In [5]:
```
import os
import nltk
#nltk.download()
```

In [67]:
```
AI =('''Artificial intelligence (AI) is a wide-ranging branch of computer science concer

Artificial intelligence allows machines to model, and even improve upon, the capabilitie

 ''')
```

In [68]:
```
AI
```

Out[68]:
```
'Artificial intelligence (AI) is a wide-ranging branch of computer science concerned wit
h building smart machines capable of performing tasks that typically require human intel
ligence. AI is an interdisciplinary science with multiple approaches, but advancements i
n machine learning and deep learning are creating a paradigm shift in virtually every se
ctor of the tech industry. \n\nArtificial intelligence allows machines to model, and eve
n improve upon, the capabilities of the human mind. From the development of self-driving
cars to the proliferation of smart assistants like Siri and Alexa, AI is a growing part
of everyday life. As a result, many tech companies across various industries are investi
ng in artificially intelligent technologies.\n\n '
```

In [3]:
```
from nltk.tokenize import word_tokenize
```

In [5]:
```
AI_word = word_tokenize(AI)
AI_word
```

Out[5]:
```
['Artificial',
 'intelligence',
 '(',
 'AI',
 ')',
 'is',
 'a',
 'wide-ranging',
 'branch',
 'of',
 'computer',
 'science',
 'concerned',
 'with',
 'building',
 'smart',
 'machines',
 'capable',
 'of',
 'performing',
 'tasks',
 'that',
 'typically',
 'require',
 'human',
 'intelligence',
 '.',
 'AI',
 'is',
 'an',
 'interdisciplinary',
 'science',
 'with',
 'multiple',
 'approaches',
 ',',
 'but',
 'advancements',
 'in',
 'machine',
 'learning',
 'and',
 'deep',
 'learning',
 'are',
 'creating',
 'a',
 'paradigm',
 'shift',
 'in',
 'virtually',
 'every',
 'sector',
 'of',
 'the',
 'tech',
 'industry',
 '.',
 'Artificial',
 'intelligence',
 'allows',
 'machines',
 'to',
 'model',
 ',',
 'and',
 'even',
 'improve',
 'upon',
 ',',
 'the',
 'capabilities',
 'of',
 'the',
 'human',
 'mind',
 '.',
 'From',
 'the',
 'development',
 'of',
 'self-driving',
 'cars',
 'to',
 'the',
 'proliferation',
 'of',
 'smart',
 'assistants',
 'like',
 'Siri',
 'and',
 'Alexa',
 ',',
 'AI',
 'is',
 'a',
 'growing',
 'part',
 'of',
 'everyday',
 'life',
 '.',
 'As',
 'a',
 'result',
 ',',
 'many',
 'tech',
 'companies',
 'across',
 'various',
 'industries',
 'are',
 'investing',
 'in',
 'artificially',
 'intelligent',
 'technologies',
 '.']
```

```
In [6]: len(AI_word)
```

```
Out[6]: 120
```

Tokenizer

```
In [7]: from nltk.tokenize import sent_tokenize
```

```
In [8]: AI_sent = sent_tokenize(AI)
        AI_sent
```

```
Out[8]: ['Artificial intelligence (AI) is a wide-ranging branch of computer science concerned wi
th building smart machines capable of performing tasks that typically require human inte
lligence.',
 'AI is an interdisciplinary science with multiple approaches, but advancements in machi
ne learning and deep learning are creating a paradigm shift in virtually every sector of
the tech industry.',
 'Artificial intelligence allows machines to model, and even improve upon, the capabilit
ies of the human mind.',
 'From the development of self-driving cars to the proliferation of smart assistants lik
e Siri and Alexa, AI is a growing part of everyday life.',
 'As a result, many tech companies across various industries are investing in artificial
ly intelligent technologies.']
```

```
In [9]: len(AI_sent)
```

```
Out[9]: 5
```

```
In [11]: from nltk.tokenize import blankline_tokenize
         AI_blank = blankline_tokenize(AI)
         AI_blank
```

```
Out[11]: ['Artificial intelligence (AI) is a wide-ranging branch of computer science concerned wi
th building smart machines capable of performing tasks that typically require human inte
lligence. AI is an interdisciplinary science with multiple approaches, but advancements
in machine learning and deep learning are creating a paradigm shift in virtually every s
ector of the tech industry.',
 'Artificial intelligence allows machines to model, and even improve upon, the capabilit
ies of the human mind. From the development of self-driving cars to the proliferation of
smart assistants like Siri and Alexa, AI is a growing part of everyday life. As a resul
t, many tech companies across various industries are investing in artificially intellige
nt technologies.']
```

```
In [12]: len(AI_blank)

Out[12]: 2
```

