作业1 知识工程与知识图谱

1. Consider the following RDF document:

<rdf:RDF

xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"

xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"

xmlns:iswww="http://sw.edu/#"

>

<rdf:Description rdf:about="http://sw.edu/#germany">

<rdf:type rdf:resource="http://sw.edu/#country" />

</rdf:Description>

<rdf:Description rdf:about="http://sw.edu/#capital\_of">

<rdf:type

rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Property"/>

<rdfs:domain rdf:resource="http://sw.edu/#city" />

<rdfs:range rdf:resource="http://sw.edu/#country" />

</rdf:Description>

<rdf:Description rdf:about="http://sw.edu/#country">

<rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class" />

<rdfs:label xml:lang="de">Land</rdfs:label>

</rdf:Description>

<rdf:Description rdf:about="http://sw.edu/#berlin">

<rdfs:label xml:lang="en">Berlin</rdfs:label>

<rdf:type rdf:resource="http://sw.edu/#city" />

<iswww:capital\_of rdf:resource="http://sw.edu/#germany" />

</rdf:Description>

<rdf:Description rdf:about="http://sw.edu/#city">

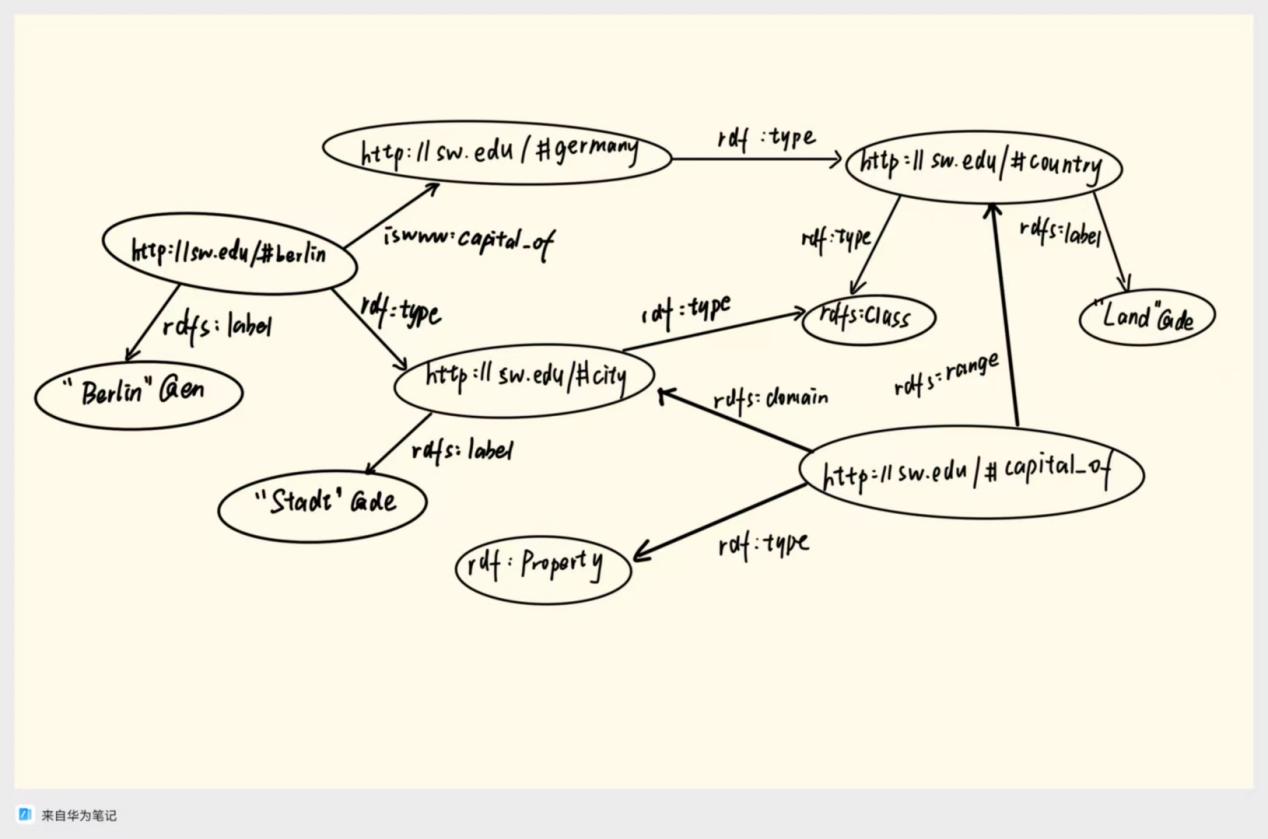
<rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class" />

<rdfs:label xml:lang="de">Stadt</rdfs:label>

</rdf:Description>

</rdf:RDF>

Draw the graph representation of the above document.



