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ANTswers: an interactive library FAQ

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Want to Know More?



http://lib.uci.edu/ALAPoster

BACKGROUND

ANTswers is an AIML chat robot (chatbots) built to answer questions about the UCI Libraries but to also respond to general conversation. ANTswers is available from the library homepage (<http://www.lib.uci.edu>) 24/7, all conversations are anonymous, and no log-in is required.

Introduced in March of 2014 for beta testing, ANTswers is built for an academic library with 2 main libraries, a study center, Special Collections & Archives, and a medical library.

Our goals in creating a library chatbot were to:

- Enhance (not replace) current reference services
- Serve a large number of people at any one time of the day
- Serve a wide range of library patrons
- Use it to someday triage patrons
- Provide UCI specific information

IMPLEMENTATION

ANTswers was in development for a year prior to going live. A focus group of 13 members of library staff was created to discuss the personality, look and feel, and scope of the chatbot. The majority of the AIML programming was completed by 1 staff member (botmaster) with support provided by a programmer in the Libraries' OIT department

- Look / Feel**
 - 8/5/13 – 9/22/13
 - Focus: Focus group determines scope and personality
- Prototype**
 - 9/23/13 – 12/9/13
 - Focus: Development of AIML files and testing
- Internal Testing w/Staff**
 - 1/6/14 – 3/10/14
 - Transcripts reviewed and revision to database made by botmaster.
- Beta Version**
 - 3/25/14 – current
 - ANTswers goes live

BASICS OF .AIML

AIML stands for Artificial Intelligence Markup Language and is an XML compliant language. Each question / answer pair is considered a unit of knowledge and is represented as:

```
<category><pattern>QUESTION</pattern>
<template>Response</template></category>
```

Where <category> defines the unit of knowledge, <pattern> defines the keyword, phrase, or question, and <template> defines the chatbots response. Recursion can be used to map secondary categories to the primary category.

```
<category><pattern>CONTACT YOU</pattern>
<template>You can talk to Danielle Kane at kaned@uci.edu.</template></category>
<category><pattern>CONTACT YOU</pattern>
<template><srai>CONTACT YOU</srai></template></category>
<category><pattern>CONTACT YOU *</pattern>
<template><srai>CONTACT YOU</srai></template></category>
<category><pattern>CONTACT YOU *</pattern>
<template><srai>CONTACT YOU</srai></template></category>
```

Where * replaces keywords before and/or after the main phrase and <srai> is the tag for recursion. Code is organized into files. Files are then uploaded to the open source AIML engine Program-O (<http://blog.program-o.com/>) which is downloaded to one of our library maintained servers.

EVALUATION

While Program-O contains transcript logs they are just viewable. Initially in the testing phases a Google form was used to track statistics on each conversation but the connection between the statistics and the conversation was lost. Moving forward the best solution was a statistics database built using MySQL which pulls transcripts from Program-O and allows for tagging, reviewing (statistics), and forwarding transcripts to other library staff.

View Chatbot Logs

Search Logs

Select Start Date: [input] Filter: [input]

Select End Date: [input] Filter: [input]

Tag: [input] Click to New Tag List

View Log

Sheet Update On	Check #	Chat #	Sheet ID	Time	Time	Are there study rooms in this language library	Conversation Start	Tags	Shared With	Reviewed	Actions
2046	2015-05-08 10:46:56		2046	2015-05-08 10:46:56		Are there study rooms in this language library					View Log
2047	2015-05-10 10:54:29		2047	2015-05-10 10:54:29		is study open 24-7 this week					View Log
2048	2015-05-08 21:53:14		2048	2015-05-08 21:53:14		writing 263				0100010 10:21am	View Log
2049	2015-05-08 10:37:41		2049	2015-05-08 10:37:41		are there any computers in the library available to use				000010 12:29pm	View Log
2049	2015-05-08 14:13:32		2049	2015-05-08 14:13:32		are there any computers in the library available to use				000010 12:29pm	View Log
2043	2015-05-08 11:54:56		2043	2015-05-08 11:54:56		do you have resources regarding the individual foundation				000010 12:57pm	View Log
2043	2015-05-08 11:48:23		2043	2015-05-08 11:48:23		hello?				000010 11:57am	View Log
2041	2015-05-08 10:02:37		2041	2015-05-08 10:02:37		hi allways				000010 11:57am	View Log
2044	2015-05-08 12:02:50		2044	2015-05-08 12:02:50		is there something there when photos changes available to look at all?				000010 11:57am	View Log
2039	2015-05-03 10:52:36		2039	2015-05-03 10:52:36		does UCI have a Wiley Online Library account that I can access as a student for free?				000010 11:58am	View Log

