In [1]:
```
import nltk
import numpy as np
import random
import string # to process standard python strings
```

```
C:\Users\chtan\anaconda3\lib\site-packages\scipy\__init__.py:155: UserWarning: A NumPy version >=1.18.5 and <1.25.0 is required for this version of SciPy (detected version 1.26.1
  warnings.warn(f"A NumPy version >={np_minversion} and <{np_maxversion}"
```

In [2]:
```
import requests
from bs4 import BeautifulSoup

# Make a request to the website
url = "https://www.chatcompose.com/what-are-chatbots.html"
response = requests.get(url)

# Parse the HTML content
soup = BeautifulSoup(response.content, 'html.parser')

# Open a file in write mode
with open("webpage_text.txt", "w") as file:
    # Find all of the <p> tags on the page
    paragraphs = soup.find_all('p')

    # Loop through the paragraphs and write the text content to the file
    for p in paragraphs:
        file.write(p.get_text())
        file.write("\n")  # Add a newline between paragraphs
```

In [3]:
```
f=open('webpage_text.txt','r',errors = 'ignore')
raw=f.read()
raw=raw.lower()# converts to lowercase
nltk.download('punkt') # first-time use only
nltk.download('wordnet') # first-time use only
sent_tokens = nltk.sent_tokenize(raw)# converts to list of sentences
word_tokens = nltk.word_tokenize(raw)# converts to list of words
```

```
[nltk_data] Downloading package punkt to
[nltk_data]     C:\Users\chtan\AppData\Roaming\nltk_data...
[nltk_data]   Package punkt is already up-to-date!
[nltk_data] Downloading package wordnet to
[nltk_data]     C:\Users\chtan\AppData\Roaming\nltk_data...
[nltk_data]   Package wordnet is already up-to-date!
```

In [4]:
```
sent_tokens
```

Out[4]: ['a chatbot is an artificial intelligence (ai) program that can simulate a conversation (or a chat) with a user in natural language through messaging applications, websites, mobile applications or by phone.',
 'an example.',
 'you want to buy some shoes from your local retail store, you have to access their web site, find what you are looking for and buy it.',
 'but what if that store had a bot?',
 'it would only be necessary to write a message to the brand through facebook and tell them what we want.',
 'and if you had doubts about size measurements you could gt answers to your problem in a moment.',
 "one of the great advantages of chatbots is that, unlike applications, they are not downloaded, it is not necessary to update them and they do not take up space in the phone's memory.",
 'another one is that we can have several bots integrated in the same chat.',
 'this way we would avoid jumping from one app to another according to what we need at each moment.',
 'the consequences?',
 'more pleasant user experiences and faster and simpler customer service interactions.',
 'why are chatbots important?',
 'a chatbot is often described as one of the most advanced and promising expressions of human-machine interaction.',
 'however, from a technological point of view, a chatbot only represents the natural evolution of a response system to questions that takes advantage of natural language processing (nlp).',
 'the formulation of answers to questions in natural language is one of the most typical examples of natural language processing applied in companies.',
 'so, what is a chatbot?',
 'it is a piece of software that is designed to automate a specific task.',
 'more specifically, a chatbot is essentially a conversational user interface that can be connected to a series of data sources through an api so that it can offer information or services on demand, such as weather forecasts, breaking news, status updates o order information.',
 'depending on their use case, chatbots can be either open or closed.',
 'open chatbots are those that use artificial intelligence to process language and learn from their interactions with users.',
 'closed chatbots are those that only and exclusively execute a conversation flow or script that may or may not use artificial intelligence depending on how it evaluates user messages.',
 'open chatbots may support a more natural way of conversing, however, if they have not been properly trained there is a risk of a poor user experience.on the other hand closed chatbots have a lower risk of poor user experience and they have the advantage that they can direct a conversation towards a specific goal or process.',
 'more information at:\nchatbot applications streamline the interactions between people and services, improving customer experience.',
 'at the same time, they offer companies new opportunities to improve the process of customer engagement and operational efficiency by reducing the typical cost of customer service.',
 'to be successful, a chatbot solution should be able to perform tasks effectively.',
 'human support plays a key role here: regardless of the type of approach and platform, human intervention is crucial to configure, train and optimize the chatbot system.',
 'there are different approaches and tools that you can use to develop a chatbot.',
 'depending on the use case you want to address, some chatbot technologies are more appropriate than others.',
 'to achieve the desired results, the combination of different forms of ai such as natural language processing, machine learning and semantic comprehension may be the best option.',
 'the best platforms offer two types of chatbot configuration, directed conversations and free-form conversations.',

```
 'a directed conversations is where a chatbot guides the user through a series of optio
ns and questions towards a particular goal.',
 'a free-form conversation gives the user more control over the conversation by letting
him send messages without the chatbot restricting his options.',
 'the rapid evolution of ai in the last decade has generated a growth in adoption of th
ese robots by companies.',
 'large companies such as skype, telegram or facebook have opted for conversational bot
s, in addition to a large number of start-ups, offering great support for customer serv
ice.',
 'the main usages for chatbots are:\nas you had anticipated, in the vast majority of ca
ses they are used to perform the customer service functions in social networks, apps an
d websites.',
 'they can collect registration data, provide information, answer frequently asked ques
tions, etc.',
 'by improving the engagement of current and potential customers they make interactions
with services faster and simpler, generating better experiences for the user.',
 'chatbots help to simplify the online shopping and payment processes.',
 'they provide information and solve the problems that users have throughout the purcha
se decision process.',
 'they can also perform searches, provide similar products or even allow payments from
the conversation chat itself.',
 'read more at chatbots to manage payments.',
 'some are able to send information and news of the company in an automated way to cust
omers and potential buyers of our online business.',
 'if it is used properly, it can be a very useful tool for any company or brand.',
 'a chatbot can be designed to capture important user information such as email, phone
etc.',
 'and send that information to sales representatives so they can do follow-ups on the c
onversation.',
 'then can also filter and qualify potential customers by asking questions and evaluati
ng the response, to filter and only send the most valuable leads to your sales team.',
 'chatbots are also able to automate the process of reservations and appointments by di
splaying availability on a calendar and taking the date selection.',
 'read more at chatbots to make reservations.',
 'generating an environment of trust between your business and your potential customers
is a fundamental factor, and having a chatbot can help you in that.',
 'chatbots show your commitment to customer experience.',
 'one of its most attractive features is that, by being programmed to fulfill certain f
unctions within a digital medium, they are available 24/7.',
 'one chatbot can provide immediate answers to simultaneous users at once.',
 'if you are not a developer, or are looking for a simpler approach that does not requi
re programming, you can try our chatbot platform chatcompose.',
 'you can create a chatbot with just a few steps, and for a variety of use cases.',
 'trial plans are free for 15 days.',
 'create your own chatbot with artificial intelligence, design conversation and sales s
cripts, and deploy your chatbot across most popular channels and media.',
 'copyright chatcompose - 2019']
```