bigrams,trigrams,ngrams

```
In [4]: from nltk.util import bigrams,trigrams,ngrams
```

```
In [11]: String = 'Artificial intelligence allows machines to model, and even improve upon, the c
         quotes_token = nltk.word_tokenize(String)
```

```
In [12]: String

Out[12]: 'Artificial intelligence allows machines to model, and even improve upon, the capabiliti
         es of the human mind.'
```

```
In [13]: quotes_token

Out[13]: ['Artificial',
          'intelligence',
          'allows',
          'machines',
          'to',
          'model',
          ',',
          'and',
          'even',
          'improve',
          'upon',
          ',',
          'the',
          'capabilities',
          'of',
          'the',
          'human',
          'mind',
          '.']
```

```
In [14]: len(quotes_token)

Out[14]: 19
```

```
In [16]: quotes_bigrams = list(nltk.bigrams(quotes_token))
         quotes_bigrams

Out[16]: [('Artificial', 'intelligence'),
          ('intelligence', 'allows'),
          ('allows', 'machines'),
          ('machines', 'to'),
          ('to', 'model'),
          ('model', ','),
          (',', 'and'),
          ('and', 'even'),
          ('even', 'improve'),
          ('improve', 'upon'),
          ('upon', ','),
          (',', 'the'),
          ('the', 'capabilities'),
          ('capabilities', 'of'),
          ('of', 'the'),
          ('the', 'human'),
          ('human', 'mind'),
          ('mind', '.')]
```

In [17]:
```
quotes_trigrams = list(nltk.trigrams(quotes_token))
quotes_trigrams
```

Out[17]:
```
[('Artificial', 'intelligence', 'allows'),
 ('intelligence', 'allows', 'machines'),
 ('allows', 'machines', 'to'),
 ('machines', 'to', 'model'),
 ('to', 'model', ','),
 ('model', ',', 'and'),
 (',', 'and', 'even'),
 ('and', 'even', 'improve'),
 ('even', 'improve', 'upon'),
 ('improve', 'upon', ','),
 ('upon', ',', 'the'),
 (',', 'the', 'capabilities'),
 ('the', 'capabilities', 'of'),
 ('capabilities', 'of', 'the'),
 ('of', 'the', 'human'),
 ('the', 'human', 'mind'),
 ('human', 'mind', '.')]
```

In [25]:
```
quotes_ngrams = list(nltk.ngrams(quotes_token,5))
quotes_ngrams
```

Out[25]:
```
[('Artificial', 'intelligence', 'allows', 'machines', 'to'),
 ('intelligence', 'allows', 'machines', 'to', 'model'),
 ('allows', 'machines', 'to', 'model', ','),
 ('machines', 'to', 'model', ',', 'and'),
 ('to', 'model', ',', 'and', 'even'),
 ('model', ',', 'and', 'even', 'improve'),
 (',', 'and', 'even', 'improve', 'upon'),
 ('and', 'even', 'improve', 'upon', ','),
 ('even', 'improve', 'upon', ',', 'the'),
 ('improve', 'upon', ',', 'the', 'capabilities'),
 ('upon', ',', 'the', 'capabilities', 'of'),
 (',', 'the', 'capabilities', 'of', 'the'),
 ('the', 'capabilities', 'of', 'the', 'human'),
 ('capabilities', 'of', 'the', 'human', 'mind'),
 ('of', 'the', 'human', 'mind', '.')]
```

Stemming

In [27]:
```
from nltk.stem import PorterStemmer
pst=PorterStemmer()
```

In [29]:
```
pst.stem('giving')
```

Out[29]:
```
'give'
```

In [30]:
```
pst.stem('loving')
```

Out[30]:
```
'love'
```

In [36]:
```
words_to_stem=['give','giving','given','gave']
for words in words_to_stem:
  print(words+':'+pst.stem(words))
```

```
give:give
giving:give
```

```
given:given
gave:gave
```

