Exercises: Semantics Tutorial
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The following exercises are based on Chapter 2 of Levine et al. (in prep.). Please also consult the material available in the wiki of the textbook, in particular:
`www.lexical-resource-semantics.de/wiki/index/Wiki-ch2`
You may also find the exercises to the chapter helpful:
`http://www.lexical-resource-semantics.de/wiki/index.php/Exercise-ch2`

Consider the following brief summary of the basic plot of *The Big Bang Theory*:
The show is centered on five characters: roommates Leonard Hofstadter and Sheldon Cooper; Penny, a waitress and aspiring actress who lives across the hall; and Leonard and Sheldon's equally geeky and socially awkward friends and co-workers, aerospace engineer Howard Wolowitz and astrophysicist Raj Koothrappali.
Source: `http://en.wikipedia.org/wiki/Big_Bang_Theory`

Task 1:   Model and constants

1. Define a universe consisting of **three** main characters of the show.

2. Define names for the three individuals in your universe appropriate to the scenario.

3. Define **two** properties appropriate to the scenario.

4. Define **one** 2-place relation appropriate to the scenario.

Task 2:   Formulæ

1. Using the vocabulary from Task 1, write down **two** atomic formulæ.

2. Indicate whether the formalæ are true or false in your model.

Task 3:   Complex formulæ

1. Combine your two formulæ from Task 2 into a complex formula. Use the connectives "¬", "∧", "∨", or "⊃."

2. Is the complex formula true or false in your model?

Task 4:   Truth table
Provide the truth table for the following statement: $(\neg p) \supset (q \vee p)$.

Task 5:   Quantifiers

1. Using your vocabulary from Task 1, write down **one** formula with a quantifier.

2. Is the formula true in your model?

3. In which way would your model have to be different to make the formula false (or, in case the formula is false: to make it true in your model)?

References

Levine, Robert D., Richter, Frank, and Sailer, Manfred (in prep.). Formal Semantics. An Empirically Grounded Appraoch. Manuscript Ohio State University and Goethe-University Frankfurt.