**GOVERNMENT ARTS COLLEGE TIRUCHIRAPPALLI – 22**

**DEPARTMENT OF COMPUTER APPLICATIONS**

**MACHINE LEARNING WITH PYTHON**

**Project Title : Optimizing Spam Filtering with Machine Learning** :

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# Introduction

* 1. **Overview**

Optimizing Spam Filtering with Machine Learning is a topic that involves using machine learning algorithms to classify incoming messages as either spam or not spam. The goal of this process is to develop a spam filter that is more accurate and efficient than traditional rule-based filters.

Machine learning models can be trained on large datasets of labeled messages to learn patterns and characteristics that are common in spam messages. These models can then be used to classify new messages as either spam or not spam based on the features that were learned during training.

There are many different machine learning algorithms that can be used for spam filtering, including Naive Bayes, Support Vector Machines, Random Forests, and Neural Networks. Each algorithm has its strengths and weaknesses, and the choice of algorithm will depend on the specific characteristics of the dataset being used.

Optimizing spam filtering with machine learning involves not only selecting an appropriate algorithm but also tuning its hyperparameters, selecting appropriate features, and performing feature engineering to improve the accuracy of the model. Additionally, it is important to evaluate the model's performance on a testing dataset and make adjustments as necessary to optimize its performance.

Overall, optimizing spam filtering with machine learning is a complex process that requires a deep understanding of machine learning algorithms and techniques, as well as knowledge of the specific characteristics of the dataset being used.

* 1. **Purpose**

The purpose of optimizing spam filtering with machine learning is to improve the accuracy and efficiency of email spam detection and filtering. Traditional spam filtering methods often rely on rule-based systems, which can be ineffective against sophisticated spam techniques and can produce a high rate of false positives (legitimate messages marked as spam). By using machine learning algorithms to analyze and classify emails, spam filters can become more accurate and adaptable to changing spam tactics. This can improve the user experience by reducing the amount of unwanted and potentially harmful emails in their inbox, while also reducing the workload of email providers' spam filtering systems.

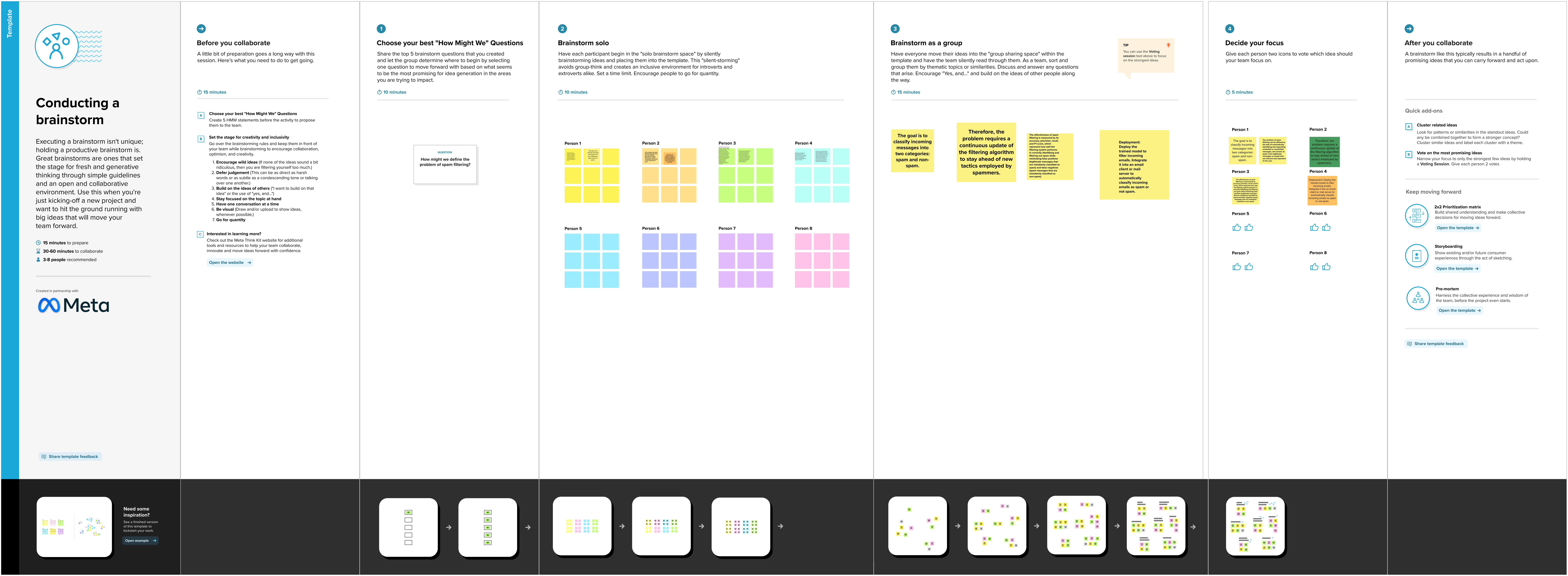
# Define Problem / Problem Understanding

## Empathy map

The empathy map for this project is shown below



# Ideation & Brainstorming map

The ideation and brainstorming map for this project is shown below

# Result

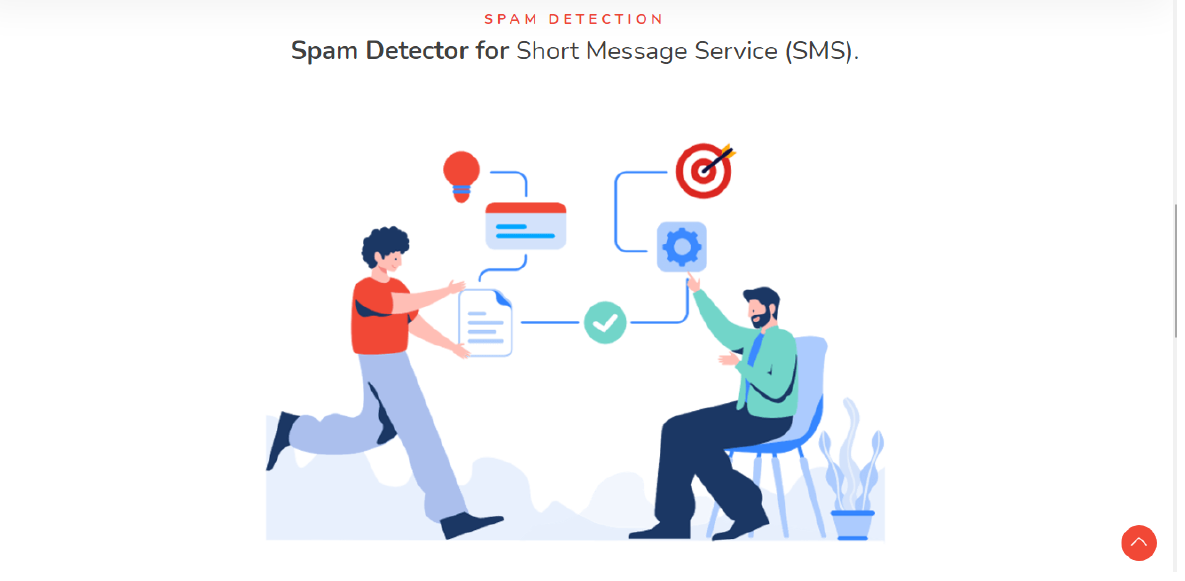
Optimizing spam filtering with machine learning is an effective way to improve the accuracy of spam detection and reduce the amount of unwanted messages in users' inboxes. By training machine learning algorithms on large datasets of labeled emails, it is possible to teach them to recognize patterns and characteristics of spam messages and distinguish them from legitimate ones.

Machine learning-based spam filters can be continuously improved and adapted to changing patterns of spam messages, making them more effective than traditional rule-based filters. However, it is important to note that no spam filter can be 100% accurate, and some legitimate messages may be mistakenly classified as spam. Therefore, it is essential to provide users with the ability to review and adjust the filtering settings and report any false positives or negatives to improve the system's accuracy over time.

-> home.html



-> spam.html



-> output.html



# Advantages & Disadvantages

* 1. **Advantages**

1. Increased accuracy: Machine learning algorithms can be trained to accurately distinguish between spam and legitimate messages, resulting in more accurate filtering and less false positives.

2. Customization: Machine learning models can be customized to the specific needs of an organization or individual user, allowing for more targeted filtering.

3. Scalability: Machine learning models can scale to handle large volumes of messages, making it easier to manage spam in high traffic environments.

4. Adaptability: Machine learning models can adapt to new and emerging types of spam, making them more effective over time.

5. Cost savings: By reducing the amount of spam that reaches inboxes, optimizing spam filtering with machine learning can reduce the costs associated with managing spam, such as storage and bandwidth.

* 1. **Disadvantages**

1. Overreliance on machine learning: Relying solely on machine learning models for spam filtering can lead to errors and false positives. These models can also be easily fooled by spammers who use new tactics to bypass the filters.

2. Data bias: Machine learning models rely heavily on the data used to train them. If the training data is biased or incomplete, the model may not be effective in accurately detecting spam messages.

3. Complexity: Implementing machine learning algorithms for spam filtering can be complex and time-consuming. It may require specialized skills and resources, such as a team of data scientists, to develop and maintain the models.