Each transcript is reviewed and statistics are submitted, statistics are kept on the following criteria:

- General Information:
 - Date | Hour | Quarter | Week | Day of Week
- Determining Answer Percentage:
 - Total # of Questions
 - # of library questions – asked | answered | answer rate
 - # of general questions – asked | answered | answer rate
- What Is Being Asked:
 - Questions Type – hours | books | articles | etc.

Statistics are downloaded weekly into an Access Database which is linked to an Excel spreadsheet. At the beginning of each quarter a spreadsheet is created using pivot charts and by refreshing the data weekly statistics can be quickly and easily shared.

MAINTENANCE

Transcripts are reviewed on a daily basis (M-F) in our Lib Web Admin System, chatbots responses are evaluated and changes are made to the AIML code if needed.

2015-05-14 12:42:31

Correct **Guest Answerer** how can I renew a book?
ANTswers Books can be renewed Online through My ANTPAC or My ILL Requests. You can also renew in person or by phone. Langson Library - 2nd floor lobby 949-824-6842, Ayala Science Library - 1st floor lobby 949-824-3692, Geumjeong Medical Library - 714-456-5585, and the Law Library - 2nd floor lobby (in person only).

2015-05-14 12:42:31

Incorrect **Guest Answerer** How soon can I renew a book?
ANTswers Books can be renewed Online through My ANTPAC or My ILL Requests. You can also renew in person or by phone. Langson Library - 2nd floor lobby 949-824-6842, Ayala Science Library - 1st floor lobby 949-824-3692, Geumjeong Medical Library - 714-456-5585, and the Law Library - 2nd floor lobby (in person only).

Opening the AIML for Borrowing & Fines we can find the category for RENEW. We can then add a new category for the phrase, "How soon can I renew." Next time this question is asked the library patron will receive the correct response.

