# Exercise 2.1

1. sim:marge rdf:type foaf:Person
2. sim:Marge fam:hasSpouse sim:Homer – P
3. fam:hasSpouse rdfs:domain foaf:Person – P
4. sim:Marge rdf:type foaf:Person – rdfs2, 1, 2
5. fam:hasSister rdfs:subPropertyOf fam:isRelativeOf
6. fam:hasSister rdfs:subPropertyOf fam:isRelativeOf – P
7. fam:isRelativeOf rdfs:subPropertyOf fam:isRelativeOf – P
8. fam:hasSister rdfs:subPropertyOf fam:isRelativeOf – rdfs5, 4, 5
9. sim:Marge rdf:type fam:Woman

No, this does not follow the derivation, as the only thing we know about sim:Marge is that it is a foaf:Person and that sim:Homer has the relationship fam:hasSpouse to her. But since fam:hasSpouse is gender-neutral we can not deduct that she is a foaf:Person from this statements

1. sim:Herb rdf:type fam:Man
2. \_:2 fam:hasBrother sim:Herb – P
3. fam:hasBrother rdfs:range fam:Man – P
4. sim:Herb rdf:type fam:Man – rdfs3, 7, 8
5. sim:Lisa fam:isRelativeOf sim:Homer
6. sim:Lisa fam:hasFather sim:Homer – P
7. fam:hasFather rdfs:subPropertyOf fam:hasParent – P
8. fam:hasParent rdfs:subPropertyOf fam:isRelativeOf sim:Homer – P
9. sim:Lisa fam:hasParent sim:Homer – rdfs7, 10, 11
10. sim:Lisa fam:isRelativeOf sim:Homer – rdfs7, 12, 13
11. sim:Lisa fam:hasMother sim:Marge

We know that som:Lisa has the property fam:hasParent to two blank nodes. However none of hese blank nodes have a referance to sim:Marge, so therefore we cannot deduct that sim:Lisa fam:hasMother sim:Marge.

1. sim:Patty rdf:type foaf:Person
2. \_:1 fam:hasSister sim:Patty – P
3. fam:hasSister rdfs:range fam:Person – P
4. sim:Patty rdf:type foaf:Person – rdfs3, 15, 16
5. This can not be proven since sim:Lisa has the property fam:hasParent to both blank nodes \_:1 and \_:2. But since it is never stated that `\_:2 fam:hasSister sim:Patty` we can not derive to this conclusion.
6. \_:d fam:hasBrother \_:e . \_:d fam:hasBrother \_:f
7. \_:2 fam:hasBrother sim:Herb
8. Since \_:2 is the only one with the property `fam:hasBrother`, the instances of \_:e and \_:f both has to refer to `sim:Herb`