

Magpie Chatbot Lab: Student Guide

Introduction

From Eliza in the 1960s to Siri and Watson today, the idea of talking to computers in natural language has fascinated people. More and more, computer programs allow people to interact with them by typing English sentences. The field of computer science that addresses how computers can understand human language is called Natural Language Processing (NLP).

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 lab, 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.

Activity 1: Getting Acquainted with Chatbots (Optional)

Chatbots are programs that are designed to respond like humans to natural language input. Before you write code to create your own chatbot, you will explore some existing chatbots.

Start

Go to <http://sites.google.com/site/webtoolsbox/bots>. Try out several of the chatbots and find one to use for this activity. Your teacher may have a specific list of chatbots for you to try.

Exploration

Have several conversations with your chatbot and answer the following questions:

- How does it respond to “where do you come from”?
- What is the most interesting response?
- What is the most peculiar response?
- How does it respond to “asdfghjkl;”?

Exercises

Work with another group and have two different chatbots converse with each other.

Questions

Simple chatbots act by looking for key words or phrases and responding to them.

1. Can you identify keywords to which your chatbot responds?
2. Think of several keywords and the responses they might cause.

Activity 2: Introduction to the `Magpie` Class

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.

Prepare

Have available:

- the code for the `Magpie`
- the code for the `MagpieRunner`
- a computer with your Java development tools

Start

Get to know the `Magpie` class. Run it, using the instructions provided by your teacher.

How does it respond to:

- My mother and I talked last night.
- I said no!
- The weather is nice.
- Do you know my brother?

Exploration

Look at the code. See how the `if` statement assigns a value to the response and returns that response. The method `getRandomResponse` picks a response from a group of `String` objects.

Exercises

Alter the code:

- 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 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.

- Add two more noncommittal responses to the possible random responses.
- Pick three more keywords, such as “no” and “brother” and edit the `getResponse` method to respond to each of these. Enter the three keywords and responses below.

Keyword	Response

- 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.

Question

1. What happens when a keyword 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 to these statements.