Natural Language Processing Homework 5

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README

1 Simplify (Q2, no need to turn in)

Mostly just notes for myself

check out d) (λa a)(λb f(b))

f), simplifying (λx green(x))(y) = green(y). Since the result holds for any y, what can you conclude about the relation between $\lambda x green(x)$ and $green$?

Same? $\lambda x green(x)$ applied to anything y means that that something y is green. Similarly, $green$ as a function can be applied to anything z that is green. In any case, they refer to the same set of things??

wait i don't get o)

2 (Q3) Simplify

2.1 John and Mary

Given $f(John = loves(Mary, John)$

- $(\lambda x loves(Mary, x))$(John)
- $loves(Mary, John)$ or alternatively, depending on semantics, "Mary loves John" or "John loves Mary".

2.2 John loves Mary

With the parse tree given for this sentence (as it's in in the semantics slideshow page 52), λx represents "John" and is the NP and λy represents Mary in the VP "loves Mary". If it is flipped, then the parse tree would be different. Furthermore, we'd have to deal with a change in the order we parse. If the meaning is flipped, we'd have to handle λy first, however that is impossible because λx is outside and thus has to be handled first.

2.3

- $(\lambda j \forall x woman(x) \Rightarrow loves(x, j))$
- Assuming that we will continue with the given semantic that loves(Mary, John) means that John loves Mary.

  f : for all x, if x is a woman, then j loves x.

  f(John) : for all x, if x is a woman, then John loves x.

2.4 ***part d

f = λy Obviously(y)

In order to construct "Sue obviously loves Mary", let y = $(\lambda x loves(Mary, x))$. Then we get

f($\lambda x loves(Mary, x)$) =

2.5 part e

f = $\lambda m(\lambda j(\lambda e$ act(e, loving), lovee(e, m), lover(e, j)))

2.6 part f

2.7 part g

3 Q4

4 Q5

5 Q6 : english-fullquant.gra

5.1 attr

For *two*, we are ensuring that the two things that we are quantifying are not the same thing, with the $first$ and *second* quantifiers on the *dom* and *pred* variables. Otherwise, we can end up counting a given something twice, which in reality then doesn't mean that we have two, but rather that we just counted one thing twice.

The singular *the* idek "the book"
exhaustive "the books"

5.2 ???

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