In [37]:
```
words_to_stem=['give','giving','given','gave','writing','thinking']
for words in words_to_stem:
  print(words+':'+pst.stem(words))
```

```
give:give
giving:give
given:given
gave:gave
writing:write
thinking:think
```

In [38]:
```
from nltk.stem import LancasterStemmer
lst=LancasterStemmer()
```

In [39]:
```
words_to_stem=['give','giving','given','gave','writing','thinking']
for words in words_to_stem:
  print(words+':'+lst.stem(words))
```

```
give:giv
giving:giv
given:giv
gave:gav
writing:writ
thinking:think
```

In [46]:
```
from nltk.stem import SnowballStemmer
sbst=SnowballStemmer('english')
```

In [47]:
```
words_to_stem=['give','giving','given','gave','writing','thinking']
for words in words_to_stem:
  print(words+':'+sbst.stem(words))
```

```
give:give
giving:give
given:given
gave:gave
writing:write
thinking:think
```

lemmatizations

In [51]:
```
from nltk.stem import wordnet
from nltk.stem import WordNetLemmatizer
word_lem = WordNetLemmatizer()
```

In [52]:
```
words_to_stem
```

Out[52]:
```
['give', 'giving', 'given', 'gave', 'writing', 'thinking']
```

In [53]:
```
for words in words_to_stem:
  print(words+':'+word_lem.lemmatize(words))
```

```
give:give
giving:giving
given:given
gave:gave
writing:writing
thinking:thinking
```

Stopwords

```
In [54]: from nltk.corpus import stopwords
```

```
In [56]: stopwords.words('english')
```

```
Out[56]: ['i',
 'me',
 'my',
 'myself',
 'we',
 'our',
 'ours',
 'ourselves',
 'you',
 "you're",
 "you've",
 "you'll",
 "you'd",
 'your',
 'yours',
 'yourself',
 'yourselves',
 'he',
 'him',
 'his',
 'himself',
 'she',
 "she's",
 'her',
 'hers',
 'herself',
 'it',
 "it's",
 'its',
 'itself',
 'they',
 'them',
 'their',
 'theirs',
 'themselves',
 'what',
 'which',
 'who',
 'whom',
 'this',
 'that',
 "that'll",
 'these',
 'those',
 'am',
 'is',
 'are',
 'was',
 'were',
 'be',
 'been',
 'being',
 'have',
 'has',
 'had',
 'having',
 'do',
 'does',
 'did',
 'doing',
 'a',
 'an',
 'the',
 'and',
 'but',
 'if',
 'or',
 'because',
 'as',
 'until',
 'while',
 'of',
 'at',
 'by',
 'for',
 'with',
 'about',
 'against',
 'between',
 'into',
 'through',
 'during',
 'before',
 'after',
 'above',
 'below',
 'to',
 'from',
 'up',
 'down',
 'in',
 'out',
 'on',
 'off',
 'over',
 'under',
 'again',
 'further',
 'then',
 'once',
 'here',
 'there',
 'when',
 'where',
 'why',
 'how',
 'all',
 'any',
 'both',
 'each',
 'few',
 'more',
 'most',
 'other',
 'some',
 'such',
 'no',
 'nor',
 'not',
 'only',
 'own',
 'same',
 'so',
 'than',
'too',
'very',
's',
't',
'can',
'will',
'just',
'don',
"don't",
'should',
"should've",
'now',
'd',
'll',
'm',
'o',
're',
've',
'y',
'ain',
'aren',
"aren't",
'couldn',
"couldn't",
'didn',
"didn't",
'doesn',
"doesn't",
'hadn',
"hadn't",
'hasn',
"hasn't",
'haven',
"haven't",
'isn',
"isn't",
'ma',
'mightn',
"mightn't",
'mustn',
"mustn't",
'needn',
"needn't",
'shan',
"shan't",
'shouldn',
"shouldn't",
'wasn',
"wasn't",
'weren',
"weren't",
'won',
"won't",
'wouldn',
"wouldn't"]
```

