CS6320, Fall 2020
Dr. Mithun Balakrishna
Homework 7

1. Coreference Resolution

Apply the Lappin and Leass pronoun resolution algorithm to resolve the pronouns in the following text passage:

Neil Ferguson is prolific, well-paid and a snappy dresser. Stephen Moss hated him, at least until he spent an hour being charmed in the historian's Oxford study.

The following salience weights can be used for the computation:

Sentence recency	100
Subject emphasis	80
Existential emphasis	70
Accusative (direct object) emphasis	50
Indirect object and oblique complement emphasis	40
Non-adverbial emphasis	50
Head noun emphasis	80

2. Logic and Semantic Representation (25 points)

Bill Gates, the founder of Microsoft, generously donates money to charities every year.

a. Provide a Davidsonian logic representative of the above sentence.

b. Identify the semantic relations in the sentence. Write them as semantic triples R(x,y). Consider only the sematic relations in the list below.

Semantic Relation	Definition
agent(X,Y)	X is the agent for Y
beneficiary(X,Y)	X is a beneficiary of Y
cause(X,Y)	X causes Y
instrument(X,Y)	X is an instrument in Y
justification(X,Y)	X is the reason/motive/justification for Y
location(X,Y)	X is the location of Y or where Y take place
manner(X,Y)	X is the manner in which Y happens
part-whole(X,Y)	X is a part of Y
quantity(X,Y)	X is a quantity of Y; Y can be an entity or event
result(X,Y)	X is the result consumed in/from/of Y
synonymy(X,Y)	X is a synonym/name/equal for/to Y
theme(X,Y)	X is the theme consumed in/from/of Y
time(X,Y)	X is the time of Y (when Y take place)
value(X,Y)	X is a value of Y

c. Provide a new logic representation that includes semantic relations.

d. Using the basic semantic relations that you identified for Question 4.b, write the semantic calculus rule to create a new semantic relation:

      Donates-To(X, Y): X donates to Y