4. Cost: Implementing machine learning algorithms for spam filtering can be expensive. It may require investment in hardware, software, and personnel to develop, train, and maintain the models.

5. Privacy concerns: Some machine learning models for spam filtering may require access to users' personal data, which can raise privacy concerns. It is important to ensure that user data is properly secured and protected.

# 5.Applications

1. Email spam filtering: Machine learning algorithms can be trained on large datasets of spam and non-spam emails to accurately classify incoming emails as either spam or legitimate.
2. Social media spam filtering: Machine learning algorithms can be used to identify and filter out spammy comments, posts, and messages on social media platforms.
3. Messaging app spam filtering: Machine learning can be used to filter spam messages on messaging apps, such as WhatsApp, Messenger, and others.
4. Online advertising: Machine learning algorithms can be used to identify and filter out spammy ads, clickbait, and other unwanted content in online advertising.
5. Fraud detection: Machine learning algorithms can be used to detect fraudulent messages, phishing scams, and other fraudulent activities.
6. Content moderation: Machine learning can be used to filter out inappropriate or offensive content on various platforms, such as social media, gaming, and other websites.
7. Network security: Machine learning algorithms can be used to detect and prevent spam and phishing attacks on networks and servers.

# Conclusion

In conclusion, optimizing spam filtering with machine learning has the potential to greatly improve the efficiency and accuracy of spam detection and prevention. By training machine learning algorithms on large datasets of spam and non-spam emails, it is possible to develop models that can accurately classify new emails as spam or not. This can save time and resources for individuals and organizations that receive large volumes of emails, and can also help prevent malicious activity such as phishing and malware attacks. However, there are also potential limitations and challenges to using machine learning for spam filtering, including the need for ongoing updates and adjustments to the models as spam tactics evolve, and the risk of false positives or false negatives. Overall, while there are both advantages and disadvantages to using machine learning for spam filtering, it is an area that holds promise for continued innovation and improvement.

# Future Scope

The future scope of optimizing spam filtering with machine learning is quite promising. As the amount of data generated daily continues to increase, machine learning models will become more accurate in detecting spam and phishing emails. Additionally, there is potential for the integration of more sophisticated natural language processing techniques to better identify and categorize spam emails based on their content.

Moreover, the use of machine learning algorithms for spam filtering is not just limited to emails. It can also be applied to other communication platforms, such as instant messaging, social media, and online forums, to prevent the spread of spam and malicious content.

Another area of future development is the integration of explainable AI (XAI) techniques. XAI methods allow for better understanding of the decision-making process behind a machine learning model's prediction, enabling more transparency and accountability.

Overall, optimizing spam filtering with machine learning has the potential to significantly enhance online security and improve user experience.

# 8.Appendix

**A Source Code :-**

#Import Lib

import os  
import nltk  
nltk.download('all')  
  
from flask import Flask, render\_template, request  
import pickle  
import numpy as np  
import re  
import nltk  
from nltk.corpus import stopwords  
from nltk.stem import PorterStemmer  
from tensorflow.keras.models import load\_model  
  
loaded\_model = load\_model('spam.pkl')  
cv = pickle.load(open('cv1.pk1','rb'))  
app = Flask(\_\_name\_\_)  
  
@app.route('/')  
def home():  
 return render\_template('home.html')  
  
@app.route('/spam', methods=['POST', 'GET'])  
def prediction():  
 if request.method == 'POST':  
 message = request.form['message']  
 data = message  
  
 new\_review = str(data)  
 print(new\_review)  
 new\_review = re.sub('[^a-zA-Z]', ' ', new\_review)  
 new\_review = new\_review.lower()  
 new\_review = new\_review.split()  
 ps = PorterStemmer()  
 all\_stopwords = stopwords.words('english')  
 all\_stopwords.remove('hot')  
 new\_review = [ps.stem(word) for word in new\_review if not word in set(all\_stopwords)]  
 new\_review = ' '.join(new\_review)  
 new\_corpus = [new\_review]  
 new\_X\_test = cv.transform(new\_corpus).toarray()  
 print(new\_X\_test)  
  
 prediction = loaded\_model.predict(new\_X\_test)  
  
 if prediction[0][0] == 1:  
 return render\_template('result.html', prediction="spam")  
 else:  
 return render\_template('result.html', prediction="Not a Spam")  
  
if \_\_name\_\_ == "\_\_main\_\_":  
 port = int(os.environ.get('PORT', 5000))  
 app.run(debug=False, port=port)

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 "from sklearn.feature\_extraction.text import TfidfVectorizer\n",  
 "from sklearn.model\_selection import train\_test\_split\n",  
 "from sklearn.svm import LinearSVC\n",  
 "from sklearn.metrics import accuracy\_score\n",  
 "import matplotlib.pyplot as plt\n",  
 "import nltk\n",  
 "from nltk.corpus import stopwords\n",  
 "from nltk.stem.porter import PorterStemmer\n",  
 "\n",  
 "# Load spam.csv dataset\n",  
 "data = pd.read\_csv('spam.csv', encoding='latin-1')\n",  
 "\n",  
 "# Rename columns\n",  
 "data = data.rename(columns={'v1': 'label', 'v2': 'text'})\n",  
 "\n",  
 "# Convert labels to binary values (0 for 'ham', 1 for 'spam')\n",  
 "data['label'] = data['label'].map({'ham': 0, 'spam': 1})\n",  
 "\n",  
 "# Split dataset into training and testing sets\n",  
 "X\_train, X\_test, y\_train, y\_test = train\_test\_split(data['text'], data['label'], random\_state=0)\n",  
 "\n",  
 "# Create TF-IDF vectors from the text data\n",  
 "vectorizer = TfidfVectorizer()\n",  
 "X\_train\_vectors = vectorizer.fit\_transform(X\_train)\n",  
 "X\_test\_vectors = vectorizer.transform(X\_test)\n",  
 "\n",  
 "# Train the Linear SVM model\n",  
 "svm = LinearSVC()\n",  
 "svm.fit(X\_train\_vectors, y\_train)\n",  
 "\n",  
 "# Predict labels for the test data\n",  
 "y\_pred = svm.predict(X\_test\_vectors)\n",  
 "\n",  
 "# Calculate accuracy score\n",  
 "accuracy = accuracy\_score(y\_test, y\_pred)\n",  
 "print('Accuracy:', accuracy)"  
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 " text = text.lower()\n",  
 " text = text.split()\n",  
 " pe = PorterStemmer()\n",  
 " stopword = stopwords.words(\"english\")\n",  
 " text = [pe.stem(word) for word in text if not word in set(stopword)]\n",  
 " text = \" \".join(text)\n",  
 " corpus.append(text)"  
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 " 'call messag miss call',\n",  
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 " 'fair enough anyth go',\n",  
 " 'yeah hope tyler could mayb ask around bit',\n",  
 " 'u know stubborn even want go hospit kept tell mark weak sucker hospit weak sucker',\n",  
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 " 'gram usual run like lt gt half eighth smarter though get almost whole second gram lt gt',\n",  
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 " 'sir wait mail',\n",  
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 " 'ye complet form clark also utter wast',\n",  
 " 'sir need axi bank account bank address',\n",  
 " 'hmmm thk sure got time hop ard ya go 4 free abt muz call u discuss liao',\n",  
 " 'time come later',\n",  
 " 'bloodi hell cant believ forgot surnam mr ill give u clue spanish begin',\n",  
 " 'well gonna finish bath good fine night',\n",  
 " 'let know got money carlo make call',\n",  
 " 'u still go mall',\n",  
 " 'turn friend stay whole show back til lt gt feel free go ahead smoke lt gt worth',\n",  
 " 'text doesnt repli let know log',\n",  
 " 'hi spoke maneesha v like know satisfi experi repli toll free ye',\n",  
 " 'lift hope offer money need especi end month approach hurt studi anyway gr8 weekend',\n",  
 " 'lol u trust',\n",  
 " 'ok gentleman treat digniti respect',\n",  
 " 'guy close',\n",  
 " 'go noth great bye',\n",  
 " 'hello handsom find job lazi work toward get back net mummi boytoy miss',\n",  
 " 'haha awesom minut',\n",  
 " 'pleas call custom servic repres freephon 0808 145 4742 9am 11pm guarante 1000 cash 5000 prize',\n",  
 " 'got xma radio time get',\n",  
 " 'ju reach home go bath first si use net tell u finish k',\n",  
 " 'uniqu enough find 30th august www areyouuniqu co uk',\n",  
 " 'sorri join leagu peopl dont keep touch mean great deal friend time even great person cost great week',\n",  
 " 'hi final complet cours',\n",  
 " 'stop howev suggest stay someon abl give or everi stool',\n",  
 " 'hope settl new school year wishin gr8 day',\n",  
 " 'gud mrng dear hav nice day',\n",  
 " 'u got person stori',\n",  
 " 'hamster dead hey tmr meet 1pm orchard mrt',\n",