In [58]:
```
stopwords.words('chinese')
```

Out[58]:
```
['一',
 '一下',
 '一些',
 '一切',
 '一则',
 '一天',
 '一定',
 '一方面',
        '一旦',
        '一时',
        '一来',
        '一样',
        '一次',
        '一片',
        '一直',
        '一致',
        '一般',
        '一起',
        '一边',
        '一面',
        '万一',
        '上下',
        '上升',
        '上去',
        '上来',
        '上述',
        '上面',
        '下列',
        '下去',
        '下来',
        '下面',
        '不一',
        '不久',
        '不仅',
        '不会',
        '不但',
        '不光',
        '不单',
        '不变',
        '不只',
        '不可',
        '不同',
        '不够',
        '不如',
        '不得',
        '不怕',
        '不惟',
        '不成',
        '不拘',
        '不敢',
        '不断',
        '不是',
        '不比',
        '不然',
        '不特',
        '不独',
        '不管',
        '不能',
        '不要',
        '不论',
        '不足',
        '不过',
        '不问',
        '与',
        '与其',
        '与否',
        '与此同时',
        '专门',
        '且',
        '两者',
        '严格',
        '严重',
        '个',
        '个人',
'个别',
'中小',
'中间',
'丰富',
'临',
'为',
'为主',
'为了',
'为什么',
'为什麼',
'为何',
'为着',
'主张',
'主要',
'举行',
'乃',
'乃至',
'么',
'之',
'之一',
'之前',
'之后',
'之後',
'之所以',
'之类',
'乌乎',
'乎',
'乘',
'也',
'也好',
'也是',
'也罢',
'了',
'了解',
'争取',
'于',
'于是',
'于是乎',
'云云',
'互相',
'产生',
'人们',
'人家',
'什么',
'什么样',
'什麼',
'今后',
'今天',
'今年',
'今後',
'仍然',
'从',
'从事',
'从而',
'他',
'他人',
'他们',
'他的',
'代替',
'以',
'以上',
'以下',
'以为',
'以便',
'以免',
'以前',
'以及',
'以后',
'以外',
'以後',
'以来',
'以至',
'以至于',
'以致',
'们',
'任',
'任何',
'任凭',
'任务',
'企图',
'伟大',
'似乎',
'似的',
'但',
'但是',
'何',
'何况',
'何处',
'何时',
'作为',
'你',
'你们',
'你的',
'使得',
'使用',
'例如',
'依',
'依照',
'依靠',
'促进',
'保持',
'俺',
'俺们',
'倘',
'倘使',
'倘或',
'倘然',
'倘若',
'假使',
'假如',
'假若',
'做到',
'像',
'允许',
'充分',
'先后',
'先後',
'先生',
'全部',
'全面',
'兮',
'共同',
'关于',
'其',
'其一',
'其中',
'其二',
'其他',
'其余',
'其它',
'其实',
'其次',
'具体',
'具体地说',
'具体说来',
'具有',
'再者',
'再说',
'冒',
'冲',
'决定',
'况且',
'准备',
'几',
'几乎',
'几时',
'凭',
'凭借',
'出去',
'出来',
'出现',
'分别',
'则',
'别',
'别的',
'别说',
'到',
'前后',
'前者',
'前进',
'前面',
'加之',
'加以',
'加入',
'加强',
'十分',
'即',
'即令',
'即使',
'即便',
'即或',
'即若',
'却不',
'原来',
'又',
'及',
'及其',
'及时',
'及至',
'双方',
'反之',
'反应',
'反映',
'反过来',
'反过来说',
'取得',
'受到',
'变成',
'另',
'另一方面',
'另外',
'只是',
'只有',
'只要',
'只限',
'叫',
'叫做',
'召开',
        '叮咚',
        '可',
        '可以',
        '可是',
        '可能',
        '可见',
        '各',
        '各个',
        '各人',
        '各位',
        '各地',
        '各种',
        '各级',
        '各自',
        '合理',
        '同',
        '同一',
        '同时',
        '同样',
        '后来',
        '后面',
        '向',
        '向着',
        '吓',
        '吗',
        '否则',
        '吧',
        '吧哒',
        '吱',
        '呀',
        '呃',
        '呕',
        '呗',
        '呜',
        '呜呼',
        '呢',
        '周围',
        '呵',
        '呸',
        '呼哧',
        '咋',
        '和',
        '咚',
        '咦',
        '咱',
        '咱们',
        '咳',
        '哇',
        '哈',
        '哈哈',
        '哉',
        '哎',
        '哎呀',
        '哎哟',
        '哗',
        '哟',
        '哦',
        '哩',
        '哪',
        '哪个',
        '哪些',
        '哪儿',
        '哪天',
        '哪年',
        '哪怕',
        '哪样',
        '哪边',
        '哪里',
        '哼',
        '哼唷',
        '唉',
        '啊',
        '啐',
        '啥',
        '啦',
        '啪达',
        '喂',
        '喏',
        '喔唷',
        '嗡嗡',
        '嗬',
        '嗯',
        '嗳',
        '嘎',
        '嘎登',
        '嘘',
        '嘛',
        '嘻',
        '嘿',
        '因',
        '因为',
        '因此',
        '因而',
        '固然',
        '在',
        '在下',
        '地',
        '坚决',
        '坚持',
        '基本',
        '处理',
        '复杂',
        '多',
        '多少',
        '多数',
        '多次',
        '大力',
        '大多数',
        '大大',
        '大家',
        '大批',
        '大约',
        '大量',
        '失去',
        '她',
        '她们',
        '她的',
        '好的',
        '好象',
        '如',
        '如上所述',
        '如下',
        '如何',
        '如其',
        '如果',
        '如此',
        '如若',
        '存在',
        '宁',
        '宁可',
        '宁愿',
        '宁肯',
'它',
'它们',
'它们的',
'它的',
'安全',
'完全',
'完成',
'实现',
'实际',
'宣布',
'容易',
'密切',
'对',
'对于',
'对应',
