

## Programming Assignment Week 16:

NLP is a field that attempts to have computers understand natural (i.e., human) language. There are many exciting breakthroughs in the field. While NLP is a complicated field, it is fairly easy to create a simple program to respond to English sentences.

For this programming, you will explore some of the basics of NLP. As you explore this, you will work with a variety of methods of the String class and practice using the if statement. You will trace a complicated method to find words in user input.

Chatbots are programs that are designed to respond like humans to natural language input. We are developing a chatbot as this programming assignment's goal.

- Have it respond "Tell me more about your dad" when the statement contains the word "dad" or "mom", "brother", or "sister". For example, a possible statement and response would be:

**Statement:** Where does your sister live?

**Response:** Tell me more about your family.

- Have it respond "Tell me more about your pets" when the statement contains the word "dog" or "cat." For example, a possible statement and response would be:

**Statement:** I like my cat Mittens.

**Response:** Tell me more about your pets.

- Have it respond "Why so negative?" when the statement contains the word "no". For example, a possible statement and response would be:

**Statement:** I have no money.

**Response:** Why so negative?

- Have it respond favorably when it sees the name of your teacher. Be sure to use appropriate pronouns! For example, a possible statement and response would be:

**Statement:** Mr. Finkelstein is telling us about robotics.

**Response:** He sounds like a good teacher.

- Have the code check that the statement has at least one character. You can do this by using the trim method to remove spaces from the beginning and end, and then checking the length of the trimmed string. If there are no characters, the response should tell the user to enter something. For example, a possible statement and response would be:

**Statement:**

**Response:** Say something, please.

- If no matching of the keyword, then add 5 more noncommittal responses to the possible random responses.

- No partial match. If you are matching the word "cat", then "catch" should not be an acceptable answer.

- Case-insensitive.

- Exit the program when “bye” is entered.
- This program is a simple REPL application

**Sample Dialog between human and chatbot:**

```
Hi, How are you? This is Chatbot Q.  
I can answer all your questions.  
You>>  
Q>> Say something, please.  
You>>dog  
Q>> Tell me more about your pets.  
You>>cat  
Q>> Tell me more about your pets.  
You>>catch  
Q>> Wait a moment!  
You>>fish  
Q>> I don't know  
You>>sister  
Q>> Tell me more about your family  
You>>data  
Q>> I am not sure. Can you repeat again?  
You>>dad  
Q>> Tell me more about your family  
You>>How about your sister?  
Q>> Tell me more about your family  
You>>I know your mom.  
Q>> Tell me more about your family  
You>>Never mind  
Q>> What is the key point?  
You>>I go to catch a fish.  
Q>> I don't know  
You>>I am not a doggy.  
Q>> Tell me more!  
You>>bye
```