Magpie Chatbot Lab Name________________________________

Magpie Chatbot is one of the three official AP Computer Science labs from the College Board. This is a shorter version, edited by me (Haas), with the intent of removing some of the extraneous material. The original lab is 12 pages! A copy of Magpie Chatbot has been placed in your classes folder.

In this lab, you will explore some of the basics of Natural Language Processing (NLP) through the use of Chatbots.

**Show Haas the running program after each activity is complete.**

# Activity 1: Play around with some Chatbots

http://www.elbot.com/
http://alice.pandorabots.com/
http://www.zabaware.com/home.html
https://sites.google.com/site/webtoolsbox/bots

# Activity 2: Modify a Chatbot.

In this activity, you will work Magpie, with a simple implementation of a chatbot. You will see how it works with some keywords and add keywords of your own.

**In BlueJ Open: MagpieActivityNotComplete - Run: MagpieRunner**

Try it out … how does it respond to:

*My mother and I talked last night.*
*I said no!*
*The weather is nice.*
*Do you know my brother?* /*** There is a problem with this one. ***/
*Bye.* /*** exits the program ***/

Look at the code. Make sure you understand how it works.

**Exercises - Add more responses to the *getResponse* method.**

1. 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.*

2. Have it respond favorably when it sees the name of your computer science teacher. For example, a possible statement and response would be:

   Statement: *Mr. Haas always talks about pizza.*
   Response: *He sounds like a good teacher.*

3. Have the code guard against an empty String. Hint: use the String methods *trim()* and *length()*. The *trim* method to remove spaces from the beginning and end. 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.*

4. Add two more noncommittal responses to the possible random responses found in method getRandomResponse().

# Activity 3: Better Keyword Detection

The Magpie class has a method *findKeyword* to detect keywords. Notice that it has a problem with statements like:

*I k**no**w all the state capitals.*
*I like vegetables s**mother**ed in cheese.*

This is because a keyword is embedded in a longer word. Run it!

**Exercise: Modify the method *findKeyword* .**
Improve the method *findKeyword* so that it only detects a keyword if it is not within another word. ***A keyword should not have letters around it.***

Hint: The following line of code will return ***true*** if ***letter*** is not a letter in the alphabet.

```
(letter.compareTo("a") < 0 ) || (letter.compareTo("z") > 0)
```

# Activity 4: Responses that Transform Statements

Single keywords are interesting, but better chatbots look for groups of words. Statements like “I like cats,” “I like math class,” and “I like Spain” all have the form “I like something.” The response could be “What do you like about something?” This activity will respond to groupings of words.

**How does Magpie respond to:**

*I want to build a robot.*
*I want to understand French.*
*Do you like me?*
*You confuse me.*

**Exercises:**

Look at the code. See how it handles “*I want to*” and *you/me* statements. Add code to respond to “I want...”, and “I…you…” statements.

1. Have it respond to “**I want** *something*” statements with “**Would you really be happy if you had** *something*?” In doing this, you need to be careful about where you place the check. Be sure you understand why. For example:

   Statement: *I want fried chicken.*
   Response: *Would you really be happy if you had fried chicken?*

2. Have it respond to statements of the form “**I** something **you**” with the restructuring “**Why do you** something **me?**” For example:

   Statement: *I like you*.
   Response: *Why do you like me?*