1. Translate the culinary-allergic example ontology as follows into RDF/XML syntax.



<rdf:RDF

xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"

xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"

xmlns:ex="http://example.org/ns#"

>

<rdf:Description rdf:about="ex:vegetableThaiCurry">

<ex:thaiDishBasedOn rdf:resource="ex:coconutMilk"/>

</rdf:Description>

<rdf:Description rdf:about="ex:sebastian">

<rdf:type rdf:resource="ex:AllergicToNuts"/>

<ex:eats rdf:resource="ex:vegetableThaiCurry"/>

</rdf:Description>

<rdf:Description rdf:about="ex:AllergicToNuts">

<rdfs:subClassOf rdf:resource="ex:Pitiable"/>

</rdf:Description>

<rdf:Description rdf:about="ex:thaiDishBasedOn">

<rdfs:domain rdf:resource="ex:Thai"/>

<rdfs:range rdf:resource="ex:Nutty"/>

<rdfs:subPropertyOf rdf:resource="ex:hasIngredient"/>

</rdf:Description>

<rdf:Description rdf:about="ex:hasIngredient">

<rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#ContainerMembershipProperty"/>

</rdf:Description>

</rdf:RDF>

1. Decide whether the following propositions can be satisfactorily modeled in RDFS and, if so, give the corresponding RDF(S) specification:

• Every pizza is a meal.

• Pizzas always have at least two toppings.

• Every pizza from the class PizzaMargarita has a Tomato topping.

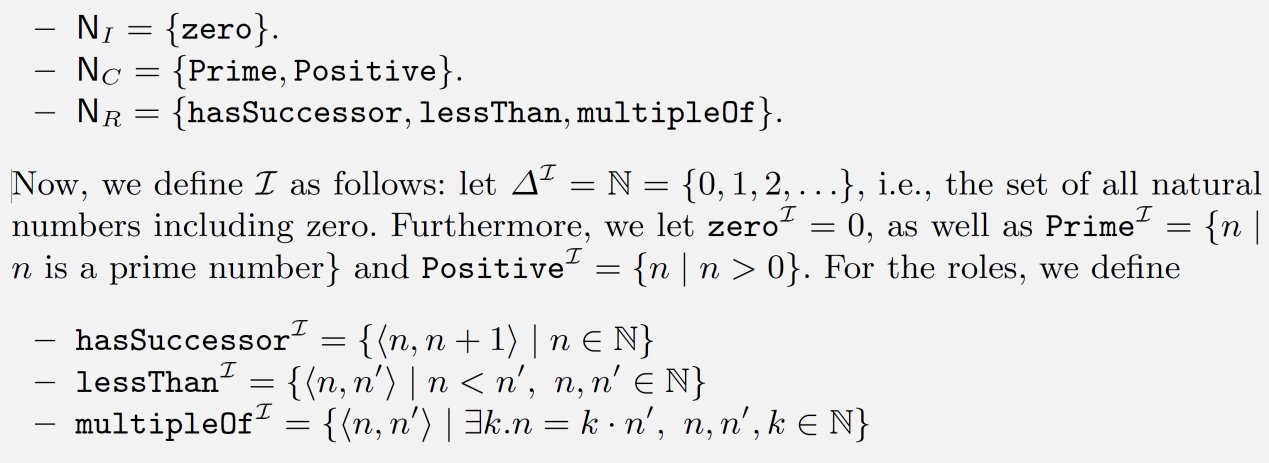
• Everything having a topping is a pizza.