" 'hi kate even hope see tomorrow bit bloodi babyjontet txt back u xxx',\n",  
 " 'found enc lt gt',\n",  
 " 'sent lt gt buck',\n",  
 " 'hello darlin ive finish colleg txt u finish u love kate xxx',\n",  
 " 'account refil success inr lt decim gt keralacircl prepaid account balanc rs lt decim gt transact id kr lt gt',\n",  
 " 'goodmorn sleep ga',\n",  
 " 'u call alter 11 ok',\n",  
 " 'say like dat dun buy ericsson oso cannot oredi lar',\n",  
 " 'enter cabin pa said happi b day boss felt special askd 4 lunch lunch invit apart went',\n",  
 " 'aight yo dat straight dogg',\n",  
 " 'pleas give us connect today lt decim gt refund bill',\n",  
 " 'shoot big load get readi',\n",  
 " 'bruv hope great break reward semest',\n",  
 " 'home alway chat',\n",  
 " 'k k good studi well',\n",  
 " 'yup noe leh',\n",  
 " 'sound great home',\n",  
 " 'final match head toward draw predict',\n",  
 " 'tire slept well past night',\n",  
 " 'easi ah sen got select mean good',\n",  
 " 'take exam march 3',\n",  
 " 'yeah think use gt atm regist sure anyway help let know sure readi',\n",  
 " 'ok prob take ur time',\n",  
 " 'os call ubandu run without instal hard disk use os copi import file system give repair shop',\n",  
 " 'sorri call later',\n",  
 " 'u say leh cours noth happen lar say v romant ju bit lor thk e nite sceneri nice leh',\n",  
 " '500 new mobil 2004 must go txt nokia 89545 collect today 1 www 4 tc biz 2optout 087187262701 50gbp mtmsg18',\n",  
 " 'would realli appreci call need someon talk',\n",  
 " 'u meet ur dream partner soon ur career 2 flyng start 2 find free txt horo follow ur star sign e g horo ari',\n",  
 " 'hey compani elama po mudyadhu',\n",  
 " 'life strict teacher bcoz teacher teach lesson amp conduct exam life first conduct exam amp teach lesson happi morn',\n",  
 " 'dear good morn',\n",  
 " 'get gandhipuram walk cross cut road right side lt gt street road turn first right',\n",  
 " 'dear go rubber place',\n",  
 " 'sorri batteri die yeah',\n",  
 " 'ye tv alway avail work place',\n",  
 " 'text meet someon sexi today u find date even flirt u join 4 10p repli name age eg sam 25 18 msg recd thirtyeight penc',\n",  
 " 'print oh lt gt come upstair',\n",  
 " 'ill littl closer like bu stop street',\n",  
 " 'wil reach',\n",  
 " 'new theori argument win situat lose person dont argu ur friend kick amp say alway correct',\n",  
 " 'u 447801259231 secret admir look 2 make contact u find r reveal think ur special call 09058094597',\n",  
 " 'tomarrow final hear laptop case cant',\n",  
 " 'pleassssssseeeee tel v avent done sportsx',\n",  
 " 'okay shine meant sign sound better',\n",  
 " 'although told u dat baig face watch realli like e watch u gave co fr u thanx 4 everyth dat u done today touch',\n",  
 " 'u rememb old commerci',\n",  
 " 'late said websit dont slipper',\n",  
 " 'ask call ok',\n",  
 " 'kalli wont bat 2nd inning',\n",  
 " 'didnt work oh ok goodnight fix readi time wake dearli miss good night sleep',\n",  
 " 'congratul ur award 500 cd voucher 125gift guarante free entri 2 100 wkli draw txt music 87066 tnc www ldew com1win150ppmx3age16',\n",  
 " 'ranjith cal drpd deeraj deepak 5min hold',\n",  
 " 'wen ur lovabl bcum angri wid u dnt take serious coz angri childish n true way show deep affect care n luv kettoda manda nice day da',\n",  
 " '',\n",  
 " 'up 3day also ship compani take 2wk way usp take week get lag may bribe nipost get stuff',\n",  
 " 'back lemm know readi',\n",  
 " 'necessarili expect done get back though headin',\n",  
 " 'mmm yummi babe nice jolt suzi',\n",  
 " 'lover need',\n",  
 " 'tri contact repli offer video handset 750 anytim network min unlimit text camcord repli call 08000930705',\n",  
 " 'park next mini come today think',\n",  
 " 'yup',\n",  
 " 'anyway go shop co si done yet dun disturb u liao',\n",  
 " 'luton 0125698789 ring ur around h',\n",  
 " 'hey realli horni want chat see nake text hot 69698 text charg 150pm unsubscrib text stop 69698',\n",  
 " 'dint come us',\n",  
 " 'wana plan trip sometm',\n",  
 " 'sure yet still tri get hold',\n",  
 " 'ur rington servic chang 25 free credit go club4mobil com choos content stop txt club stop 87070 150p wk club4 po box1146 mk45 2wt',\n",  
 " 'evo download flash jealou',\n",  
 " 'rington club get uk singl chart mobil week choos top qualiti rington messag free charg',\n",  
 " 'come mu sort narcot situat',\n",  
 " 'night end anoth day morn come special way may smile like sunni ray leav worri blue blue bay',\n",  
 " 'hmv bonu special 500 pound genuin hmv voucher answer 4 easi question play send hmv 86688 info www 100percent real com',\n",  
 " 'usf guess might well take 1 car',\n",  
 " 'object bf come',\n",  
 " 'thanx',\n",  
 " 'tell rob mack gf theater',\n",  
 " 'awesom see bit',\n",  
 " 'sent type food like',\n",  
 " 'done hand celebr full swing yet',\n",  
 " 'got call tool',\n",  
 " 'wen u miss someon',\n",  
 " 'ok ask money far',\n",  
 " 'oki',\n",  
 " 'yeah think usual guy still pass last night get ahold anybodi let know throw',\n",  
 " 'k might come tonight class let earli',\n",  
 " 'ok',\n",  
 " 'hi babi im cruisin girl friend r u 2 give call hour home that alright fone fone love jenni xxx',\n",  
 " 'life mean lot love life love peopl life world call friend call world ge',\n",  
 " 'dear shall mail tonit busi street shall updat tonit thing look ok varunnathu edukkukaye raksha ollu good one real sens',\n",  
 " 'hey told name gautham ah',\n",  
 " 'haf u found feel stupid da v cam work',\n",  
 " 'oop 4 got bit',\n",  
 " 'much buzi',\n",  
 " 'accident delet messag resend pleas',\n",  
 " 'mobil custom may claim free camera phone upgrad pay go sim card loyalti call 0845 021 3680 offer end 28thfeb c appli',\n",  
 " 'unless situat go gurl would appropri',\n",  
 " 'hurt teas make cri end life die plz keep one rose grave say stupid miss u nice day bslvyl',\n",  
 " 'cant pick phone right pl send messag',\n",  
 " 'need coffe run tomo believ time week alreadi',\n",  
 " 'awesom rememb last time got somebodi high first time diesel v',\n",  
 " 'shit realli shock scari cant imagin second def night u think somewher could crash night save taxi',\n",  
 " 'oh way food fridg want go meal tonight',\n",  
 " 'womdarful actor',\n",  
 " 'sm ac blind date 4u rodds1 21 aberdeen unit kingdom check http img sm ac w icmb3cktz8r7 4 blind date send hide',\n",  
 " 'yup remb think book',\n",  
 " 'jo ask u wana meet',\n",  
 " 'lol ye friendship hang thread caus u buy stuff',\n",  
 " 'themob check newest select content game tone gossip babe sport keep mobil fit funki text wap 82468',\n",  
 " 'garag key bookshelf',\n",  
 " 'today accept day u accept brother sister lover dear1 best1 clos1 lvblefrnd jstfrnd cutefrnd lifpartnr belovd swtheart bstfrnd rpli mean enemi',\n",  
 " 'think ur smart win 200 week weekli quiz text play 85222 cs winnersclub po box 84 m26 3uz 16 gbp1 50 week',\n",  
 " 'say give call friend got money definit buy end week',\n",  
 " 'hi way u 2day normal way real ur uniqu hope know u 4 rest mylif hope u find wot lost',\n",  
 " 'made day great day',\n",  
 " 'k k advanc happi pongal',\n",  
 " 'hmmm guess go 4 kb n power yoga haha dunno tahan power yoga anot thk got lo oso forgot liao',\n",  
 " 'realli dude friend afraid',\n",  
 " 'decemb mobil 11mth entitl updat latest colour camera mobil free call mobil updat co free 08002986906',\n",  
 " 'coffe cake guess',\n",  
 " 'merri christma babe love ya kiss',\n",  
 " 'hey dont go watch x men lunch haha',\n",  
 " 'cud u tell ppl im gona b bit l8 co 2 buse hav gon past co full im still waitin 4 1 pete x',\n",  
 " 'would great guild could meet bristol road somewher get touch weekend plan take flight good week',\n",  
 " 'problem',\n",  
 " 'call messag miss call',\n",  
 " 'hi da today class',\n",  
 " 'say good sign well know track record read women',\n",  
 " 'cool text park',\n",  
 " 'read text sent meant joke read light',\n",  
 " 'k k apo k good movi',\n",  
 " 'mayb could get book tomo return immedi someth',\n",  
 " 'call germani 1 penc per minut call fix line via access number 0844 861 85 85 prepay direct access',\n",  
 " 'chanc might evapor soon violat privaci steal phone number employ paperwork cool pleas contact report supervisor',\n",  
 " 'valentin day special win 1000 quiz take partner trip lifetim send go 83600 150p msg rcvd custcar

