Cogs 543 | Fall 2023
Computational Semantics | Assignment 4 | due Jan 2, before class

Here is your lexicon:

walks :=	$\lambda x.walk'x$ ::	et
loves :=	$\lambda x\lambda y.love'xy$ ::	$e(et)$
reads :=	$\lambda x\lambda y.read'xy$ ::	$e(et)$
John :=	$\lambda p.p\,j'$ ::	ett
Mary :=	$\lambda p.p\,m'$ ::	ett
woman :=	$\lambda x.woman'x$ ::	et
book :=	$\lambda x.book'x$ ::	et
blue :=	$\lambda p\lambda x.blue'x \wedge p\,x$ ::	$et(et)$
is :=	$\lambda p\lambda x.p(\lambda x.x = x)x$ ::	$et(et)(et)$
no :=	$\lambda p\lambda q.\neg(\exists x.px \wedge qx)$ ::	$et(ett)$
a :=	$\lambda p\lambda q.\exists x.px \wedge qx$ ::	$et(ett)$
every :=	$\lambda p\lambda q.\forall x.px \rightarrow qx$ ::	$et(ett)$
ACC :=	$\lambda k\lambda q\lambda y.k(\lambda x.q\,x\,y)$ ::	$et(ett)(e(et)et)$
NOM :=	$\lambda p.p$ ::	$ett(ett)$

Q 1. (20%)

The lexicon above is one of the possible models of copula and adjectival semantics. It also models two case markers the *nominative* and the *accusative*. Make sure that the lexicon can deliver what it aims to deliver. Indicate any errors you find. Do not think taht there *must* be errors. The lexicon may just be fine. Those like the following structures should be interpretable correctly.

(1) a. ((NOM John) (reads (ACC (every (blue book))))).
b. ((NOM Every woman) (reads (ACC (every (blue book))))).

Q 2.

You are required to propose a new lexicon, so that an expression like:

(2) John killed Mary with a knife.

receives the meaning,

(3) $\lambda e.killing'e \wedge agent'e\,j' \wedge patient'e\,s' \wedge \exists x.knife'x \wedge instr'e\,x$

Notice that (3) is not a type t interpretation, it is rather vt, where v is the type of eventualities. Therefore, (3) denotes a set of event(ualitie)s.

You need to model two alternative approaches:

(a) (40%) the predicates $agent'$ and $patient'$ are contributed by the verb *kill*;

(b) (40%) they come from case marking.

in either case the predicate $instr'$ will be contributed by *with*.