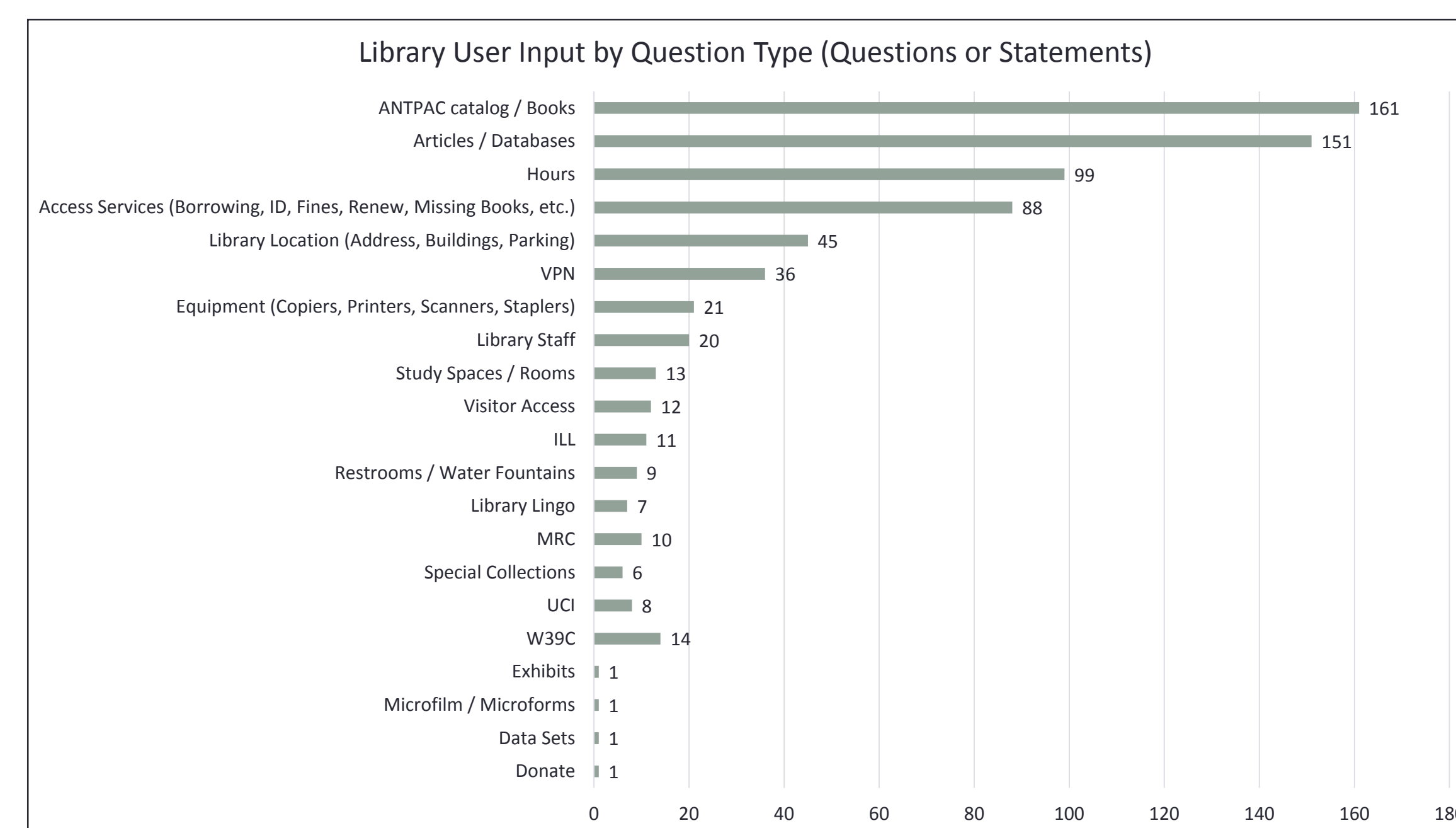
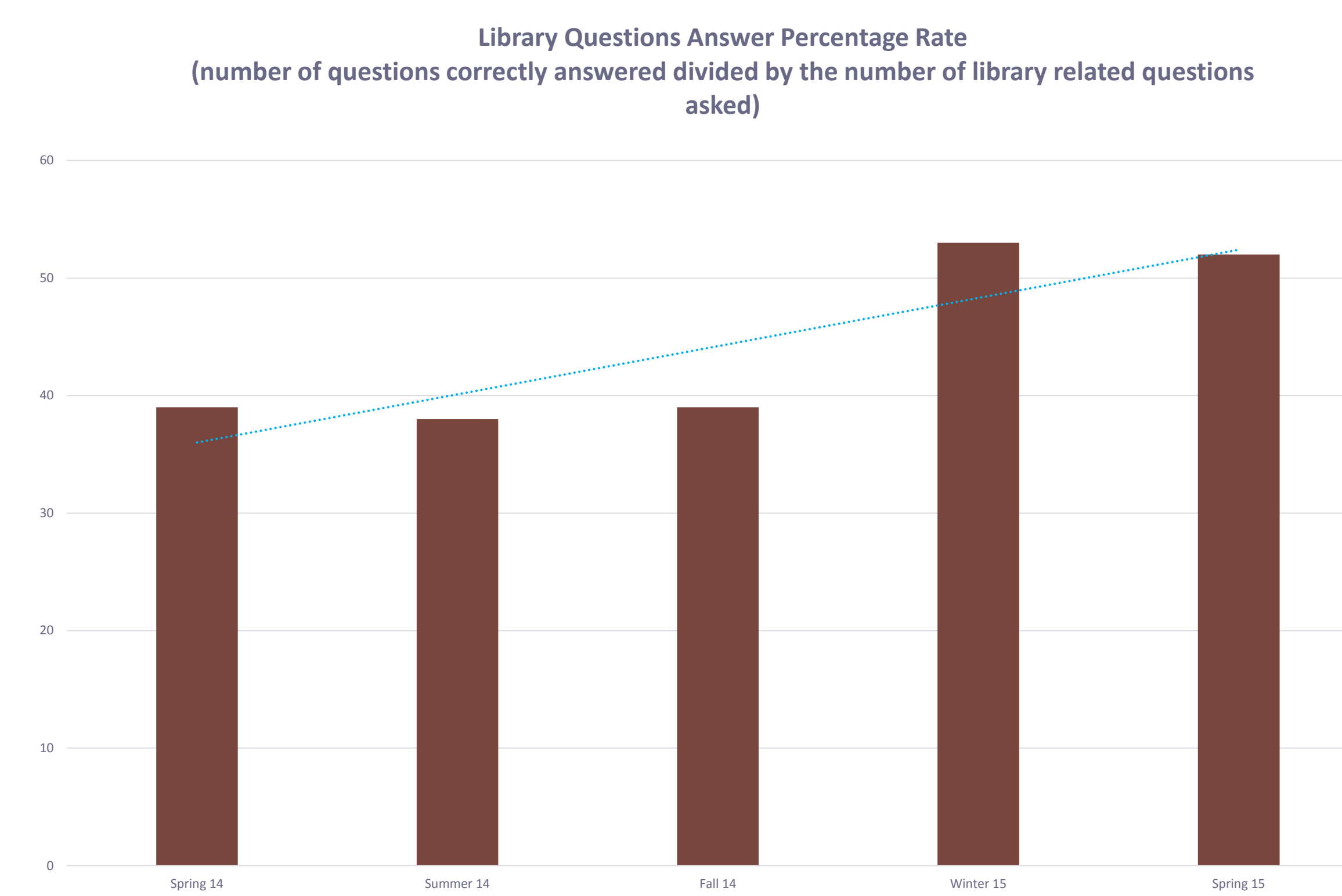
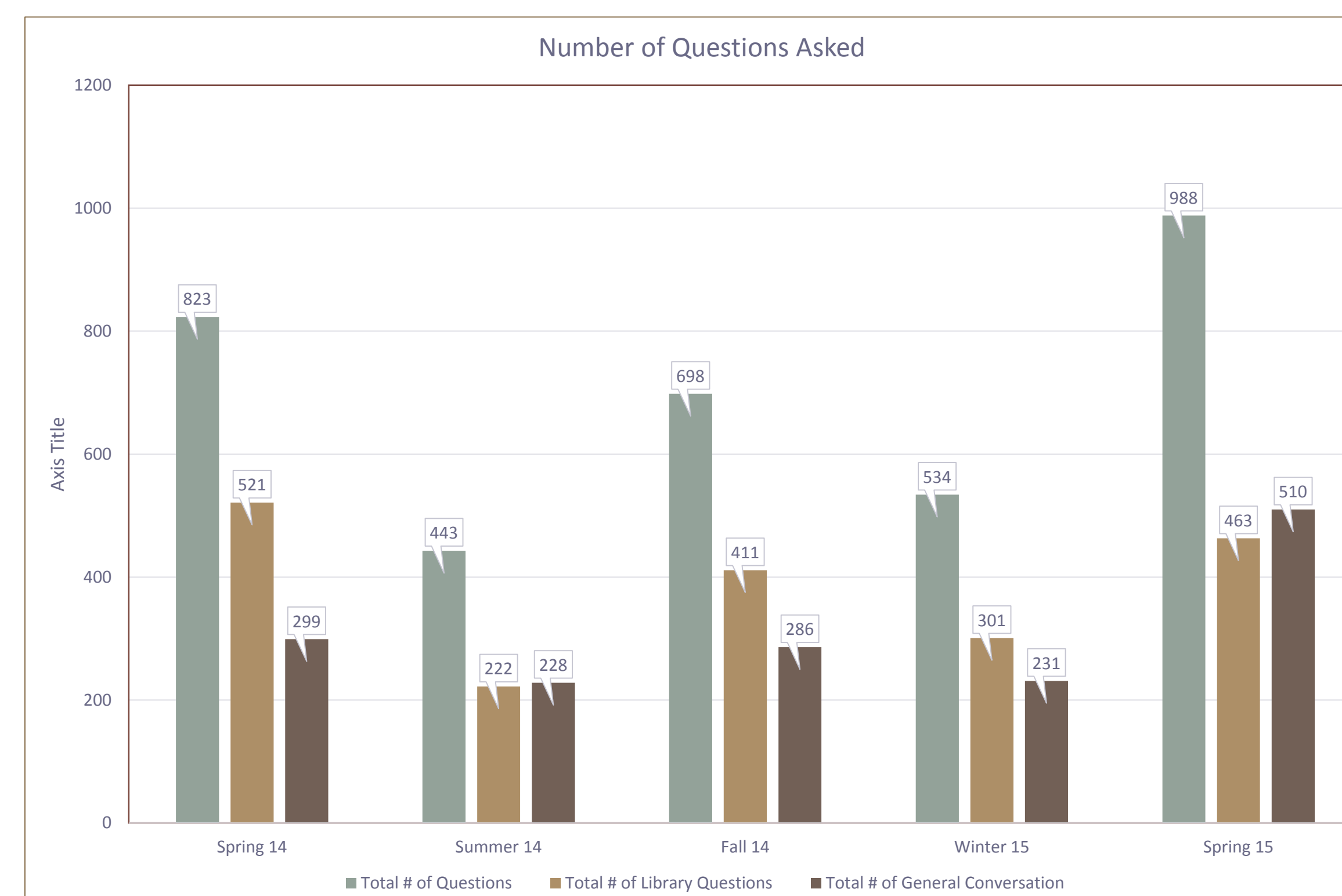
```
11 <category><pattern>RENEW</pattern>
12 <template>Books can be renewed Online through <a href="https://antpac.lib.uci.edu/patroninfo/" target="" blank="">https://antpac.lib.uci.edu/patroninfo/</a> or <a href="https://www.lib.uci.edu/myillrequestsathrough/" target="" blank="">https://www.lib.uci.edu/myillrequestsathrough/</a>. You can also renew in person or by phone: Langson Lib
13 Ayala Science Library - 1st floor lobby 949-824-3692, Geumjeong Medical Library - 714-456-5585, and the Law Library - 2nd floor lobby (
14
15 </category><pattern>HOW SOON CAN I RENEW *</pattern>
16 <template>one year loans may be renewed 90 days before the due date; 90 day loans 45 days before the due date; 28 day loans 8 days
17 before the due date, and 14 day loans 4 days before the due date.</template></category>
```