08718720201',\n",  
 " 'ta daaaaa home babe still',\n",  
 " 'cool come havent wine dine',\n",  
 " 'sleep surf',\n",  
 " 'sorri call later',\n",  
 " 'u call right call hand phone',\n",  
 " 'ok great thanx lot',\n",  
 " 'take post come must 1000 text happi read one wiv hello carolin end favourit bless',\n",  
 " 'u hide stranger',\n",  
 " 'interest like',\n",  
 " 'sister clear two round birla soft yesterday',\n",  
 " 'gudnit tc practic go',\n",  
 " 'di yiju ju saw ur mail case huim havent sent u num di num',\n",  
 " 'one small prestig problem',\n",  
 " 'fanci shag interest sextextuk com txt xxuk suzi 69876 txt cost 1 50 per msg tnc websit x',\n",  
 " 'check realli miss see jeremiah great month',\n",  
 " 'nah help never iphon',\n",  
 " 'car hour half go apeshit',\n",  
 " 'today sorri day ever angri ever misbehav hurt plz plz slap urself bcoz ur fault basic good',\n",  
 " 'yo guy ever figur much need alcohol jay tri figur much safe spend weed',\n",  
 " 'lt gt ish minut 5 minut ago wtf',\n",  
 " 'thank call forgot say happi onam sirji fine rememb met insur person meet qatar insha allah rakhesh ex tata aig join tissco tayseer',\n",  
 " 'congratul ur award 500 cd voucher 125gift guarante free entri 2 100 wkli draw txt music 87066 tnc www ldew com1win150ppmx3age16',\n",  
 " 'ur cash balanc current 500 pound maxim ur cash send cash 86688 150p msg cc 08708800282 hg suite342 2land row w1j6hl',\n",  
 " 'actor work work even sleep late sinc unemploy moment alway sleep late unemploy everi day saturday',\n",  
 " 'hello got st andrew boy long way cold keep post',\n",  
 " 'ha ha cool cool chikku chikku db',\n",  
 " 'oh ok prob',\n",  
 " 'check audrey statu right',\n",  
 " 'busi tri finish new year look forward final meet',\n",  
 " 'good afternoon sunshin dawn day refresh happi aliv breath air smile think love alway',\n",  
 " 'well know z take care worri',\n",  
 " 'updat xma offer latest motorola sonyericsson nokia free bluetooth doubl min 1000 txt orang call mobileupd8 08000839402 call2optout f4q',\n",  
 " 'discount code rp176781 stop messag repli stop www regalportfolio co uk custom servic 08717205546',\n",  
 " 'wat uniform get',\n",  
 " 'cool text readi',\n",  
 " 'hello boytoy geeee miss alreadi woke wish bed cuddl love',\n",  
 " 'spoil bed well',\n",  
 " 'go bath msg next lt gt min',\n",  
 " 'cant keep talk peopl sure pay agre price pl tell want realli buy much will pay',\n",  
 " 'thank rington order refer t91 charg gbp 4 per week unsubscrib anytim call custom servic 09057039994',\n",  
 " 'say happen',\n",  
 " 'could seen recognis face',\n",  
 " 'well lot thing happen lindsay new year sigh bar ptbo blue heron someth go',\n",  
 " 'keep payasam rinu bring',\n",  
 " 'taught ranjith sir call sm like becau he verifi project prabu told today pa dont mistak',\n",  
 " 'guess worri must know way bodi repair quit sure worri take slow first test guid ovul relax noth said reason worri keep followin',\n",  
 " 'yeah sure give coupl minut track wallet',\n",  
 " 'hey leav big deal take care',\n",  
 " 'hey late ah meet 945',\n",  
 " 'doubl min txt 4 6month free bluetooth orang avail soni nokia motorola phone call mobileupd8 08000839402 call2optout n9dx',\n",  
 " 'took mr owl 3 lick',\n",  
 " 'custom place call',\n",  
 " 'mm time dont like fun',\n",  
 " '4mth half price orang line rental latest camera phone 4 free phone 11mth call mobilesdirect free 08000938767 updat or2stoptxt',\n",  
 " 'yup lunch buffet u eat alreadi',\n",  
 " 'huh late fr dinner',\n",  
 " 'hey sat go intro pilat kickbox',\n",  
 " 'morn ok',\n",  
 " 'ye think offic lap room think that last day didnt shut',\n",  
 " 'pick bout 7 30ish time go',\n",  
 " 'perform award calcul everi two month current one month period',\n",  
 " 'actual sleep still might u call back text gr8 rock si send u text wen wake',\n",  
 " 'alway put busi put pictur ass facebook one open peopl ever met would think pictur room would hurt make feel violat',\n",  
 " 'good even sir al salam wahleykkum share happi news grace god got offer tayseer tissco join hope fine inshah allah meet sometim rakhesh visitor india',\n",  
 " 'hmmm k want chang field quickli da wanna get system administr network administr',\n",  
 " 'free rington text first 87131 poli text get 87131 true tone help 0845 2814032 16 1st free tone 3x 150pw e nd txt stop',\n",  
 " 'dear chechi talk',\n",  
 " 'hair cream ship',\n",  
 " 'none happen til get though',\n",  
 " 'yep great loxahatche xma tree burn lt gt start hour',\n",  
 " 'haha get use drive usf man know lot stoner',\n",  
 " 'well slightli disastr class pm fav darl hope day ok coffe wld good stay late tomorrow time place alway',\n",  
 " 'hello good week fanci drink someth later',\n",  
 " 'headin toward busetop',\n",  
 " 'messag text miss sender name miss number miss sent date miss miss u lot that everyth miss sent via fullonsm com',\n",  
 " 'come room point iron plan weekend',\n",  
 " 'co want thing',\n",  
 " 'oki go yan jiu skip ard oso go cine den go mrt one blah blah blah',\n",  
 " 'bring home wendi',\n",  
 " '100 date servic cal l 09064012103 box334sk38ch',\n",  
 " 'whatsup dont u want sleep',\n",  
 " 'alright new goal',\n",  
 " 'free entri 250 weekli competit text word win 80086 18 c www txttowin co uk',\n",  
 " 'alright head minut text meet',\n",  
 " 'send logo 2 ur lover 2 name join heart txt love name1 name2 mobno eg love adam eve 07123456789 87077 yahoo pobox36504w45wq txtno 4 ad 150p',\n",  
 " 'ye last week take live call',\n",  
 " 'someon contact date servic enter phone fanci find call landlin 09111032124 pobox12n146tf150p',\n",  
 " 'siva hostel aha',\n",  
 " 'urgent mobil number award 2000 prize guarante call 09058094455 land line claim 3030 valid 12hr',\n",  
 " 'send ur friend receiv someth ur voic speak express 1 childish 2 naughti 3 sentiment 4 rowdi 5 ful attitud 6 romant 7 shi 8 attract 9 funni lt gt irrit lt gt lovabl repli',\n",  
 " 'ok ok guess',\n",  
 " 'aathi dear',\n",  
 " 'pain urin thing els',\n",  
 " '7 esplanad mind give lift co got car today',\n",  
 " 'wnt buy bmw car urgent vri urgent hv shortag lt gt lac sourc arng di amt lt gt lac that prob',\n",  
 " 'home watch tv lor',\n",  
 " 'usual take fifteen fuck minut respond ye question',\n",  
 " 'congrat nokia 3650 video camera phone call 09066382422 call cost 150ppm ave call 3min vari mobil 16 close 300603 post bcm4284 ldn wc1n3xx',\n",  
 " 'book ticket pongal',\n",  
 " 'avail like right around hillsborough amp lt gt th',\n",  
 " 'messag sent askin lt gt dollar shoul pay lt gt lt gt',\n",  
 " 'ask g iouri told stori like ten time alreadi',\n",  
 " 'long applebe fuck take',\n",  
 " 'hi hope u get txt journey hasnt gd 50 min late think',\n",  
 " 'like love arrang',\n",  
 " 'ye realli great bhaji told kalli best cricket sachin world tough get',\n",  
 " 'suppos wake gt',\n",  
 " 'oic saw tot din c found group liao',\n",  
 " 'sorri call later',\n",  
 " 'hey hey wereth monkeespeopl say monkeyaround howdi gorgeou',\n",  
 " 'sorri batteri die come get gram place',\n",  
 " 'well done blimey exercis yeah kinda rememb wot hmm',\n",  
 " 'wont get concentr dear know mind everyth',\n",  
 " 'lol made plan new year',\n",  
 " '10 min later k',\n",  
 " 'hank lotsli',\n",  
 " 'thank hope good day today',\n",  
 " 'k k detail want transfer acc enough',\n",  
 " 'ok tell stay yeah tough optimist thing improv month',\n",  
 " 'loan purpos 500 75 000 homeown tenant welcom previous refus still help call free 0800 1956669 text back help',\n",  
 " 'si si think ill go make oreo truffl',\n",  
 " 'look ami ure beauti intellig woman like u lot know u like like worri',\n",  
 " 'hope result consist intellig kind start ask practicum link keep ear open best ttyl',\n",  
 " '1 20 call cost guess isnt bad miss ya need ya want ya love ya',\n",  
 " 'go thru differ feel waver decis cope individu time heal everyth believ',\n",  
 " 'u go phone gonna die stay',\n",  
 " 'great never better day give even reason thank god',\n",  
 " 'upgrdcentr orang custom may claim free camera phone upgrad loyalti call 0207 153 9153 offer end 26th juli c appli opt avail',\n",  
 " 'sorri call later ok bye',\n",  
 " 'ok way railway',\n",  
 " 'great princess love give receiv oral doggi style fave posit enjoy make love lt gt time per night',\n",  
 " 'put stuff road keep get slipperi',\n",  
 " 'go ride bike',\n",

