Entrance Test Semantics 2
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You can reach a total of 65 points in this test. You have to reach more than 50% of the points to be admitted to the class, i.e. at least 32 points.
Please send your solution as a pdf file to: f.richter@em.uni-frankfurt.de
Deadline is **October 3, 2017**.

1 Predicate Logic

Task 1: Ambiguous sentences (7 points)
Consider the following ambiguous sentences:

(1)   a.   Every ship went through a tempest.
       b.   Miranda pitied the men on the ship.
       c.   Antonio tried to persuade Sebastian to kill his brother.
       d.   Prospero and Antonio arrived on the island.

1. For **each** of these, determine the type of ambiguity.

2. Pick **one** of the sentences provide an unambiguous paraphrase for the possible readings.

Task 2: Model and Interpretation (7 points)

1. Define a universe that comprises of Miranda and Prospero.

2. Define an interpretation of the names **miranda** and **prospero** in an intuitively plausible way.

3. Define an interpretation of the properties $\textbf{young}^1$, $\textbf{sorcerer}^1$, and $\textbf{islander}^1$ in such a way that Miranda is young, Prospero is a sorcerer and both are islanders.

4. Define an interpretation of the 2-place predicates $\textbf{child-of}^2$ and $\textbf{like}^2$ in such a way that Miranda is Prospero's child and Miranda and Prospero like each other and themselves.

Task 3: Formulæ (5 points)
Write down logical formulæ that express the meaning of the following sentences.

1. Miranda is a sorcerer.

2. Prospero is young but a parent to Miranda.

3. If Prospero is not an islander, then Miranda likes Prospero.

Task 4: Interpreting formulæ (8 points)
Compute the interpretation of the following formulæ step by step.

1. $\textbf{young}^1(\textbf{miranda})$

2. $\neg\textbf{like}^2(\textbf{prospero}, \textbf{prospero})$

3. $\textbf{sorcerer}^1(\textbf{prospero}) \supset \textbf{child-of}^2(\textbf{prospero}, \textbf{miranda}))$

Task 5: Variables (3 points)
Provide a g-function that maps the variables y and z to individuals in the universe and compute the interpretation of the following formula with respect to the model and your g.

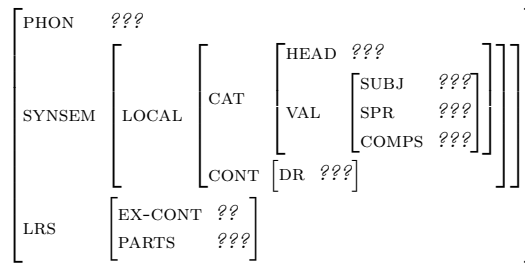(i) **child-of**$^2(y, z)$

Task 6: Quantifiers (4 points)
Write down logical formulæ that express the meaning of the following sentences. Are the formulæ true in **your** model? Give a short reason (you don't need to compute the truth value).

1. A sorcerer likes Miranda. 2. Every islander is young.

2   Lexical Resource Semantics

Task 7: Analysis: Lexicon (9 points)
Provide the lexical entries for the words in the sentence *Miranda likes Prospero.* Use the features as given in the AVM below. You may ignore the EX-CONT value on words.

$$
\begin{bmatrix}
\text{PHON} & \textit{???} \\
\text{SYNSEM} & \begin{bmatrix} \text{LOCAL} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \textit{???} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \textit{???} \\ \text{SPR} & \textit{???} \\ \text{COMPS} & \textit{???} \end{bmatrix} \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{DR} & \textit{???} \end{bmatrix} \end{bmatrix} \end{bmatrix} \\
\text{LRS} & \begin{bmatrix} \text{EX-CONT} & \textit{??} \\ \text{PARTS} & \textit{???} \end{bmatrix}
\end{bmatrix}
$$

Task 8: Analysis: Syntactic structure and semantic combinatorics (13 points)
Using the lexical entries from Task 7, provide the syntactic structure of the sentence *Miranda likes Prospero.* Indicate **all** the values for all features at each node in the tree.

Task 9: General mechanisms of LRS (6 points)

1. Enumerate all possible logical forms that would be compatible with the PARTS list of the sentence from Task 8.

2. How does LRS prevent some of the hypothetically possible logical forms that you listed in subtask 1 from occurring?

Task 10: Local semantics (3 points)
The feature DR, which is situated under SS LOCAL CONTENT, contains variables or logical names. Briefly explain how it interacts with syntactic argument selection by verbs (via the features SUBJ and COMPS) to ensure that verbs correctly connect their logical arguments to their syntactic arguments.