The file will then be saved, uploaded, and the older version will be deleted from Program-O (<http://blog.program-o.com/>)

RESULTS

Data is from 3/25/14 – 6/9/15

- Total number of conversations: 715
- Total number of questions: 3,486
- Total number of Library questions: 1,918 (55% of total)
- Total number of General questions: 1,554 (45% of total)



LANGUAGE ANALYSIS

<http://www.online-utility.org/text/analyzer.jsp>

Chatlog transcripts are exported and run through a text analyzer on a quarterly and yearly basis. Information on how library users are asking questions are used to refine the ANTswers database but is also of interest as the UCI Libraries works to redesign our library website.

Number of characters (including spaces) :	126547
Number of characters (without spaces) :	77342
Number of words :	18408

Some top phrases containing 4 words (without punctuation marks)			
Phrase	Occurrences	Phrase	Occurrences
Where can I find	62	Check out a book	17
How do I find	46	Time does the library	16
Can you help me	32	Can I check out	16
How do I get	23	How do I use	14
Is the library open	23	I am looking for	14
What is your name	21	I want articles on	13
I check out a	19	How do I access	13
What time does the	18		

Some top phrases containing 3 words (without punctuation marks)			
Phrase	Occurrences	Phrase	Occurrences
How do I	200	What are the	33
Where can I	82	Can you help	32
Can I find	73	Does the library	29
What is the	67	I need to	28
What is your	51	Who is the	27
How can I	48	Do I get	23
Where is the	47	Check out a	21
Do you have	37	What time is	21
Is the library	36		

FUTURE PLANS

- Redesign of ANTswers' library related files due to a changing library web presence.
- Continue to refine database using knowledge gained from text mining transcripts – goal is to eventually reach a 95% answer rate for library questions. ANTswers will then move out of Beta.
- A research project is currently underway to compare how questions are asked in in-person reference, QuestionPoint (24/7), and ANTswers.

BUILD YOUR OWN CHATBOT

This collection includes approximately 130 AIML files that are available for download and for the use in creating other library chatbots. You will need to review and edit each of the files for your particular institution. To implement your own library chatbot you will need a server, chatbot software (we used Program-O), editing software (we used Notepad++) and at least minimal experience with HTML, CSS, Javascript and AIML