" 'yup need ju wait 4 e rain 2 stop',\n",  
 " 'mani compani tell languag',\n",  
 " 'okmail dear dave final notic collect 4 tenerif holiday 5000 cash award call 09061743806 landlin tc sae box326 cw25wx 150ppm',\n",  
 " 'long sinc scream princess',\n",  
 " 'noth meant money enter account bank remov flat rate someon transfer lt gt account lt gt dollar got remov bank differ charg also differ sure trust 9ja person send account detail co',\n",  
 " 'want 2 get laid tonight want real dog locat sent direct 2 ur mob join uk largest dog network txting moan 69888nyt ec2a 31p msg 150p',\n",  
 " 'nice line said broken heart plz cum 1 time infront wise trust u good 9t',\n",  
 " 'ok gonna head usf like fifteen minut',\n",  
 " 'love aathi love u lot',\n",  
 " 'tension ah machi problem',\n",  
 " 'k pick anoth 8th done',\n",  
 " 'guy get back g said think stay mcr',\n",  
 " 'almost see u sec',\n",  
 " 'yo carlo friend alreadi ask work weekend',\n",  
 " 'watch tv lor',\n",  
 " 'thank babi cant wait tast real thing',\n",  
 " 'chang fb jaykwon thuglyf falconerf',\n",  
 " 'win realli 1 side long time',\n",  
 " 'free messag activ 500 free text messag repli messag word free term condit visit www 07781482378 com',\n",  
 " 'dear reach railway happen',\n",  
 " 'depend qualiti want type sent boy fade glori 6 want ralph mayb 2',\n",  
 " 'think fix send test messag',\n",  
 " 'sorri man account dri would want could trade back half could buy shit credit card',\n",  
 " 'congrat 1 year special cinema pass 2 call 09061209465 c suprman v matrix3 starwars3 etc 4 free bx420 ip4 5we 150pm dont miss',\n",  
 " 'sorri meet call later',\n",  
 " 'class lt gt reunion',\n",  
 " 'free call',\n",  
 " 'got meh',\n",  
 " 'nope think go monday sorri repli late',\n",  
 " 'told accentur confirm true',\n",  
 " 'kate jackson rec center 7ish right',\n",  
 " 'dear reach room',\n",  
 " 'fight world easi u either win lose bt fightng some1 close u dificult u lose u lose u win u still lose',\n",  
 " 'come',\n",  
 " 'check nuerologist',\n",  
 " 'lolnic went fish water',\n",  
 " '123 congratul week competit draw u 1450 prize claim call 09050002311 b4280703 cs stop sm 08718727868 18 150ppm',\n",  
 " 'wait e car dat bore wat co wait outsid got noth 2 home stuff watch tv wat',\n",  
 " 'mayb westshor hyde park villag place near hous',\n",  
 " 'know anthoni bring money school fee pay rent stuff like that need help friend need',\n",  
 " 'signific',\n",  
 " 'opinion 1 2 jada 3 kusruthi 4 lovabl 5 silent 6 spl charact 7 matur 8 stylish 9 simpl pl repli',\n",  
 " '8 latest g still scroung ammo want give new ak tri',\n",  
 " 'prabha soryda reali frm heart sori',\n",  
 " 'lol ok forgiven',\n",  
 " 'jst chang tat',\n",  
 " 'guarante latest nokia phone 40gb ipod mp3 player 500 prize txt word collect 83355 ibhltd ldnw15h 150p mtmsgrcvd18',\n",  
 " 'competit',\n",  
 " 'boltblu tone 150p repli poli mono eg poly3 1 cha cha slide 2 yeah 3 slow jamz 6 toxic 8 come stop 4 tone txt',\n",  
 " 'credit top http www bubbletext com renew pin tgxxrz',\n",  
 " 'way transport less problemat sat night way u want ask n join bday feel free need know definit no book fri',\n",  
 " 'usual person unconsci children adult may behav abnorm call',\n",  
 " 'ebay might less elsewher',\n",  
 " 'shall come get pickl',\n",  
 " 'gonna go get taco',\n",  
 " 'rude campu',\n",  
 " 'urgent mobil award 2 000 bonu caller prize 02 09 03 2nd attempt contact call 0871 872 9755 box95qu',\n",  
 " 'hi b ard 4 christma enjoy n merri x ma',\n",  
 " 'today offer claim ur 150 worth discount voucher text ye 85023 savamob member offer mobil cs 08717898035 3 00 sub 16 unsub repli x',\n",  
 " 'ye pretti ladi like singl',\n",  
 " 'reciev tone within next 24hr term condit pleas see channel u teletext pg 750',\n",  
 " 'jay say doubl faggot',\n",  
 " 'privat 2003 account statement 07815296484 show 800 un redeem point call 08718738001 identifi code 41782 expir 18 11 04',\n",  
 " 'today sunday sunday holiday work',\n",  
 " 'gudnit tc practic go',\n",  
 " 'late',\n",  
 " 'call hope l8r malaria know miss guy miss bani big pl give love especi great day',\n",  
 " 'good afternoon love goe day hope mayb got lead job think boytoy send passion kiss across sea',\n",  
 " 'probabl gonna see later tonight lt',\n",  
 " 'mayb fat finger press button know',\n",  
 " 'ummmmmaah mani mani happi return day dear sweet heart happi birthday dear',\n",  
 " 'tirupur da start offic call',\n",  
 " 'www applausestor com monthlysubscript 50p msg max6 month csc web age16 2stop txt stop',\n",  
 " 'famou quot develop abil listen anyth uncondit without lose temper self confid mean marri',\n",  
 " 'go colleg pa els ill come self pa',\n",  
 " '4 oclock mine bash flat plan',\n",  
 " 'girl stay bed girl need recoveri time id rather pass fun coop bed',\n",  
 " 'special',\n",  
 " 'know need get hotel got invit apologis cali sweet come english bloke weddin',\n",  
 " 'sorri took long omw',\n",  
 " 'wait lt gt min',\n",  
 " 'ok give 5 minut think see btw alibi cut hair whole time',\n",  
 " 'imagin final get sink bath put pace mayb even eat left also imagin feel cage cock surround bath water remind alway own enjoy cuck',\n",  
 " 'hurri weed defici like three day',\n",  
 " 'sure get acknowledg astoundingli tactless gener faggi demand blood oath fo',\n",  
 " 'ok everi night take warm bath drink cup milk see work magic still need loos weight know',\n",  
 " 'look fri pan case cheap book perhap silli fri pan like book',\n",  
 " 'well uv caus mutat sunscreen like essenti theseday',\n",  
 " 'lunch onlin',\n",  
 " 'know friend alreadi told',\n",  
 " 'hi princess thank pic pretti',\n",  
 " 'aiyo u alway c ex one dunno abt mei repli first time u repli fast lucki workin huh got bao ur sugardad ah gee',\n",  
 " 'hi msg offic',\n",  
 " 'thanx 4 e browni v nice',\n",  
 " 'geeeee love much bare stand',\n",  
 " 'gent tri contact last weekend draw show 1000 prize guarante call 09064012160 claim code k52 valid 12hr 150ppm',\n",  
 " 'fuck babe miss alreadi know let send money toward net need want crave',\n",  
 " 'ill call u 2mrw ninish address icki american freek wont stop callin 2 bad jen k eh',\n",  
 " 'oooh bed ridden ey think',\n",  
 " 'anyway go gym whatev love smile hope ok good day babe miss much alreadi',\n",  
 " 'love daddi make scream pleasur go slap ass dick',\n",  
 " 'wot u wanna missi',\n",  
 " 'yar lor wait 4 mum 2 finish sch lunch lor whole morn stay home clean room room quit clean hee',\n",  
 " 'know lab goggl went',\n",  
 " 'open door',\n",  
 " 'wait call',\n",  
 " 'nope wait sch 4 daddi',\n",  
 " '1 000 cash 2 000 prize claim call09050000327',\n",  
 " 'tire argu week week want',\n",  
 " 'wait 4 sch finish ard 5',\n",  
 " 'mobil number 5000 claim call us back ring claim hot line 09050005321',\n",  
 " 'arngd marriag u r walkin unfortuntli snake bite u bt love marriag danc frnt snake amp sayin bite bite',\n",  
 " 'huh earli dinner outsid izzit',\n",  
 " 'ok anyway need chang said',\n",  
 " 'tri contact repli offer 750 min 150 textand new video phone call 08002988890 repli free deliveri tomorrow',\n",  
 " 'ex wife abl kid want kid one day',\n",  
 " 'scotland hope show jjc tendenc take care live dream',\n",  
 " 'tell u headach want use 1 hour sick time',\n",  
 " 'dun thk quit yet hmmm go jazz yogasana oso go meet em lesson den',\n",  
 " 'pete pleas ring meiv hardli gotani credit',\n",  
 " 'ya srsli better yi tho',\n",  
 " 'meet call later',\n",  
 " 'ur chanc win 250 wkli shop spree txt shop 80878 c www txt 2 shop com custcar 08715705022 1x150p wk',\n",  
 " 'special select receiv 2000 pound award call 08712402050 line close cost 10ppm 16 cs appli ag promo',\n",  
 " 'privat 2003 account statement 07753741225 show 800 un redeem point call 08715203677 identifi code 42478 expir 24 10 04',\n",  
 " 'still grand prix',\n",  
 " 'met stranger choos friend long world stand friendship never end let friend forev gud nitz',\n",  
 " 'great',\n",  
 " 'gud mrng dear nice day',\n",  
 " 'import custom servic announc call freephon 0800 542 0825',\n",  
 " 'exhaust train morn much wine pie sleep well',\n",  
 " 'go buy mum present ar',\n",  
 " 'mind blastin tsunami occur rajnik stop swim indian ocean',\n",  
 " 'u send home first ok lor readi yet',\n",  
 " 'speak cash yet',\n",  
 " 'happi come noon',\n",  
 "