• No pizza from the class PizzaMargarita has a topping from the class

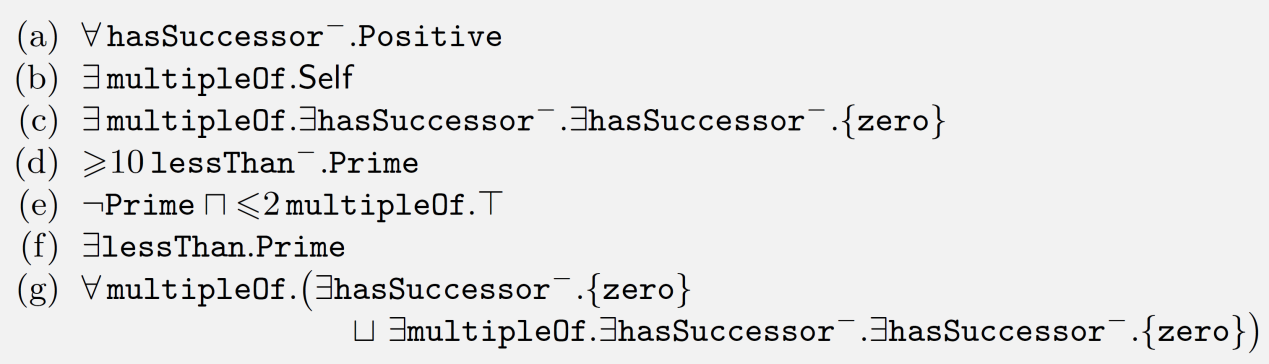
Meat.

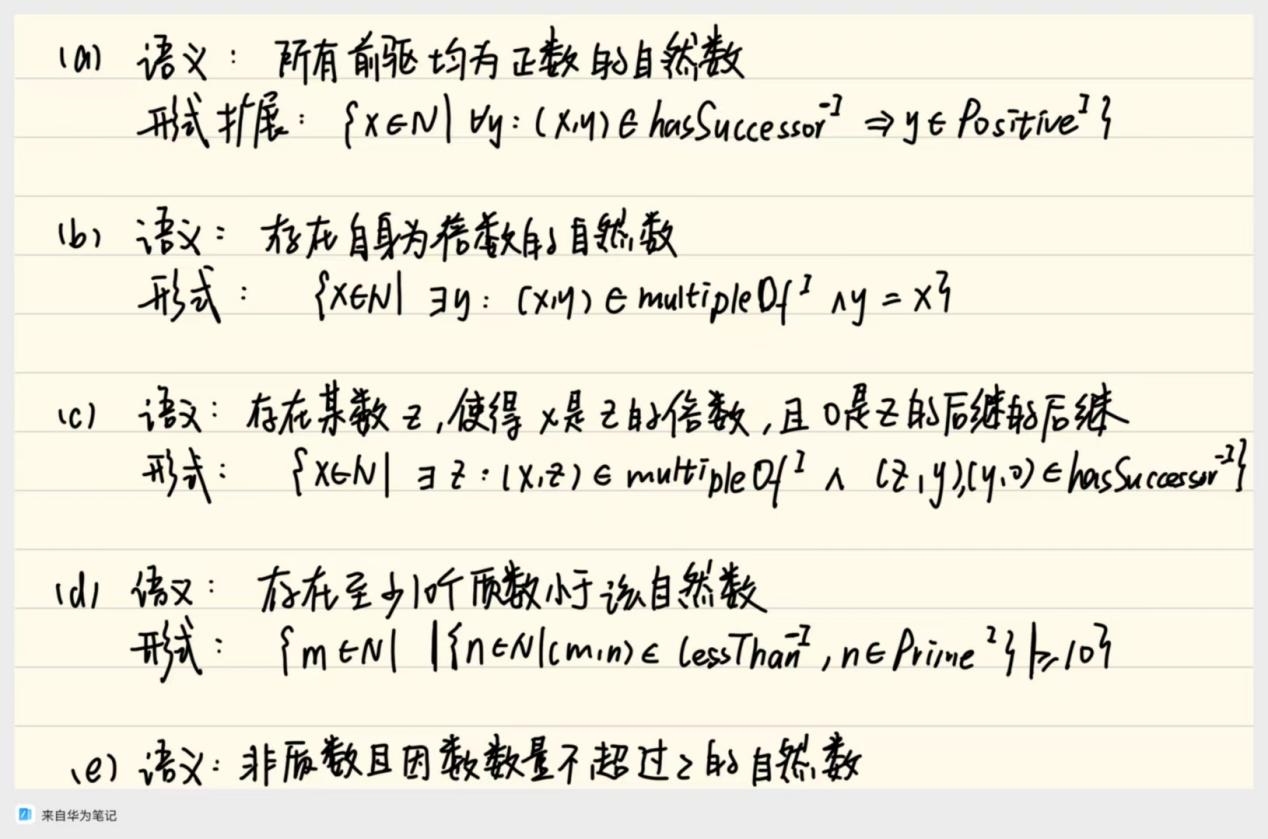
• “Having a topping” is a containedness relation.

