), ('like', 0.1772254854440689), ('work', 0.17354869842529297), ('area', 0.12319845706224442), ('later', 0.1182447150349617), ('come', 0.06191670522093773), ('sit', 0.059263937175273895), ('account', 0.034936267882585526), ('day', 0.01829218678176403), ('time', 0.005780995357781649)], 6: [('charge', 0.17151379585266113), ('cancel', 0.15104077756404877), ('try', 0.11842615902423859), ('equipment', 0.11842615902423859), ('complaint', 0.08407004177570343), ('send', 0.059454020112752914), ('need', 0.059454020112752914), ('issue', 0.05066818371415138), ('receive', 0.05066818371415138), ('day', 0.031129352748394012)], 0: [('second', 0.18624579906463623), ('charge', 0.09553208947181702), ('date', 0.093390554189682), ('believe', 0.07799059897661209), ('wrong', 0.07799059897661209), ('finally', 0.07799059897661209), ('able', 0.06604545563459396), ('system', 0.06604545563459396), ('tv', 0.056285567581653595), ('sit', 0.056285567581653595)]}
```

```
In [38]: list_hdp_topics_a = list(hdp_topics_a.values()) # Creating a list of HDP topic values
# print(list_hdp_topics_a, "\n"*2)
```

```
hdp_iter_a = 0
while len(list_hdp_topics_a) > hdp_iter_a:
    for topic_words in list_hdp_topics_a:
        print("Topic ", hdp_iter_a, " :\n\n", topic_words, "\n"*2)
        hdp_iter_a += 1
```

Topic 0 :

[('account', 0.06841529160737991), ('transfer', 0.06067153438925743), ('set', 0.04849667474627495), ('speak', 0.047317024320364), ('ask', 0.04731662571430206), ('place', 0.04045933485031128), ('hold', 0.04045933485031128), ('talk', 0.030353235080838203), ('supervisor', 0.030323518440127373), ('resolve', 0.030323518440127373)]

Topic 1 :

[('new', 0.0763866975903511), ('week', 0.07001093775033951), ('house', 0.06253451108932495), ('home', 0.0583115853369236), ('check', 0.05559156835079193), ('day', 0.039720989763736725), ('hear', 0.03476272523403168), ('xfinity', 0.03334147110581398), ('money', 0.03334147110581398), ('office', 0.03334147110581398)]

Topic 2 :

[('schedule', 0.08189976215362549), ('rep', 0.07945065200328827), ('problem', 0.0650157481431961), ('customer', 0.05340491235256195), ('minute', 0.052389197051525116), ('technician', 0.04919615387916565), ('phone', 0.045069362968206406), ('month', 0.04336348921060562), ('able', 0.036146070808172226), ('post', 0.03074927255511284)]

Topic 3 :

[('order', 0.1099681705236435), ('contact', 0.09174319356679916), ('hour', 0.07430366426706314), ('box', 0.06882718950510025), ('online', 0.06875980645418167), ('receive', 0.0660564973950386), ('additional', 0.0550236813724041), ('mornning', 0.041287560015916824), ('available', 0.041287560015916824), ('complete', 0.041287560015916824)]

Topic 4 :

[('credit', 0.27602142095565796), ('bill', 0.18594133853912354), ('pay', 0.10200369358062744), ('previous', 0.09665925800800323), ('supervisor', 0.06906505674123764), ('charge', 0.06359852105379105), ('twice', 0.055267952382564545), ('include', 0.04147085174918175), ('work', 0.03901542350649834), ('date', 0.027673745527863503)]

Topic 5 :

[('line', 0.1458786427974701), ('person', 0.1390739381313324), ('read', 0.08341067284345627), ('people', 0.07513153553009033), ('system', 0.07357282936573029), ('care', 0.06258801370859146), ('company', 0.05441102385520935), ('area', 0.0522775414586067), ('believe', 0.05222775414586067), ('phone', 0.045927610248327255)]

Topic 6 :

[('leave', 0.25916194915771484), ('equipment', 0.22349512577056885), ('box', 0.1201891154050827), ('technician', 0.086

