Semantics and reasoning

1 From the lecture

1. What is a counter-model? How can a counter-model be used to show that one set of triples is not entailed by another set of triples?
2. Explain briefly. What is the difference between entailment and inference?
3. How to we deal with literals in our "simplified semantics"?
4. How do we deal with blank nodes in our semantics?
5. What do we mean by monotonic reasoning?
6. What do we mean by a closed world assumption?
7. How can we interpret a SPARQL aggregation (count, sum etc.) query with an open world assumption?
8. What is soundness and completeness of a calculus?

2 Literals and blank nodes

Let Γ be the RDF graph below. You will need to interpret both blank nodes and literals using the semantics laid out in the lectures.

1. Create an interpretation $\mathcal{I}_1$ such that $\mathcal{I}_1 \models \Gamma$.
2. Create an interpretation $\mathcal{I}_2$ such that $\mathcal{I}_2 \not\models \Gamma$.

```
1  @prefix : <http://www.example.org#> .
2  @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
3
4  :Tweety rdf:type   :Bird .
5  :Nixon  rdf:type   :Republican .
6  :Nixon  rdf:type   :Quacker .
7  :Nixon  :listensTo :Tweety .
8  :Nixon  :likes     [ a :Bird ]  .
```

```
9  []      :likes     :Nixon .
10  :Nixon  :hasNickname "Ric" .
11  :Tweety :hasNickname "Mr. Man" .
12  :Tweety :likes     :Tux .
```