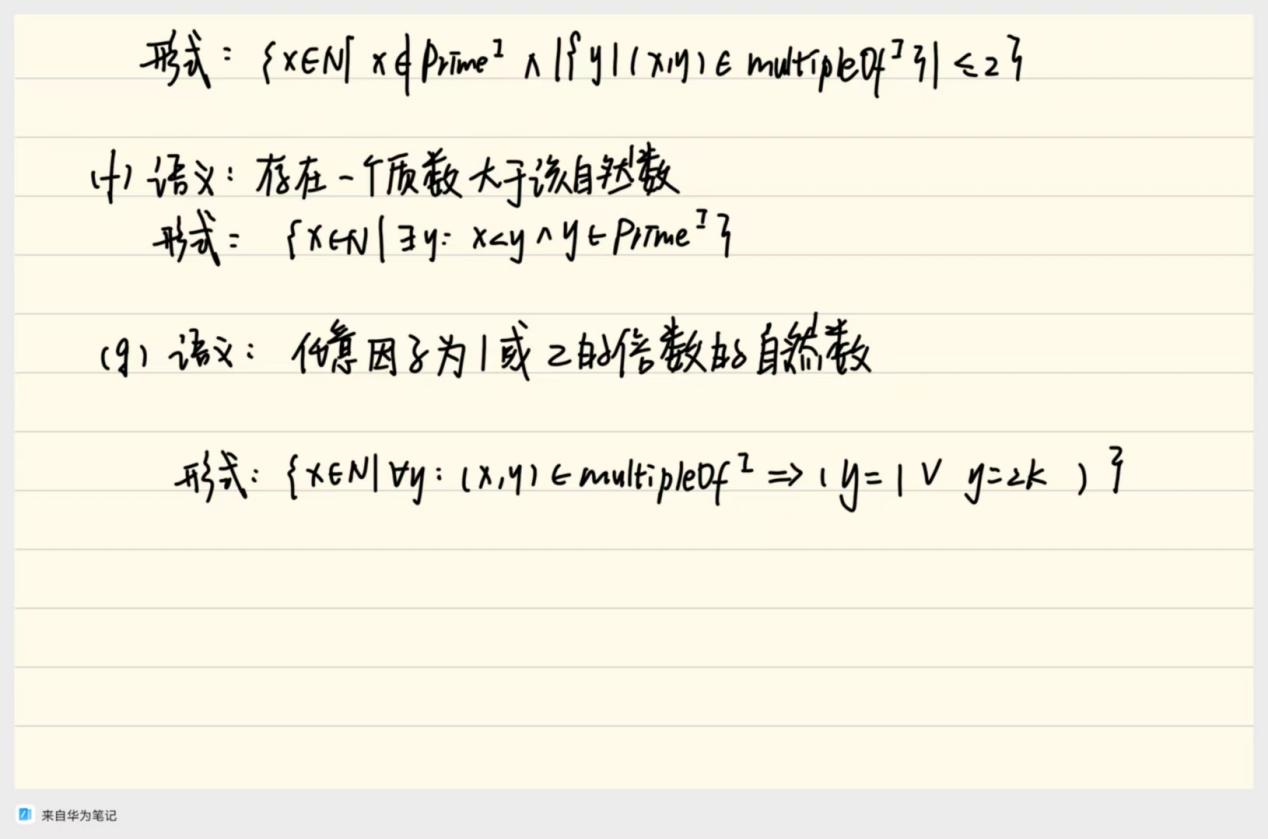
1. 可以。 :Pizza rdfs:subClassOf :Meal.
2. 不可以。 RDFS不支持基数约束
3. 不可以。 RDFS无法强制要求每个实例必须拥有该属性，仅能声明关联关系。
4. 可以。 :hasTopping rdfs:domain :Pizza.
5. 不可以。 RDFS无法表达否定约束
6. 可以。 :hasTopping a rdf:Property.
7. As an example of an interpretation, this time with an infinite domain, consider the following vocabulary:



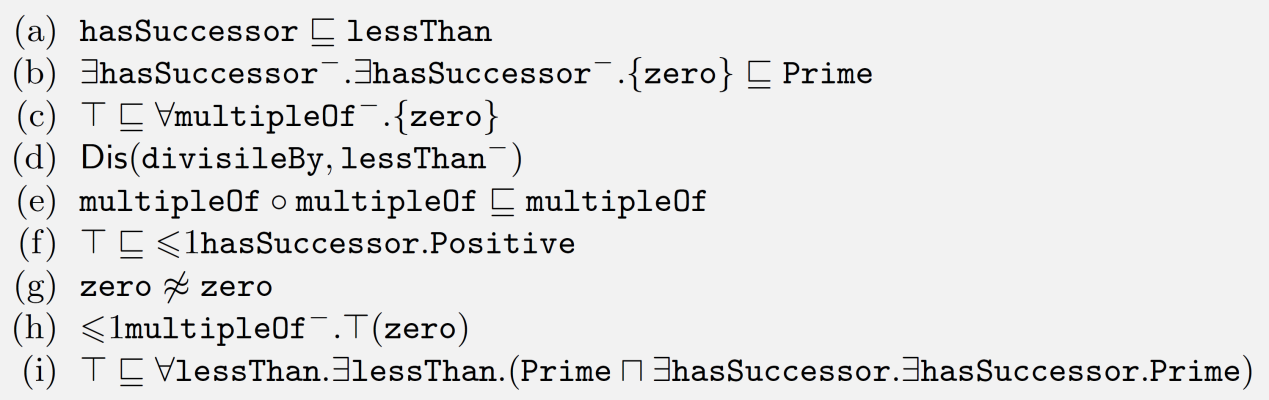
Describe (both verbally and formally) the extension of the following concepts with respect to the interpretation  defined above