```
55542880296707), ('find', 0.08649792522192001), ('know', 0.06927752494812012), ('run', 0.05772057920694351), ('year', 0.029606936499476433), ('money', 0.028943240642547607), ('try', 0.02046855166554451)]
```

Topic 7 :

```
[('month', 0.5497573018074036), ('people', 0.13780179619789124), ('sign', 0.1149149239063263), ('charge', 0.07057218998670578), ('later', 0.055279187858104706), ('tell', 0.01564864069223404), ('comcast', 0.014675426296889782), ('come', 0.01176202017813921), ('year', 0.0002641293976921588), ('bill', 0.0002641262544784695)]
```

Topic 8 :

```
[('leave', 0.19675487279891968), ('like', 0.1772254854440689), ('work', 0.17354869842529297), ('area', 0.12319845706224442), ('later', 0.1182447150349617), ('come', 0.06191670522093773), ('sit', 0.059263937175273895), ('account', 0.034936267882585526), ('day', 0.01829218678176403), ('time', 0.005780995357781649)]
```

Topic 9 :

```
[('charge', 0.17151379585266113), ('cancel', 0.15104077756404877), ('try', 0.11842615902423859), ('equipment', 0.11842615902423859), ('complaint', 0.08407004177570343), ('send', 0.059454020112752914), ('need', 0.059454020112752914), ('is sue', 0.05066818371415138), ('receive', 0.05066818371415138), ('day', 0.031129352748394012)]
```

Topic 10 :

```
[('second', 0.18624579906463623), ('charge', 0.09553208947181702), ('date', 0.093390554189682), ('believe', 0.07799059897661209), ('wrong', 0.07799059897661209), ('finally', 0.07799059897661209), ('able', 0.06604545563459396), ('system', 0.06604545563459396), ('tv', 0.056285567581653595), ('sit', 0.056285567581653595)]
```

## HDP for Massachusetts

```
In [39]: ## This HDP code is inspired by
## https://towardsdatascience.com/dont-be-afraid-of-nonparametric-topic-models-part-2-python-e5666db347a

# The HDP model is defined using the tomatopy library(extension of Topic Modelling Tool-->tomoto)
# Inverse Document Frequency term weighting is used to assign higher weight to fewer occurring topics and vice versa
# Minimum collection frequency is set to 0 to prevent exclusion of words
# Minimum document frequency is set to 9 for exclusion of words that have a document frequency less than the set value
# Number of top words to be removed is also set to 0 to keep the most frequently occurring words
# Initial k number of topics is set to 10 which is later adjusted during training
```

```

# alpha is set to 0.1 so that individual documents have a very few set of topics
# gamma is set to 1 so that documents share a lot of topics
# corpus is the list of docs to be added to model

start_time_hdp_mas_one = time.time()

hdp_model_m = tp.HDPModel(tw=tp.TermWeight.IDF,min_cf=0,min_df=9,rm_top=0,initial_k=10,alpha=0.1,gamma=1)

for token in processed_tokens_list_m:
    hdp_model_m.add_doc(token)

# Initiating Markov Chain Monte Carlo MCMC burn in to discard the first 7000 iterations and allow the model to stabilize
# and converge i.e 'get into working condition'
hdp_model_m.burn_in = 7000
hdp_model_m.train(0)

print("No. of complaints: ", len(hdp_model_m.docs), "\nVocab size: ", hdp_model_m.num_vocab, "\nNum words: ",
      hdp_model_m.num_words)
print("Removed top words: ", hdp_model_m.removed_top_words)

end_time_hdp_mas_one = time.time()
total_time_hdp_mas_one = round(end_time_hdp_mas_one - start_time_hdp_mas_one, 2)
print("\n\n ***** \n\n",
      "Total time taken: ", total_time_hdp_mas_one,
      "s\n\n ***** \n\n")

```