'meet lunch la',\n",  
 " 'take care n get well soon',\n",  
 " 'xclusiv clubsaisai 2morow 28 5 soire special zouk nichol pari free rose 2 ladi info 07946746291 07880867867',\n",  
 " 'meant say cant wait see u get bore bridgwat banter',\n",  
 " 'neva mind ok',\n",  
 " 'fine imma get drink somethin want come find',\n",  
 " '22 day kick euro2004 u kept date latest news result daili remov send get txt stop 83222',\n",  
 " 'valentin game send di msg ur friend 5 answer r someon realli love u que colour suit best rpli',\n",  
 " 'mani depend',\n",  
 " 'thanx4 today cer nice 2 catch ave 2 find time often oh well take care c u soon c',\n",  
 " 'call said choos futur',\n",  
 " 'happi valentin day know earli hundr handsom beauti wish thought finish aunti uncl 1st',\n",  
 " 'like v shock leh co tell shuhui like tell leona also like dat almost know liao got ask abt ur reaction lor',\n",  
 " 'famili happi',\n",  
 " 'come n pick come immedi aft ur lesson',\n",  
 " 'let snow let snow kind weather bring ppl togeth friendship grow',\n",  
 " 'dear got lt gt dollar hi hi',\n",  
 " 'good word word may leav u dismay mani time',\n",  
 " 'make sure alex know birthday fifteen minut far concern',\n",  
 " 'sorri got thing may pub later',\n",  
 " 'nah straight bring bud drink someth actual littl use straight cash',\n",  
 " 'haha good hear offici paid market 8th',\n",  
 " 'mani lick take get center tootsi pop',\n",  
 " 'yup thk r e teacher said make face look longer darren ask 2 cut short',\n",  
 " 'new textbuddi chat 2 horni guy ur area 4 25p free 2 receiv search postcod gaytextbuddi com txt one name 89693',\n",  
 " 'today vodafon number end 4882 select receiv 350 award number match call 09064019014 receiv 350 award',\n",  
 " 'pleas dont say like hi hi hi',\n",  
 " 'thank u',\n",  
 " 'oh forward messag thought send',\n",  
 " 'got seventeen pound seven hundr ml hope ok',\n",  
 " 'dear voucher holder 2 claim week offer pc go http www e tlp co uk expressoff ts cs appli 2 stop text txt stop 80062',\n",  
 " 'n funni',\n",  
 " 'sweetheart hope kind day one load reason smile biola',\n",  
 " 'login dat time dad fetch home',\n",  
 " 'shower babi',\n",  
 " 'askd u question hour answer',\n",  
 " 'well imma definit need restock thanksgiv let know',\n",  
 " 'said kiss kiss sound effect gorgeou man kind person need smile brighten day',\n",  
 " 'probabl gonna swing wee bit',\n",  
 " 'ya nice readi thursday',\n",  
 " 'allo brave buse taken train triumph mean b ham jolli good rest week',\n",  
 " 'watch cartoon listen music amp eve go templ amp church u',\n",  
 " 'mind ask happen dont say uncomfort',\n",  
 " 'privat 2003 account statement show 800 un redeem point call 08715203694 identifi code 40533 expir 31 10 04',\n",  
 " 'prob send email',\n",  
 " '1 000 cash 2 000 prize claim call09050000327 c rstm sw7 3ss 150ppm',\n",  
 " 'that cool sometim slow gentl sonetim rough hard',\n",  
 " 'gonna say sorri would normal start panic time sorri see tuesday',\n",  
 " 'wait know wesley town bet hella drug',\n",  
 " 'fine miss much',\n",  
 " 'u got person stori',\n",  
 " 'tell drug dealer get impati',\n",  
 " 'sun cant come earth send luv ray cloud cant come river send luv rain cant come meet u send care msg u gud evng',\n",  
 " 'place man',\n",  
 " 'doesnt make sens take unless free need know wikipedia com',\n",  
 " '88800 89034 premium phone servic call 08718711108',\n",  
 " 'sea lay rock rock envelop envelop paper paper 3 word',\n",  
 " 'mum repent',\n",  
 " 'sorri go home first daddi come fetch later',\n",  
 " 'leav de start prepar next',\n",  
 " 'ye babi studi posit kama sutra',\n",  
 " 'en chikku nang bakra msg kalstiya tea coffe',\n",  
 " 'carlo minut still need buy',\n",  
 " 'pay lt decim gt lakh',\n",  
 " 'good even ttyl',\n",  
 " 'u receiv msg',\n",  
 " 'ho ho big belli laugh see ya tomo',\n",  
 " 'sm ac sun0819 post hello seem cool',\n",  
 " 'get ur 1st rington free repli msg tone gr8 top 20 tone phone everi week 1 50 per wk 2 opt send stop 08452810071 16',\n",  
 " 'ditto worri say anyth anymor like said last night whatev want peac',\n",  
 " 'got lt gt way could pick',\n",  
 " 'dont knw pa drink milk',\n",  
 " 'mayb say hi find got card great escap wetherspoon',\n",  
 " 'piggi r u awak bet u still sleep go 4 lunch',\n",  
 " 'caus freaki lol',\n",  
 " 'miss call caus yell scrappi miss u wait u come home lone today',\n",  
 " 'hex place talk explain',\n",  
 " 'log 4 wat sdryb8i',\n",  
 " 'xy go 4 e lunch',\n",  
 " 'hi sue 20 year old work lapdanc love sex text live bedroom text sue 89555 textoper g2 1da 150ppmsg 18',\n",  
 " 'want ask wait 4 finish lect co lect finish hour anyway',\n",  
 " 'finish work yet',\n",  
 " 'everi king cri babi everi great build map imprtant u r today u wil reach tomorw gud ni8',\n",  
 " 'dear cherthala case u r come cochin pl call bfore u start shall also reach accordingli tell day u r come tmorow engag an holiday',\n",  
 " 'thank love torch bold',\n",  
 " 'forward 448712404000 pleas call 08712404000 immedi urgent messag wait',\n",  
 " 'farm open',\n",  
 " 'sorri troubl u buy 4d dad 1405 1680 1843 2 big 1 small sat n sun thanx',\n",  
 " 'sister law hope great month say hey abiola',\n",  
 " 'purchas stuff today mail po box number',\n",  
 " 'ah poop look like ill prob send laptop get fix cuz gpu problem',\n",  
 " 'good good job like entrepreneur',\n",  
 " 'aight close still around alex place',\n",  
 " 'meet corpor st outsid gap see mind work',\n",  
 " 'mum ask buy food home',\n",  
 " 'k u also dont msg repli msg',\n",  
 " 'much r will pay',\n",  
 " 'sorri call later',\n",  
 " 'import prevent dehydr give enough fluid',\n",  
 " 'that bit weird even suppos happen good idea sure pub',\n",  
 " 'true dear sat pray even felt sm time',\n",  
 " 'think get away trek long famili town sorri',\n",  
 " 'wanna gym harri',\n",  
 " 'quit late lar ard 12 anyway wun b drivin',\n",  
 " 'review keep fantast nokia n gage game deck club nokia go 2 www cnupdat com newslett unsubscrib alert repli word',\n",  
 " '4mth half price orang line rental latest camera phone 4 free phone 11mth call mobilesdirect free 08000938767 updat or2stoptxt cs',\n",  
 " 'height confid aeronaut professor wer calld amp wer askd 2 sit aeroplan aftr sat wer told dat plane ws made student dey hurri plane bt 1 didnt move said made student',\n",  
 " 'seem like weird time night g want come smoke day shitstorm attribut alway come make everyon smoke',\n",  
 " '08714712388 10am 7pm cost 10p',\n",  
 " 'save stress person dorm account send account detail money sent',\n",  
 " 'also know lunch menu da know',\n",  
 " 'stuff sell tell',\n",  
 " '449071512431 urgent 2nd attempt contact u u 1250 call 09071512433 b4 050703 csbcm4235wc1n3xx callcost 150ppm mobilesvari max 7 50',\n",  
 " 'book lesson msg call work sth go get spec membership px3748',\n",  
 " 'guarante 1000 cash 2000 prize claim yr prize call custom servic repres 08714712394 10am 7pm',\n",  
 " 'macha dont feel upset assum mindset believ one even wonder plan us let life begin call anytim',\n",  
 " 'oh send address',\n",  
 " 'fine anytim best',\n",  
 " 'wondar full flim',\n",  
 " 'ya even cooki jelli',\n",  
 " 'world run still mayb feel admit mad correct let call life keep run world may u r also run let run',\n",  
 " 'got look scrumptiou daddi want eat night long',\n",  
 " 'co lar ba dao ok 1 pm lor u never ask go ah said u would ask fri said u ask today',\n",  
 " 'alright omw gotta chang order half8th',\n",  
 " 'exactli anyway far jide studi visit',\n",  
 " 'dunno u ask',\n",  
 " 'email alertfrom jeri stewarts 2kbsubject low cost prescripiton drvgsto listen email call 123',\n",  
 " 'spring come earli yay',\n",  
 " 'lol feel bad use money take steak dinner',\n",  
 " 'even u dont get troubl convinc tel twice tel neglect msg dont c read dont repli',\n",  
 " 'leav qatar tonit search opportun went fast pl add ur prayer dear rakhesh',\n",  
 " 'one talk',\n",  
 " 'thank look realli appreci',\n",  
 " 'hi custom loyalti offer new nokia6650 mobil 10 txtauction txt word start 81151 get 4t ctxt tc 150p mtmsg',\n",  
 " 'wish',\n",  
 " 'haha mayb u rite u know well da feel like someon gd lor u faster go find one gal group attach liao',\n",  
 " 'ye glad made',\n",  
 " 'well littl time thing good time ahead',\n",  
 " 'got room soon