'将',
'少数',
'尔后',
'尚且',
'尤其',
'就',
'就是',
'就是说',
'尽',
'尽管',
'属于',
'岂但',
'左右',
'巨大',
'巩固',
'己',
'已经',
'帮助',
'常常',
'并',
'并不',
'并不是',
'并且',
'并没有',
'广大',
'广泛',
'应当',
'应用',
'应该',
'开外',
'开始',
'开展',
'引起',
'强烈',
'强调',
'归',
'当',
'当前',
'当时',
'当然',
'当着',
'形成',
'彻底',
'彼',
'彼此',
'往',
'往往',
'待',
'後来',
'後面',
'得',
            '得出',
            '得到',
            '心里',
            '必然',
            '必要',
            '必须',
            '怎',
            '怎么',
            '怎么办',
            '怎么样',
            '怎样',
            '怎麼',
            '总之',
            '总是',
            '总的来看',
            '总的来说',
            '总的说来',
            '总结',
            '总而言之',
            '恰恰相反',
            '您',
            '意思',
            '愿意',
            '慢说',
            '成为',
            '我',
            '我们',
            '我的',
            '或',
            '或是',
            '或者',
            '战斗',
            '所',
            '所以',
            '所有',
            '所谓',
            '打',
            '扩大',
            '把',
            '抑或',
            '拿',
            '按',
            '按照',
            '换句话说',
            '换言之',
            '据',
            '掌握',
            '接着',
            '接著',
            '故',
            '故此',
            '整个',
            '方便',
            '方面',
            '旁人',
            '无宁',
            '无法',
            '无论',
            '既',
            '既是',
            '既然',
            '时候',
            '明显',
            '明确',
            '是',
            '是否',
    '是的',
    '显然',
    '显著',
    '普通',
    '普遍',
    '更加',
    '曾经',
    '替',
    '最后',
    '最大',
    '最好',
    '最後',
    '最近',
    '最高',
    '有',
    '有些',
    '有关',
    '有利',
    '有力',
    '有所',
    '有效',
    '有时',
    '有点',
    '有的',
    '有着',
    '有著',
    '望',
    '朝',
    '朝着',
    '本',
    '本着',
    '来',
    '来着',
    '极了',
    '构成',
    '果然',
    '果真',
    '某',
    '某个',
    '某些',
    '根据',
    '根本',
    '欢迎',
    '正在',
    '正如',
    '正常',
    '此',
    '此外',
    '此时',
    '此间',
    '毋宁',
    '每',
    '每个',
    '每天',
    '每年',
    '每当',
    '比',
    '比如',
    '比方',
    '比较',
    '毫不',
    '没有',
    '沿',
    '沿着',
    '注意',
    '深入',
'清楚',
'满足',
'漫说',
'焉',
'然则',
'然后',
'然後',
'然而',
'照',
'照着',
'特别是',
'特殊',
'特点',
'现代',
'现在',
'甚么',
'甚而',
'甚至',
'用',
'由',
'由于',
'由此可见',
'的',
'的话',
'目前',
'直到',
'直接',
'相似',
'相信',
'相反',
'相同',
'相对',
'相对而言',
'相应',
'相当',
'相等',
'省得',
'看出',
'看到',
'看来',
'看看',
'看见',
'真是',
'真正',
'着',
'着呢',
'矣',
'知道',
'确定',
'离',
'积极',
'移动',
'突出',
'突然',
'立即',
'第',
'等',
'等等',
'管',
'紧接着',
'纵',
'纵令',
'纵使',
'纵然',
'练习',
'组成',
    '经',
    '经常',
    '经过',
    '结合',
    '结果',
    '给',
    '绝对',
    '继续',
    '继而',
    '维持',
    '综上所述',
    '罢了',
    '考虑',
    '者',
    '而',
    '而且',
    '而况',
    '而外',
    '而已',
    '而是',
    '而言',
    '联系',
    '能',
    '能否',
    '能够',
    '腾',
    '自',
    '自个儿',
    '自从',
    '自各儿',
    '自家',
    '自己',
    '自身',
    '至',
    '至于',
    '良好',
    '若',
    '若是',
    '若非',
    '范围',
    '莫若',
    '获得',
    '虽',
    '虽则',
    '虽然',
    '虽说',
    '行为',
    '行动',
    '表明',
    '表示',
    '被',
    '要',
    '要不',
    '要不是',
    '要不然',
    '要么',
    '要是',
    '要求',
    '规定',
    '觉得',
    '认为',
    '认真',
    '认识',
    '让',
    '许多',
    '论',
    '设使',
    '设若',
    '该',
    '说明',
    '诸位',
    '谁',
    '谁知',
    '赶',
    '起',
    '起来',
    '起见',
    '趁',
    '趁着',
    '越是',
    '跟',
    '转动',
    '转变',
    '转贴',
    '较',
    '较之',
    '边',
    '达到',
    '迅速',
    '过',
    '过去',
    '过来',
    '运用',
    '还是',
    '还有',
    '这',
    '这个',
    '这么',
    '这么些',
    '这么样',
    '这么点儿',
    '这些',
    '这会儿',
    '这儿',
    '这就是说',
    '这时',
    '这样',
    '这点',
    '这种',
    '这边',
    '这里',
    '这麼',
    '进入',
    '进步',
    '进而',
    '进行',
    '连',
    '连同',
    '适应',
    '适当',
    '适用',
    '逐步',
    '逐渐',
    '通常',
    '通过',
    '造成',
    '遇到',
    '遭到',
    '避免',
    '那',
    '那个',
    '那么',
'那么些',
'那么样',
'那些',
'那会儿',
'那儿',
'那时',
'那样',
'那边',
'那里',
'那麼',
'部分',
'鄙人',
'采取',
'里面',
'重大',
'重新',
'重要',
'鉴于',
'问题',
'防止',
'阿',
'附近',
'限制',
'除',
'除了',
'除此之外',
'除非',
'随',
'随着',
'随著',
'集中',
'需要',
'非但',
'非常',
'非徒',
'靠',
'顺',
'顺着',
'首先',
'高兴',
'是不是']
```