In [5]:
```
lemmer = nltk.stem.WordNetLemmatizer()
#WordNet is a semantically-oriented dictionary of English included in NLTK.
def LemTokens(tokens):
    return [lemmer.lemmatize(token) for token in tokens]
remove_punct_dict = dict((ord(punct), None) for punct in string.punctuation)
def LemNormalize(text):
    return LemTokens(nltk.word_tokenize(text.lower().translate(remove_punct_dict)))
```

In [6]:
```
GREETING_INPUTS = ("hello", "hi", "greetings", "sup", "what's up","hey",)
GREETING_RESPONSES = ["hi", "hey", "*nods*", "hi there", "hello", "I am glad! You are ta
def greeting(sentence):
```

```
    for word in sentence.split():
        if word.lower() in GREETING_INPUTS:
            return random.choice(GREETING_RESPONSES)
```

In [7]:
```
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.metrics.pairwise import cosine_similarity
```

In [8]:
```
def response(user_response):
    robo_response=''
    sent_tokens.append(user_response)
    TfidfVec = TfidfVectorizer(tokenizer=LemNormalize, stop_words='english')
    tfidf = TfidfVec.fit_transform(sent_tokens)
    vals = cosine_similarity(tfidf[-1], tfidf)
    idx=vals.argsort()[0][-2]
    flat = vals.flatten()
    flat.sort()
    req_tfidf = flat[-2]
    if(req_tfidf==0):
        robo_response=robo_response+"I am sorry! I don't understand you"
        return robo_response
    else:
        robo_response = robo_response+sent_tokens[idx]
        return robo_response
```

In [10]:
```
flag=True
print("Hi. I will answer your queries about Chatbots. To exit, type Bye!")
while(flag==True):
    user_response = input()
    user_response=user_response.lower()
    if(user_response!='bye'):
        if(user_response=='thanks' or user_response=='thank you' ):
            flag=False
            print("ROBO: You are welcome..")
        else:
            if(greeting(user_response)!=None):
                print("ROBO: "+greeting(user_response))
            else:
                print("ROBO: ",end="")
                print(response(user_response))
                sent_tokens.remove(user_response)
    else:
        flag=False
        print("ROBO: Bye! ")
```

```
Hi. I will answer your queries about Chatbots. To exit, type Bye!
hi
ROBO: hey
hello
ROBO: hey
sup
ROBO: hi there
thanks
ROBO: You are welcome..
```

Challenge

We have successfully built our first chatbot. Your challenge is to now change this chatbot. For our example, we used the Wikipedia page for chatbots as our corpus. Now use the information from this page: https://www.chatcompose.com/what-are-chatbots.html as the chatbot corpus and retrain your chatbot. Also, in the main while loop for the chatbot, include addition cases to generate a reply when the user asks about the weather. You can use simple if-else clauses for this purpose.