Name: Paul Chafetz  
Date: 3/10/2019

Magpie Chatbot Lab

**Directions**: Make note of your responses to the following questions as you work through activities 1, 2, and 3 of the AP Computer Science Lab: Magpie.

# Activity 1

1. Which chatbot did you use?

A.L.I.C.E. chatbot.

1. Paste your conversation with the chatbot below.

**Human:** What is your name?   
**A.L.I.C.E:** My name is ALICE.

**Human:** How are you?   
**A.L.I.C.E:** I am functioning within normal parameters.

**Human:** What is your favorite color?   
**A.L.I.C.E:** My favorite color is blue.   
**Human:** Are you real?   
**A.L.I.C.E:** Yes I am a real artificial intelligence.

1. What was the most interesting or peculiar response? Why?

What was peculiar was that she had a favorite color. The other questions I asked were generally straightforward and I expected similar answers. However, when she said “blue,” I was surprised that her programmer made sure that she has personal preferences and tastes.

1. Think about your conversation with a chatbot. Identify key words to which you think the chatbot responds.

Who, What, Where, Why, How, Color, You, Real, Name, Favorite, Robot, AI, and any non-real words (If you type something she cannot comprehend, she may ask the user personal questions)

1. Suggest several key words and the possible corresponding responses.

robot → I am a robot.

how → AI Foundation programmed me for it.

real → Totally real.

name → My name is ALICE.

ai → Artificial intelligence is the branch of engineering and science devoted to constructing machines that think. That's a good question.

# Activity 2

1. What happens when a key word is included in another word? Consider statements like "I know all the state capitals" and "I like vegetables smothered in cheese." Explain the problem with the responses.

The responses must not have parts of the original keywords in them. In the word “know,” there is also “no,” which is a keyword. Also, in “smothered,” there is “mother,” which triggers the family-based response. A failsafe must be implemented to ensure that the bot’s logic correctly retrieves the correct response in a given circumstance.

1. The lab suggests using the trim method from the String class. How does it work? Show an example of a String value before and after the trim method is invoked.

The trim method used on a String removes any leading and trailing spaces, leaving just the words in place. It does this by checking for the Unicode character of a “space” and removing all instances of it before and after any other characters in a given String.

String str = “ I like golfing. ”

Str would print as “ I like golfing. ” whereas str.trim() would print as “I like golfing.”

1. Paste the code below showing the additional two noncommittal responses added to getRandomResponse.

/\*\*

\* Pick a default response to use if nothing else fits.

\* @return a non-committal string

\*/

private String getRandomResponse()

{

final int NUMBER\_OF\_RESPONSES = 6;

double r = Math.random();

int whichResponse = (int)(r \* NUMBER\_OF\_RESPONSES);

String response = "";

if (whichResponse == 0)

response = "Interesting, tell me more.";

else if (whichResponse == 1)

response = "Hmmm.";

else if (whichResponse == 2)

response = "Do you really think so?";

else if (whichResponse == 3)

response = "You don't say.";

else if (whichResponse == 4)

response = "Really? I totally agree!";

else if (whichResponse == 5)

response = " Tell me about your favorite foods.";

return response;}

1. Complete the table below. List the additional keywords and responses you added to the getResponse method.

| Keyword | Response |
| --- | --- |
| food, meal | I don't have a favorite food, myself. |
| dog, cat, favorite | That's really cool. Does he/she have a name? |
| mr., mrs. miss. | Your teacher/instructor must be awesome! |

1. What happens when more than one keyword appears in a string? Consider the string "My mother has a dog but no cat." Explain how to prioritize responses in the reply method. Did this impact any changes you made to the getResponse method?

Since the keywords are ordered in the if-statement, the first keyword triggered will produce the corresponding response, regardless of the other keywords in the statement. One way to prioritize responses is to properly position them in order of importance in the if-statement, so the program produces the best response. The other way would be to have the program scan for all keywords first with substrings and then determine the proper response afterwards, ensuring that the bot stays on topic as best as possible. The most of the getResponse method would need to be reprogrammed to meet this new requirement of searching multiple keywords.

# Activity 3

Trace through the following method calls. Write the value of the variables position, before, and after each time the program control reaches the point in the method indicated by the comment.

1. findKeyword( "She’s my sister", "sister", 0);

| Iteration | position | before | after |
| --- | --- | --- | --- |
| 1 | 8 | “ ” | “ ” |

1. findKeyword( "Brother Tom is helpful", "brother", 0);

| Iteration | position | before | after |
| --- | --- | --- | --- |
| 1 | 0 | “” | “ ” |

1. findKeyword( "I can’t catch wild cats.", "cat", 0);

| Iteration | position | before | after |
| --- | --- | --- | --- |
| 1 | 8 | “ ” | “c” |
| 2 | 19 | “ ” | “s” |

Return -1, as “cat” is not a single word in the statement.

1. findKeyword( "I know nothing about snow plows.", "no", 0);

| Iteration | position | before | after |
| --- | --- | --- | --- |
| 1 | 3 | “k” | “w” |
| 2 | 7 | “ ” | “t” |
| 3 | 22 | “s” | “w” |

Return -1, as “no” is not a single word in the statement.

1. Your choice. Fill in the parameters and then trace the method call.  
   findKeyword( "I filled my ink cartridge in my car yesterday.", "car", 0);

| Iteration | position | before | after |
| --- | --- | --- | --- |
| 1 | 17 | “ ” | “t” |
| 2 | 33 | “ ” | “ ” |