In [59]:
```
len(stopwords.words('chinese'))
```

Out[59]:
```
841
```

In [60]:
```
stopwords.words('hindi')
```

```
---------------------------------------------------------------------------
OSError                                   Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_10764\1472798112.py in <module>
----> 1 stopwords.words('hindi')

~\anaconda3\lib\site-packages\nltk\corpus\reader\wordlist.py in words(self, fileids, ign
ore_lines_startswith)
     19         return [
     20             line
---> 21             for line in line_tokenize(self.raw(fileids))
     22             if not line.startswith(ignore_lines_startswith)
     23         ]

~\anaconda3\lib\site-packages\nltk\corpus\reader\api.py in raw(self, fileids)
    216         contents = []
    217         for f in fileids:
--> 218             with self.open(f) as fp:
    219                 contents.append(fp.read())
    220         return concat(contents)

~\anaconda3\lib\site-packages\nltk\corpus\reader\api.py in open(self, file)
    229         """
    230         encoding = self.encoding(file)
--> 231         stream = self._root.join(file).open(encoding)
    232         return stream
    233 

~\anaconda3\lib\site-packages\nltk\data.py in join(self, fileid)
    332     def join(self, fileid):
    333         _path = os.path.join(self._path, fileid)
--> 334         return FileSystemPathPointer(_path)
    335 
    336     def __repr__(self):

~\anaconda3\lib\site-packages\nltk\compat.py in _decorator(*args, **kwargs)
     39     def _decorator(*args, **kwargs):
     40         args = (args[0], add_py3_data(args[1])) + args[2:]
---> 41         return init_func(*args, **kwargs)
     42 
     43     return wraps(init_func)(_decorator)

~\anaconda3\lib\site-packages\nltk\data.py in __init__(self, _path)
    310         _path = os.path.abspath(_path)
    311         if not os.path.exists(_path):
--> 312             raise OSError("No such file or directory: %r" % _path)
    313         self._path = _path
    314 

OSError: No such file or directory: 'C:\\Users\\91996\\AppData\\Roaming\\nltk_data\\corp
ora\\stopwords\\hindi'
```