put clock back til 8 shout everyon get realis 7 wahay anoth hour bed',\n",  
 " 'ok may free gym',\n",  
 " 'men like shorter ladi gaze eye',\n",  
 " 'dunno ju say go lido time 930',\n",  
 " 'promis take good care princess run pleas send pic get chanc ttyl',\n",  
 " 'u subscrib best mobil content servic uk 3 per 10 day send stop 82324 helplin 08706091795',\n",  
 " 'reason spoken year anyway great week best exam',\n",  
 " 'monday next week give full gist',\n",  
 " 'realiz 40 year thousand old ladi run around tattoo',\n",  
 " 'import custom servic announc premier',\n",  
 " 'dont gimm lip caveboy',\n",  
 " 'get librari',\n",  
 " 'reali sorri recognis number confus r u pleas',\n",  
 " 'didnt holla',\n",  
 " 'cant think anyon spare room top head',\n",  
 " 'faith make thing possibl hope make thing work love make thing beauti may three christma merri christma',\n",  
 " 'u made appoint',\n",  
 " 'call carlo phone vibrat act might hear text',\n",  
 " 'romant pari 2 night 2 flight 79 book 4 next year call 08704439680t cs appli',\n",  
 " 'grandma oh dear u still ill felt shit morn think hungov anoth night leav sat',\n",  
 " 'urgent ur 500 guarante award still unclaim call 09066368327 closingdate04 09 02 claimcod m39m51 1 50pmmorefrommobile2bremov mobypobox734ls27yf',\n",  
 " 'noth ju tot u would ask co u ba gua went mt faber yest yest ju went alreadi mah today go ju call lor',\n",  
 " 'wish famili merri x ma happi new year advanc',\n",  
 " 'ur award citi break could win 200 summer shop spree everi wk txt store 88039 skilgm tscs087147403231winawk age16 1 50perwksub',\n",  
 " 'nt goin got somethin unless meetin 4 dinner lor haha wonder go ti time',\n",  
 " 'sorri call later',\n",  
 " 'cant pick phone right pl send messag',\n",  
 " 'lol know dramat school alreadi close tomorrow appar drive inch snow suppos get',\n",  
 " 'get anywher damn job hunt',\n",  
 " 'lol u drunkard hair moment yeah still 4 tonight wat plan',\n",  
 " 'idc get weasel way shit twice row',\n",  
 " 'wil lt gt minut got space',\n",  
 " 'sleep surf',\n",  
 " 'thank pick trash',\n",  
 " 'go tell friend sure want live smoke much spend hour beg come smoke',\n",  
 " 'hi kate love see tonight ill phone tomorrow got sing guy gave card xxx',\n",  
 " 'happi new year dear brother realli miss got number decid send text wish happi abiola',\n",  
 " 'mean get door',\n",  
 " 'opinion 1 2 jada 3 kusruthi 4 lovabl 5 silent 6 spl charact 7 matur 8 stylish 9 simpl pl repli',\n",  
 " 'hmmm thought said 2 hour slave 3 late punish',\n",  
 " 'beerag',\n",  
 " 'import custom servic announc premier call freephon 0800 542 0578',\n",  
 " 'dont think turn like randomlli within 5min open',\n",  
 " 'suppos make still town though',\n",  
 " 'time fix spell sometim get complet diff word go figur',\n",  
 " 'ever thought live good life perfect partner txt back name age join mobil commun 100p sm',\n",  
 " '5 free top polyphon tone call 087018728737 nation rate get toppoli tune sent everi week text subpoli 81618 3 per pole unsub 08718727870',\n",  
 " 'gud mrng dear hav nice day',\n",  
 " 'hope enjoy game yesterday sorri touch pl know fondli bein thot great week abiola',\n",  
 " 'e best 4 ur drive tmr',\n",  
 " 'u dogbreath sound like jan c al',\n",  
 " 'omg want scream weigh lost weight woohoo',\n",  
 " 'gener one uncount noun u dictionari piec research',\n",  
 " 'realli get hang around',\n",  
 " 'orang custom may claim free camera phone upgrad loyalti call 0207 153 9996 offer end 14thmarch c appli opt availa',\n",  
 " 'petey boy wherear friendsar thekingshead come canlov nic',\n",  
 " 'ok msg u b4 leav hous',\n",  
 " 'gimm lt gt minut ago',\n",  
 " 'last chanc claim ur 150 worth discount voucher today text shop 85023 savamob offer mobil cs savamob pobox84 m263uz 3 00 sub 16',\n",  
 " 'appt lt time gt fault u listen told u twice',\n",  
 " 'free 1st week no1 nokia tone 4 ur mobil everi week txt nokia 8077 get txting tell ur mate www getz co uk pobox 36504 w45wq 16 norm150p tone',\n",  
 " 'guarante 200 award even 1000 cashto claim ur award call free 08000407165 18 2 stop getstop 88222 php rg21 4jx',\n",  
 " 'k 4',\n",  
 " 'dled 3d imp',\n",  
 " 'sure make sure know smokin yet',\n",  
 " 'boooo alway work quit',\n",  
 " 'take half day leav bec well',\n",  
 " 'ugh wanna get bed warm',\n",  
 " 'nervou lt gt',\n",  
 " 'ring come guy costum gift futur yowif hint hint',\n",  
 " 'congratul ur award either 500 cd gift voucher free entri 2 100 weekli draw txt music 87066 tnc www ldew com1win150ppmx3age16',\n",  
 " 'borrow ur bag ok',\n",  
 " 'u outbid simonwatson5120 shinco dvd plyr 2 bid visit sm ac smsreward 2 end bid notif repli end',\n",  
 " 'boytoy miss happen',\n",  
 " 'lot use one babe model help youi bring match',\n",  
 " 'also bring galileo dobbi',\n",  
 " 'respond',\n",  
 " 'boo babe u enjoyin yourjob u seem 2 b gettin well hunni hope ure ok take care llspeak 2u soonlot lovem xxxx',\n",  
 " 'good afternoon starshin boytoy crave yet ach fuck sip cappuccino miss babe teas kiss',\n",  
 " 'road cant txt',\n",  
 " 'smsservic yourinclus text credit pl goto www comuk net login 3qxj9 unsubscrib stop extra charg help 08702840625 comuk 220 cm2 9ae',\n",  
 " '25p 4 alfi moon children need song ur mob tell ur m8 txt tone chariti 8007 nokia poli chariti poli zed 08701417012 profit 2 chariti',\n",  
 " 'good even ttyl',\n",  
 " 'hmm bit piec lol sigh',\n",  
 " 'hahaha use brain dear',\n",  
 " 'hey got mail',\n",  
 " 'sorri light turn green meant anoth friend want lt gt worth may around',\n",  
 " 'thank yesterday sir wonder hope enjoy burial mojibiola',\n",  
 " 'u secret admir reveal think u r special call 09065174042 opt repli reveal stop 1 50 per msg recd cust care 07821230901',\n",  
 " 'hi mate rv u hav nice hol messag 3 say hello coz sent u 1 age start drive stay road rvx',\n",  
 " 'dear voucher holder claim week offer pc pleas go http www e tlp co uk expressoff ts cs appli stop text txt stop 80062',\n",  
 " 'thank much skype wit kz sura didnt get pleasur compani hope good given ultimatum oh countin aburo enjoy messag sent day ago',\n",  
 " 'sure result offer',\n",  
 " 'good morn dear great amp success day',\n",  
 " 'want 750 anytim network min 150 text new video phone five pound per week call 08002888812 repli deliveri tomorrow',\n",  
 " 'sir late pay rent past month pay lt gt charg felt would inconsider nag someth give great cost didnt speak howev recess wont abl pay charg month henc askin well ahead month end pleas help thank',\n",  
 " 'tri contact offer new video phone 750 anytim network min half price rental camcord call 08000930705 repli deliveri wed',\n",  
 " 'last chanc 2 claim ur 150 worth discount voucher text ye 85023 savamob member offer mobil cs 08717898035 3 00 sub 16 remov txt x stop',\n",  
 " 'luv u soo much u understand special u r 2 ring u 2morrow luv u xxx',\n",  
 " 'pl send comprehens mail pay much',\n",  
 " 'prashanthettan mother pass away last night pray famili',\n",  
 " 'urgent call 09066350750 landlin complimentari 4 ibiza holiday 10 000 cash await collect sae cs po box 434 sk3 8wp 150 ppm 18',\n",  
 " 'k k go',\n",  
 " 'meanwhil shit suit xavier decid give us lt gt second warn samantha come play jay guitar impress shit also think doug realiz live anymor',\n",  
 " 'stomach thru much trauma swear eat better lose weight',\n",  
 " 'offic what matter msg call break',\n",  
 " 'yeah bare enough room two us x mani fuck shoe sorri man see later',\n",  
 " 'today offer claim ur 150 worth discount voucher text ye 85023 savamob member offer mobil cs 08717898035 3 00 sub 16 unsub repli x',\n",  
 " 'u reach orchard alreadi u wan 2 go buy ticket first',\n",  
 " 'real babi want bring inner tigress',\n",  
 " 'da run activ full version da',\n",  
 " 'ah poor babi hope urfeel bettersn luv probthat overdos work hey go care spk 2 u sn lot lovejen xxx',\n",  
 " 'stop stori told return say order',\n",  
 " 'talk sexi make new friend fall love world discreet text date servic text vip 83110 see could meet',\n",  
 " 'go take babe',\n",  
 " 'hai ana tomarrow come morn lt decim gt ill sathi go rto offic repli came home',\n",  
 " 'spoon okay',\n",  
 " 'say somebodi name tampa',\n",  
 " 'work go min',\n",  
 " 'brother geniu',\n",  
 " 'sorri guess whenev get hold connect mayb hour two text',\n",  
 " 'u find time bu coz need sort stuff',\n",  
 " 'dude ive see lotta corvett late',\n",  
 " 'congratul ur award either yr suppli cd virgin record mysteri gift guarante call 09061104283

