

ELIZA: dialogue with a machine

(Symbolic) programming for non-(symbolic) programmers

Advanced Programmers

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Practical matters

- prerequisites for this class
 - LISP running on your machine
 - profound LISP knowledge
- additional material
 - slides
 - bag of goodies
 - Hyperspec/ - function reference for Common Lisp
 - slime.pdf - SLIME user manual
 - pattern-matcher.lisp - end point of today / starting point for tomorrow

Sample dialogue

P: Men are all alike.

E: IN WHAT WAY

P: They're always bugging us about something or another.

E: CAN YOU BE MORE SPECIFIC

P: Well, my boyfriend made me come here.

E: YOUR BOYFRIEND MADE ME COME HERE

P: He says I'm depressed much of the time.

E: I AM SORRY TO HERE YOU ARE DEPRESSED

P: It's true. I am unhappy.

E: DO YOU THINK COMING HERE WILL HELP YOU NOT TO BE UNHAPPY

P: I need some help. That much seems certain.

E: WHAT WOULD IT MEAN TO YOU IF YOU GET SOME HELP

P: Perhaps I could learn to get along with my mother.

E: TELL ME MORE ABOUT YOUR FAMILY

Unravelling the ‘magic’

- pattern matcher: detects pattern & bindings for variables in pattern
 - “I need ?X” / “I need help”
 - ((?X .“help”))
- selects one of possible responses & substitute variables using bindings
 - “What would it mean if you got ?X”
 - “What would it mean if you got help”

Pattern matcher v0.1

- recursive traverse pattern & input
- maintain set of bindings
 - extend set of bindings for each unbound variable
 - if variable is bound make sure it is consistent with known value

Pattern matcher v0.2

- problem: “?P need ?X” / “Mr. Hulot and I need a vacation”
- goal: ((?P . “Mr. Hulot and I”) (?X . “a vacation”))
- solution: segment matching
 - trick: use next constant in pattern to detect segment

Missing function

```
(defun starts-with (list x)
  "Is this a list whose first element is x?"
  (and (consp list)
        (eql (first list) x)))
```

Tomorrow's mission

- problem: ((?X adj) (?Y noun)) / ((“un” art) (“petit” noun) (“ballon” adj) (“proche-de” prep) (“la” art) (“boîte” noun) (“rouge” adj))
- goal:
 - ((?X .“petit”) (?Y .“ballon”))
 - ((?X .“rouge”) (?Y .“boîte”))
 - ((?X .“petit”) (?Y .“boîte”))
 - ((?X .“rouge”) (?Y .“ballon”))
- solution: ?