Regular Expressions

In [61]:
```python
import re
punctuation = re.compile(r'[.-?!,:;()|0-9]')
```

In [62]:
```python
punctuation
```

Out[62]:
```
re.compile(r'[.-?!,:;()|0-9]', re.UNICODE)
```

In [69]:
```python
AI
```

Out[69]:
```
'Artificial intelligence (AI) is a wide-ranging branch of computer science concerned wit
h building smart machines capable of performing tasks that typically require human intel
ligence. AI is an interdisciplinary science with multiple approaches, but advancements i
n machine learning and deep learning are creating a paradigm shift in virtually every se
ctor of the tech industry. \n\nArtificial intelligence allows machines to model, and eve
n improve upon, the capabilities of the human mind. From the development of self-driving
cars to the proliferation of smart assistants like Siri and Alexa, AI is a growing part 
of everyday life. As a result, many tech companies across various industries are investi
ng in artificially intelligent technologies.\n\n '
```

In [73]:
```python
sent = 'khatty is natural when it comes to drawing'
sent_tokens = word_tokenize(sent)
sent_tokens
```

Out[73]:
```
['khatty', 'is', 'natural', 'when', 'it', 'comes', 'to', 'drawing']
```

In [75]:
```python
for token in sent_tokens:
    print(nltk.pos_tag([token]))
```

```
[('khatty', 'NN')]
[('is', 'VBZ')]
[('natural', 'JJ')]
[('when', 'WRB')]
[('it', 'PRP')]
[('comes', 'VBZ')]
[('to', 'TO')]
[('drawing', 'VBG')]
```

In [6]:
```
sent2 = 'john is eating a delicious cake'
sent2_tokens = word_tokenize(sent2)
for token in sent2_tokens:
        print(nltk.pos_tag([token]))
```

```
[('john', 'NN')]
[('is', 'VBZ')]
[('eating', 'VBG')]
[('a', 'DT')]
[('delicious', 'JJ')]
[('cake', 'NN')]
```

In [7]:
```
from nltk import ne_chunk
```

In [8]:
```
Ne_sent='The US president stays in the WHITEHOUSE'
```

In [10]:
```
Ne_tokens = word_tokenize(Ne_sent)
Ne_tokens
```

Out[10]:
```
['The', 'US', 'president', 'stays', 'in', 'the', 'WHITEHOUSE']
```

In [11]:
```
Ne_tags = nltk.pos_tag(Ne_tokens)
Ne_tags
```

Out[11]:
```
[('The', 'DT'),
 ('US', 'NNP'),
 ('president', 'NN'),
 ('stays', 'NNS'),
 ('in', 'IN'),
 ('the', 'DT'),
 ('WHITEHOUSE', 'NNP')]
```

In [13]:
```
NE_NER = ne_chunk(Ne_tags)
print(NE_NER)
```

```
(S
  The/DT
  (GSP US/NNP)
  president/NN
  stays/NNS
  in/IN
  the/DT
  (ORGANIZATION WHITEHOUSE/NNP))
```