```

No. of complaints: 138
Vocab size: 186
Num words: 5941
Removed top words: []

```

```

*****

```

```

Total time taken: 0.02 s

```

```

*****

```

```

In [40]: start_time_hdp_mas_two = time.time()

```

```

# Training the HDP model
mcmc_iter_m = 5000

```



```

for i in range(0, mcmc_iter_m, 200):
    hdp_model_m.train(100, workers = 1000)
    print("Iteration: ", i, "\tLog-likelihood: ", hdp_model_m.ll_per_word, "\tNo. of topics: ", hdp_model_m.live_k)

end_time_hdp_mas_two = time.time()
total_time_hdp_mas_two = round(end_time_hdp_mas_two - start_time_hdp_mas_two, 2)
print("\n\n ***** \n\n",
      "Total time taken: ", total_time_hdp_mas_two,
      "\n\n ***** \n\n")

```

Iteration: 0	Log-likelihood: -5.275414435560031	No. of topics: 11
Iteration: 200	Log-likelihood: -5.2424509728659885	No. of topics: 11
Iteration: 400	Log-likelihood: -5.232823959422183	No. of topics: 10
Iteration: 600	Log-likelihood: -5.22740000017408	No. of topics: 11
Iteration: 800	Log-likelihood: -5.240908648214455	No. of topics: 9
Iteration: 1000	Log-likelihood: -5.243610247108854	No. of topics: 8
Iteration: 1200	Log-likelihood: -5.237688179561374	No. of topics: 7
Iteration: 1400	Log-likelihood: -5.240499575292245	No. of topics: 8
Iteration: 1600	Log-likelihood: -5.233980545633803	No. of topics: 7
Iteration: 1800	Log-likelihood: -5.240577921728368	No. of topics: 7
Iteration: 2000	Log-likelihood: -5.259009483266346	No. of topics: 6
Iteration: 2200	Log-likelihood: -5.248981642123603	No. of topics: 6
Iteration: 2400	Log-likelihood: -5.251507374346302	No. of topics: 5
Iteration: 2600	Log-likelihood: -5.246793028117209	No. of topics: 5
Iteration: 2800	Log-likelihood: -5.250076275157887	No. of topics: 5
Iteration: 3000	Log-likelihood: -5.252853714783039	No. of topics: 5
Iteration: 3200	Log-likelihood: -5.250317622468731	No. of topics: 5
Iteration: 3400	Log-likelihood: -5.249979515322632	No. of topics: 5
Iteration: 3600	Log-likelihood: -5.2495313117282585	No. of topics: 5
Iteration: 3800	Log-likelihood: -5.247395163484873	No. of topics: 6
Iteration: 4000	Log-likelihood: -5.261323906635156	No. of topics: 5
Iteration: 4200	Log-likelihood: -5.249569669680525	No. of topics: 5
Iteration: 4400	Log-likelihood: -5.248772376338553	No. of topics: 5
Iteration: 4600	Log-likelihood: -5.248231500535236	No. of topics: 5
Iteration: 4800	Log-likelihood: -5.24952487760388	No. of topics: 5

\*\*\*\*\*

Total time taken: 3.15 s

\*\*\*\*\*

```
In [41]: hdp_topics_m = get_top_10_hdp_topic_words(hdp_model_m)
print(hdp_topics_m, "\n"*2)

