

Elizabeth Self-Teach Exercises

(from §1.6 in *Elizabeth.pdf*)

There are five exercises, designed to be progressively more complex, and each introducing new features of the scripting language. In each case you are given a dialogue and your task is to write a script file which produces the behaviour shown in the dialogue. By the time you have completed Exercise 5, you should be ready to start producing a complete dialogue script of your own from scratch.

Make sure that you have the User Guide (*Elizabeth.pdf*) handy as you work through these, because the exercises often refer to sections of that. The slides on the first four pages of *Elizabeth_Handout.pdf* might also be useful for summary or quick reference.

Exercise 1: Basic keyword-response script

For this exercise, your task is to produce a simple script in which the keywords are the acronyms ‘AI’ and ‘NLP’. The script should produce the following behaviour:

```
HELLO, YOU CAN ASK ME WHAT SOME ACRONYMS MEAN.
what does AI mean?
AI MEANS ARTIFICIAL INTELLIGENCE.
what about NLP?
NLP MEANS NATURAL LANGUAGE PROCESSING.
what about CAD?
I DON'T KNOW ABOUT THAT ONE.
but you did know AI
AI MEANS ARTIFICIAL INTELLIGENCE.
I don't think you know many acronyms
I DON'T KNOW ABOUT THAT ONE.
```

This exercise shouldn't require anything beyond an understanding of the Illustrative Script and Conversation (in §1.4 of the User Guide), which probably provides the best way in to the system, because examples are often so much easier to understand than description. However if you need more detailed discussion of *Elizabeth*'s mechanisms, that section provides relevant links to other parts of the User Guide, notably §2.3.2 on simple keyword transformations, §2.2.1 on ‘welcome’ messages, and §2.2.4 on ‘no-keyword’ responses.

Exercise 2: Simple use of memory

For this exercise the keyword ‘remember’ in the user input should cause the phrase following it to be stored in memory. The contents of the memory will then be stated in response to the correct keyword phrase (which you need to work out). Your script should produce the behaviour shown in the following two conversations:

```
HI, I CAN REMEMBER THINGS.
remember my password
OK, I'LL REMEMBER MY PASSWORD.
what's the password?
SORRY I DON'T UNDERSTAND.
remind me what my password is
YOU ASKED ME TO REMEMBER MY PASSWORD.
remember Joseph Weizenbaum
OK, I'LL REMEMBER JOSEPH WEIZENBAUM.
remind me
YOU ASKED ME TO REMEMBER JOSEPH WEIZENBAUM.
remind
SORRY I DON'T UNDERSTAND.
```

```

tell me
    SORRY I DON'T UNDERSTAND.

    HI, I CAN REMEMBER THINGS.
remind me
    SORRY I DON'T UNDERSTAND.
remember my name
    OK, I'LL REMEMBER MY NAME.
my name is Joe
    SORRY I DON'T UNDERSTAND.
remind me what my name is
    YOU ASKED ME TO REMEMBER MY NAME.
remember the armadillo
    OK, I'LL REMEMBER THE ARMADILLO.
remember my pet armadillo
    OK, I'LL REMEMBER MY PET ARMADILLO.
remind me
    YOU ASKED ME TO REMEMBER MY PET ARMADILLO.

```

Again refer to the Illustrative Script and Conversation in §1.4 of the User Guide and (if necessary) the other sections mentioned in connection with Exercise 1, but also see §2.4 on ‘Phrase Memorisation and Recall’.

Exercise 3: Transformations and more memory

This exercise requires you to modify the script you did for Exercise 2 (but save your existing script first under a separate name, so you don’t lose it). Your Exercise 2 script should produce the behaviour in the last conversation shown above. For Exercise 3, modify the script so it produces the behaviour below. Note the different response in the third line, and how ‘my’ at various points becomes ‘YOUR’.

```

    HI, I CAN REMEMBER THINGS.
remind me
    YOU ASKED ME TO REMEMBER NOTHING SO FAR.
remember my name
    OK, I'LL REMEMBER YOUR NAME.
my name is Joe
    SORRY I DON'T UNDERSTAND.
remind me what my name is
    YOU ASKED ME TO REMEMBER YOUR NAME.
remember the armadillo
    OK, I'LL REMEMBER THE ARMADILLO.
remember my pet armadillo
    OK, I'LL REMEMBER YOUR PET ARMADILLO.
remind me
    YOU ASKED ME TO REMEMBER YOUR PET ARMADILLO.

```

The help references here are the same as for Exercise 2, plus §2.3.4 of the User Guide on output transformations. Note that the output in the third line is relatively easy to achieve because it begins with the words ‘YOU ASKED ME TO REMEMBER’ (so you can achieve this by setting an initial memory within your script). But you might find it interesting to consider how you would instead produce a different form of words, such as ‘YOU HAVEN’T ASKED ME TO REMEMBER ANYTHING YET’. One simple method is to use two keyword sets which have the same keyword, but where the response in the first set contains a memory, and hence only becomes available when that memory has become defined (this is illustrated in §2.4.1, ‘Remembering More Than One Thing’). But you can also use the more advanced techniques from §4.2, ‘Dynamic Script Processing’ and §4.5, ‘Defining and Using Conditional Commands’).

Exercise 4: Remembering more than one thing

For Exercise 4 the script has to deal with remembering more than one thing at a time. The required behaviour is shown in the following dialogue.

```
HI, I CAN REMEMBER A NAME AND A NUMBER.
remember the name Elizabeth
OK, I'LL REMEMBER THE NAME ELIZABETH.
recall the number
SORRY, I DON'T UNDERSTAND.
remember the number 42
OK, I'LL REMEMBER THE NUMBER 42.
recall the name
THE NAME IS ELIZABETH.
recall the number
THE NUMBER IS 42.
what is the name?
SORRY, I DON'T UNDERSTAND.
```

Again this exercise requires the techniques of ‘Phrase Memorisation and Recall’ (§2.4 of the User Guide), but now augmented by the use of index codes as described in §2.4.1, ‘Remembering More Than One Thing’.

Exercise 5: Dynamically altering the script

This exercise is more challenging than the previous ones. The following conversation concerns the numbers *one* and *two*, their Roman forms (‘I’ and ‘II’) and the familiar Arabic equivalents (‘1’ and ‘2’). Note that the response to typing ‘one’ or ‘two’ depends on what has gone on before in the conversation. Also note that before Roman or Arabic has been specified, the response to ‘one’ is neither ‘I’ nor ‘1’.

```
I KNOW BOTH ROMAN AND ARABIC VERSIONS OF ONE AND TWO.
one
IS THAT ROMAN OR ARABIC?
roman
OK, I'LL USE ROMAN NUMERALS.
one
I.
two
II.
arabic
OK, I'LL USE ARABIC NUMERALS.
one
1.
two
2.
three
SORRY NO IDEA.
roman
OK I'LL USE ROMAN NUMERALS.
one
I.
two
II.
```

There are various ways to achieve the behaviour required here, and you might find it interesting to experiment with different techniques. Some just involve the saving and/or deletion of memories (as explained in §2.4 of the User Guide, ‘Phrase Memorisation and Recall’, and §4.4, ‘Giving Direction to a Conversation’) and possibly the use of conditional commands (see §4.5, ‘Defining and Using Conditional Commands’). Others involve Dynamic Script Processing (see §4.2), such as the creation and deletion of keywords etc. while the conversation is running.