In [19]:
```
from wordcloud import WordCloud
import matplotlib.pyplot as plt
```

In [18]:
```
!pip install wordcloud
```

```
Collecting wordcloud
  Downloading wordcloud-1.8.2.2-cp39-cp39-win_amd64.whl (153 kB)
     ------------------------------------ 153.1/153.1 kB 652.2 kB/s eta 0:00:00
Requirement already satisfied: pillow in c:\users\91996\anaconda3\lib\site-packages (fro
m wordcloud) (9.2.0)
```

```
Requirement already satisfied: numpy>=1.6.1 in c:\users\91996\anaconda3\lib\site-package
s (from wordcloud) (1.21.5)
Requirement already satisfied: matplotlib in c:\users\91996\anaconda3\lib\site-packages
(from wordcloud) (3.5.2)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\91996\anaconda3\lib\site
-packages (from matplotlib->wordcloud) (2.8.2)
Requirement already satisfied: pyparsing>=2.2.1 in c:\users\91996\anaconda3\lib\site-pac
kages (from matplotlib->wordcloud) (3.0.9)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\91996\anaconda3\lib\site-pa
ckages (from matplotlib->wordcloud) (4.25.0)
Requirement already satisfied: packaging>=20.0 in c:\users\91996\anaconda3\lib\site-pack
ages (from matplotlib->wordcloud) (21.3)
Requirement already satisfied: cycler>=0.10 in c:\users\91996\anaconda3\lib\site-package
s (from matplotlib->wordcloud) (0.11.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\users\91996\anaconda3\lib\site-pa
ckages (from matplotlib->wordcloud) (1.4.2)
Requirement already satisfied: six>=1.5 in c:\users\91996\anaconda3\lib\site-packages (f
rom python-dateutil>=2.7->matplotlib->wordcloud) (1.16.0)
Installing collected packages: wordcloud
Successfully installed wordcloud-1.8.2.2
```

In [32]:
```
text = (" Python Python Python NIT NIT NIT NIT NIT KodiMatplotlib Matplotlib Seaborn Net
```

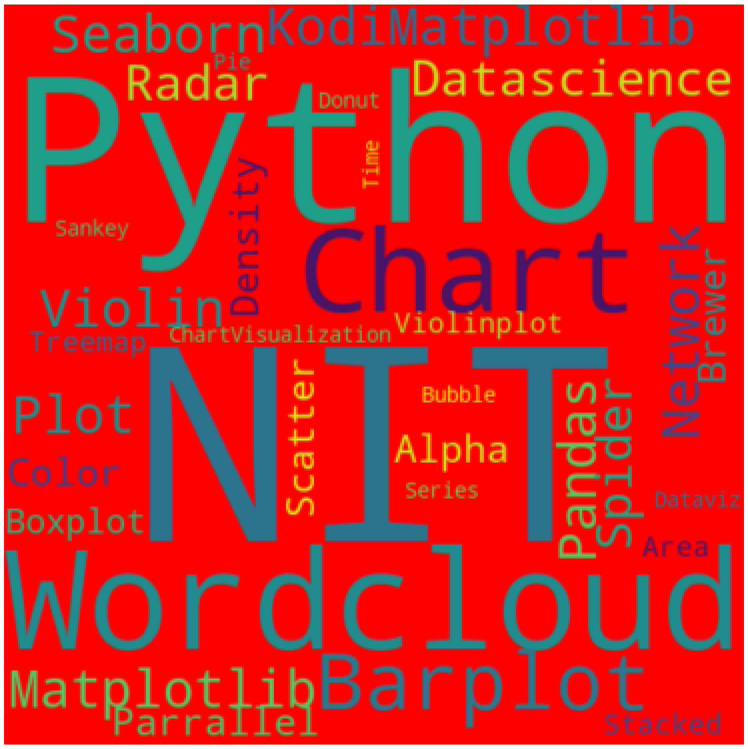
In [25]:
```
text
```

Out[25]:
```
' Python Python Python Matplotlib Matplotlib Seaborn Network Plot Violin Chart Pandas Da
tascience Wordcloud Spider Radar Parrallel Alpha Color Brewer Density Scatter Barplot Ba
rplot Boxplot Violinplot Treemap Stacked Area Chart ChartVisualization Dataviz Donut Pie
Time-Series Wordcloud Wordcloud Sankey Bubble'
```

In [30]:
```

```

In [33]:
```
wordcloud = WordCloud(width = 480, height=480, margin = 0,background_color='red').genera
# Display the generated image:
plt.imshow(wordcloud,interpolation='bilinear')
plt.axis('off')
plt.margins(x=0,y=0)
plt.show()
```



In [ ]:
```

```