{0: [('bill', 0.01261004339903593), ('cable', 0.012478090822696686), ('internet', 0.012168790213763714), ('month', 0.010805167257785797), ('customer', 0.010567279532551765), ('box', 0.010361573658883572), ('tell', 0.01033704075962305), ('pay', 0.01012658141553402), ('time', 0.009706414304673672), ('come', 0.009579135105013847)], 2: [('payment', 0.2030162662267685), ('account', 0.13293692469596863), ('transfer', 0.0898623988032341), ('fee', 0.08502780646085739), ('request', 0.06187180429697037), ('contact', 0.056701499968767166), ('later', 0.04725939780473709), ('online', 0.04624079540371895), ('equipment', 0.04479161277413368), ('number', 0.03992423042654991)], 5: [('speed', 0.41623708605766296), ('mbps', 0.2939915657043457), ('internet', 0.11248230934143066), ('representative', 0.06525300443172455), ('xfinity', 0.046335555613040924), ('pay', 0.0361906997859478), ('service', 0.0120924087241292), ('past', 9.790297917788848e-05), ('change', 9.789364412426949e-05), ('month', 9.789247997105122e-05)], 6: [('tv', 0.20073337852954865), ('channel', 0.1778620183467865), ('box', 0.17303788661956787), ('claim', 0.1726393699645996), ('second', 0.1436776965856552), ('change', 0.053681567311286926), ('request', 0.0333801694214344), ('home', 0.021576620638370514), ('multiple', 0.00013147626304998994), ('equipment', 0.00013146686251275241)], 1: [('install', 0.3906627893447876), ('office', 0.15341496467590332), ('cable', 0.11872245371341705), ('offer', 0.10664648562669754), ('pick', 0.07677766680717468), ('tv', 0.06439948081970215), ('sign', 0.06437455862760544), ('month', 0.00014039248344488442), ('bill', 0.00014038663357496262), ('credit', 0.00014038663357496262)]}
```

```
In [42]: list_hdp_topics_m = list(hdp_topics_m.values()) # Creating a list of HDP topic values
# print(list_hdp_topics_m, "\n"*2)

hdp_iter_m = 0
while len(list_hdp_topics_m) > hdp_iter_m:
    for topic_words in list_hdp_topics_m:
        print("Topic ", hdp_iter_m, " :\n\n", topic_words, "\n"*2)
        hdp_iter_m += 1
```

Topic 0 :

```
[('bill', 0.01261004339903593), ('cable', 0.012478090822696686), ('internet', 0.012168790213763714), ('month', 0.010805167257785797), ('customer', 0.010567279532551765), ('box', 0.010361573658883572), ('tell', 0.01033704075962305), ('pay', 0.01012658141553402), ('time', 0.009706414304673672), ('come', 0.009579135105013847)]
```

Topic 1 :

```
[('payment', 0.2030162662267685), ('account', 0.13293692469596863), ('transfer', 0.0898623988032341), ('fee', 0.08502780646085739), ('request', 0.06187180429697037), ('contact', 0.056701499968767166), ('later', 0.04725939780473709), ('on line', 0.04624079540371895), ('equipment', 0.04479161277413368), ('number', 0.03992423042654991)]
```

Topic 2 :

```
[('speed', 0.41623708605766296), ('mbps', 0.2939915657043457), ('internet', 0.11248230934143066), ('representative', 0.06525300443172455), ('xfinity', 0.046335555613040924), ('pay', 0.0361906997859478), ('service', 0.0120924087241292), ('past', 9.790297917788848e-05), ('change', 9.789364412426949e-05), ('month', 9.789247997105122e-05)]
```

Topic 3 :

```
[('tv', 0.20073337852954865), ('channel', 0.1778620183467865), ('box', 0.17303788661956787), ('claim', 0.1726393699645996), ('second', 0.1436776965856552), ('change', 0.053681567311286926), ('request', 0.0333801694214344), ('home', 0.021576620638370514), ('multiple', 0.00013147626304998994), ('equipment', 0.00013146686251275241)]
```

Topic 4 :

```
[('install', 0.3906627893447876), ('office', 0.15341496467590332), ('cable', 0.11872245371341705), ('offer', 0.10664648562669754), ('pick', 0.07677766680717468), ('tv', 0.06439948081970215), ('sign', 0.06437455862760544), ('month', 0.00014039248344488442), ('bill', 0.00014038663357496262), ('credit', 0.00014038663357496262)]
```

In [43]:

```
### Comparison calculations ###
## Total time taken for hdp model to run ##

# Arizona hdp total time
ari_hdp_total_time = round(total_time_hdp_ari_one + total_time_hdp_ari_two,2)
# Massachusetts hdp total time
mas_hdp_total_time = round(total_time_hdp_mas_one + total_time_hdp_mas_two,2)

## LDA/LSA ratio calculation for finding which technique is faster ##
```

```
# Arizona Lda/Lsa
ari_lda_lsa_ratio = round(lda_total_time_a/lsa_total_time_a, 2)
# Massachusetts Lda/Lsa
mas_lda_lsa_ratio = round(lda_total_time_m/lsa_total_time_m, 2)

## LDA/HDP ratio calulation for finding which technique is faster ##

# Arizona Lda/Lsa
ari_lda_hdp_ratio = round(lda_total_time_a/ari_hdp_total_time, 2)
# Massachusetts Lda/Lsa
mas_lda_hdp_ratio = round(lda_total_time_m/mas_hdp_total_time, 2)

## HDP/LSA ratio calulation for finding which technique is faster ##

# Arizona hdp/Lsa
ari_hdp_lsa_ratio = round(ari_hdp_total_time/lsa_total_time_a, 2)
# Massachusetts hdp/Lsa
mas_hdp_lsa_ratio = round(mas_hdp_total_time/lsa_total_time_m, 2)
```

### **Brief comparison of results from LSA, LDA and HDP**

In [44]: `md(f"<b>Latent Semantic Analysis (LSA)</b> gives a score for the most relevant topic for a document (where a higher sco`

Out[44]: **Latent Semantic Analysis (LSA)** gives a score for the most relevant topic for a document (where a higher score indicates greater relevance - ignoring the negative sign) whereas **Latent Dirichlet Allocation (LDA)** gives the relevance of individual complaints to each topic as a percentage.

The **LSA** and **LDA** models of Arizona take **0.17 s** and **1.32 s** respectively.

The **LSA** and **LDA** models of Massachusetts take **0.16 s** and **9.78 s** respectively.

Comparatively, the **LSA** model is about **7.76 times** faster than the **LDA** model in case of Arizona and about **61.12 times** faster in case of Massachusetts.

The **HDP** model of Arizona takes **0.63 s**.

The **HDP model** of Massachusetts takes **3.17 s**.

**Hierarchical Dirichlet Processing (HDP)** is a topic extraction technique that is similar to **LDA** (uses Dirichlet distribution) but instead of explicitly requiring the specification of the number of topics to be extracted from text, this model interprets the number of topics on its own based on the input corpus. It does take time to train the model but comparatively, the total runtime of the **HDP** model is less than that of **LDA**.

The **HDP** model is **2.1 times** faster than **LDA** in case of Arizona and **3.09 times** faster in case of Massachusetts.

The **LSA** model is **3.71 times** faster than **HDP** in case of Arizona and **19.81 times** faster in case of Massachusetts.

According to the results obtained above, **LSA** is faster than **HDP** which is faster than **LDA**. Although **LSA** is the fastest technique to use, it is also less accurate compared to the rest of the two techniques. **LDA** is more accurate than **LSA** but is also the slowest compared to the other two. **HDP** on the other hand, is faster than **LDA** but slower than **LSA** and is more accurate than **LSA**.

Note: Both LDA and LSA require trial and error (or using coherence value/score) to find out the optimal number of topics extracted from the text. No trial and error is involved in the HDP method as multiple iterations are used to train the model which then finds out the optimal number of topics that the input text contains.

Overall, proper preprocessing of input text (ensuring no stopwords remain in the text), the selection of vectorization technique (like

BoW and TF-IDF) and topic extraction technique (like LSA, LDA and HDP as some techniques are more efficient than the other whereas some are more accurate) has an impact on results and making the right choices at the beginning helps get more accurate/better results.