ts cs www smsco net 1 50pm approx 3min',\n",  
 " 'consid wall bunker shit import never play peac guess place high enough matter',\n",  
 " 'privat 2003 account statement 07808 xxxxxx show 800 un redeem point call 08719899217 identifi code 41685 expir 07 11 04',\n",  
 " 'hello need posh bird chap user trial prod champney put need address dob asap ta r',\n",  
 " 'u want xma 100 free text messag new video phone half price line rental call free 0800 0721072 find',\n",  
 " 'well offici philosoph hole u wanna call home readi save',\n",  
 " 'go good problem still need littl experi understand american custom voic',\n",  
 " 'text drop x',\n",  
 " 'ugh long day exhaust want cuddl take nap',\n",  
 " 'talk atleast day otherwis miss best friend world shakespear shesil lt gt',\n",  
 " 'shop till u drop either 10k 5k 500 cash 100 travel voucher call 09064011000 ntt po box cr01327bt fixedlin cost 150ppm mobil vari',\n",  
 " 'castor need see someth',\n",  
 " 'sunshin quiz wkli q win top soni dvd player u know countri liverpool play mid week txt ansr 82277 1 50 sp tyron',\n",  
 " 'u secret admir look 2 make contact u find r reveal think ur special call 09058094565',\n",  
 " 'u secret admir look 2 make contact u find r reveal think ur special call 09065171142 stopsm 08',\n",  
 " 'remind download content alreadi paid goto http doit mymobi tv collect content',\n",  
 " 'see knew give break time woul lead alway want miss curfew gonna gibe til one midnight movi gonna get til 2 need come home need getsleep anyth need b studdi ear train',\n",  
 " 'love give massag use lot babi oil fave posit',\n",  
 " 'dude go sup',\n",  
 " 'yoyyooo u know chang permiss drive mac usb flash drive',\n",  
 " 'gibb unsold mike hussey',\n",  
 " 'like talk pa abl dont know',\n",  
 " 'dun cut short leh u dun like ah fail quit sad',\n",  
 " 'unbeliev faglord',\n",  
 " 'wife knew time murder exactli',\n",  
 " 'ask princess',\n",  
 " 'great princess think',\n",  
 " 'nutter cutter ctter cttergg cttargg ctargg ctagg ie',\n",  
 " 'ok noe u busi realli bore msg u oso dunno wat colour choos 4 one',\n",  
 " 'g class earli tomorrow thu tri smoke lt gt',\n",  
 " 'superb thought grate u dont everyth u want mean u still opportun happier tomorrow u today',\n",  
 " 'hope good week check',\n",  
 " 'use hope agent drop sinc book thing year whole boston nyc experi',\n",  
 " 'thursday night yeah sure thing work',\n",  
 " 'free rington wait collect simpli text password mix 85069 verifi get usher britney fml',\n",  
 " 'probabl money worri thing come due sever outstand invoic work two three month ago',\n",  
 " 'possibl teach',\n",  
 " 'wonder phone batteri went dead tell love babe',\n",  
 " 'love smell bu tobacco',\n",  
 " 'get worri derek taylor alreadi assum worst',\n",  
 " 'hey charl sorri late repli',\n",  
 " 'lastest stereophon marley dizze racal libertin stroke win nookii game flirt click themob wap bookmark text wap 82468',\n",  
 " 'give plu said grinul greet whenev speak',\n",  
 " 'white fudg oreo store',\n",  
 " 'januari male sale hot gay chat cheaper call 08709222922 nation rate 1 5p min cheap 7 8p min peak stop text call 08712460324 10p min',\n",  
 " 'love come took long leav zaher got word ym happi see sad left miss',\n",  
 " 'sorri hurt',\n",  
 " 'feel nauseou piss eat sweet week caus today plan pig diet week hungri',\n",  
 " 'ok lor earli still project meet',\n",  
 " 'call da wait call',\n",  
 " 'could ask carlo could get anybodi els chip',\n",  
 " 'actual send remind today wonder weekend',\n",  
 " 'peopl see msg think iam addict msging wrong bcoz know iam addict sweet friend bslvyl',\n",  
 " 'hey gave photo regist drive ah tmr wanna meet yck',\n",  
 " 'dont talk ever ok word',\n",  
 " 'u wana see',\n",  
 " 'way school pl send ashley number',\n",  
 " 'shall fine avalarr hollalat',\n",  
 " 'went attend anoth two round today still reach home',\n",  
 " 'actual delet old websit blog magicalsong blogspot com',\n",  
 " 'k wait chikku il send aftr lt gt min',\n",  
 " 'diet ate 1 mani slice pizza yesterday ugh alway diet',\n",  
 " 'k give kvb acc detail',\n",  
 " 'oh come ah',\n",  
 " 'money r lucki winner 2 claim prize text money 2 88600 1million give away ppt150x3 normal text rate box403 w1t1ji',\n",  
 " 'realli sorri b abl 2 friday hope u find altern hope yr term go ok',\n",  
 " 'congratul ore mo owo wa enjoy wish mani happi moment fro wherev go',\n",  
 " 'samu shoulder yet',\n",  
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 " 'dun wear jean lor',\n",  
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 " 'better made friday stuf like pig yesterday feel bleh least writh pain kind bleh',\n",  
 " 'sell ton coin sell coin someon thru paypal voila money back life pocket',\n",  
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 " 'ur cash balanc current 500 pound maxim ur cash send go 86688 150p msg cc 08718720201 po box 114 14 tcr w1',\n",  
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 " 'yar lor wan 2 go c hors race today mah eat earlier lor ate chicken rice u',\n",  
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 " 'yup thk e shop close lor',\n",  
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 " async function convertToInteractive(key) {\n",  
 " const element = document.querySelector('#df-ff5bc0f3-27c5-4114-9f10-b209ca0897af');\n",  
 " const dataTable =\n",  
 " await google.colab.kernel.invokeFunction('convertToInteractive',\n",  
 " [key], {});\n",  
 " if (!dataTable) return;\n",  
 "\n",  
 " const docLinkHtml = 'Like what you see? Visit the ' +\n",  
 " '<a target=\"\_blank\" href=https://colab.research.google.com/notebooks/data\_table.ipynb>data table notebook</a>'\n",  
 " + ' to learn more about interactive tables.';\n",  
 " element.innerHTML = '';\n",  
 " dataTable['output\_type'] = 'display\_data';\n",  
 " await google.colab.output.renderOutput(dataTable, element);\n",  
 " const docLink = document.createElement('div');\n",  
 " docLink.innerHTML = docLinkHtml;\n",  
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 "from sklearn.preprocessing import StandardScaler\n",  
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 "# assuming your data is stored in a pandas DataFrame called 'data'\n",  
 "x\_bal = data.drop(\"label\", axis=1).select\_dtypes(exclude=[\"object\"]) # assuming 'label' is the target variable and you want to drop it from the features\n",  
 "names = x\_bal.columns # assuming you want to keep the column names for later use\n",  
 "sc = StandardScaler()\n",  
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 "x\_bal = pd.DataFrame(x\_bal, columns=names)\n",  
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 "# Convert the predictions to class labels\n",  
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