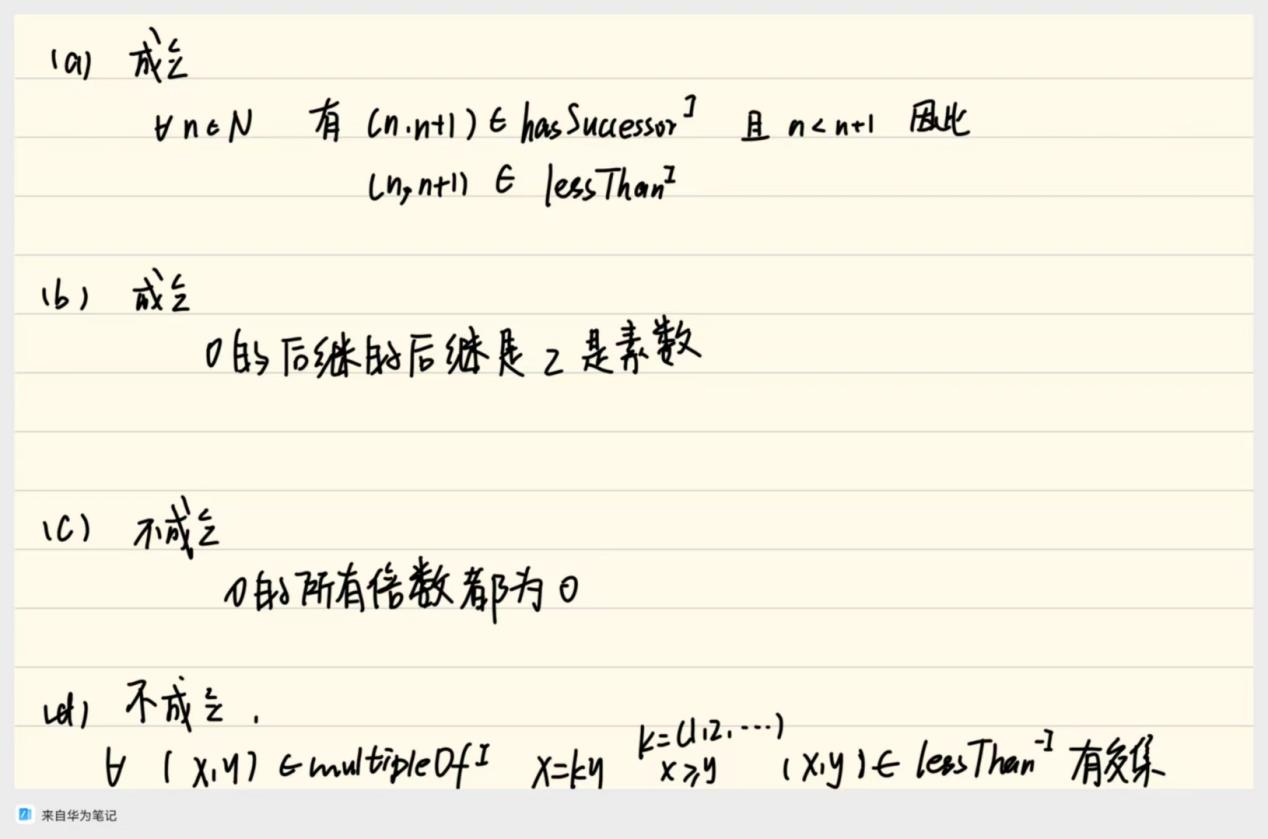


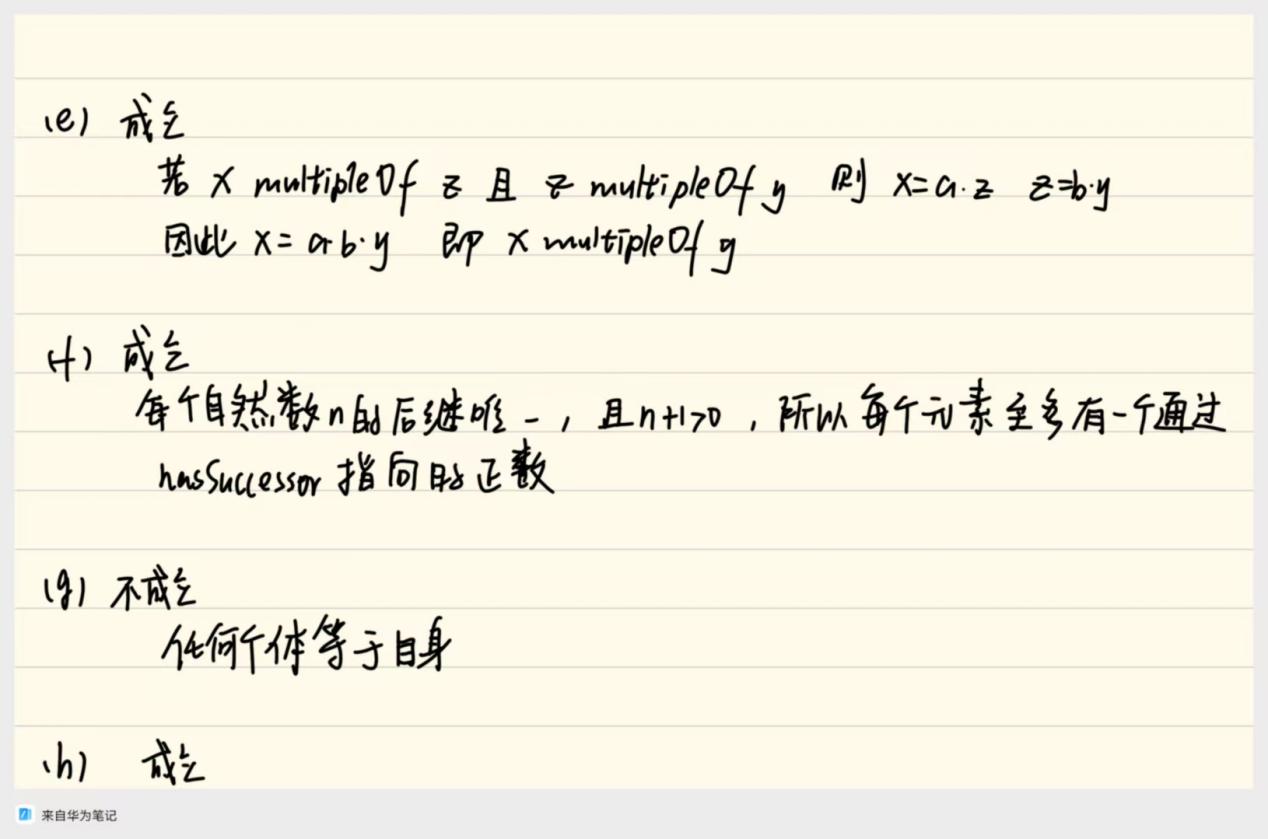


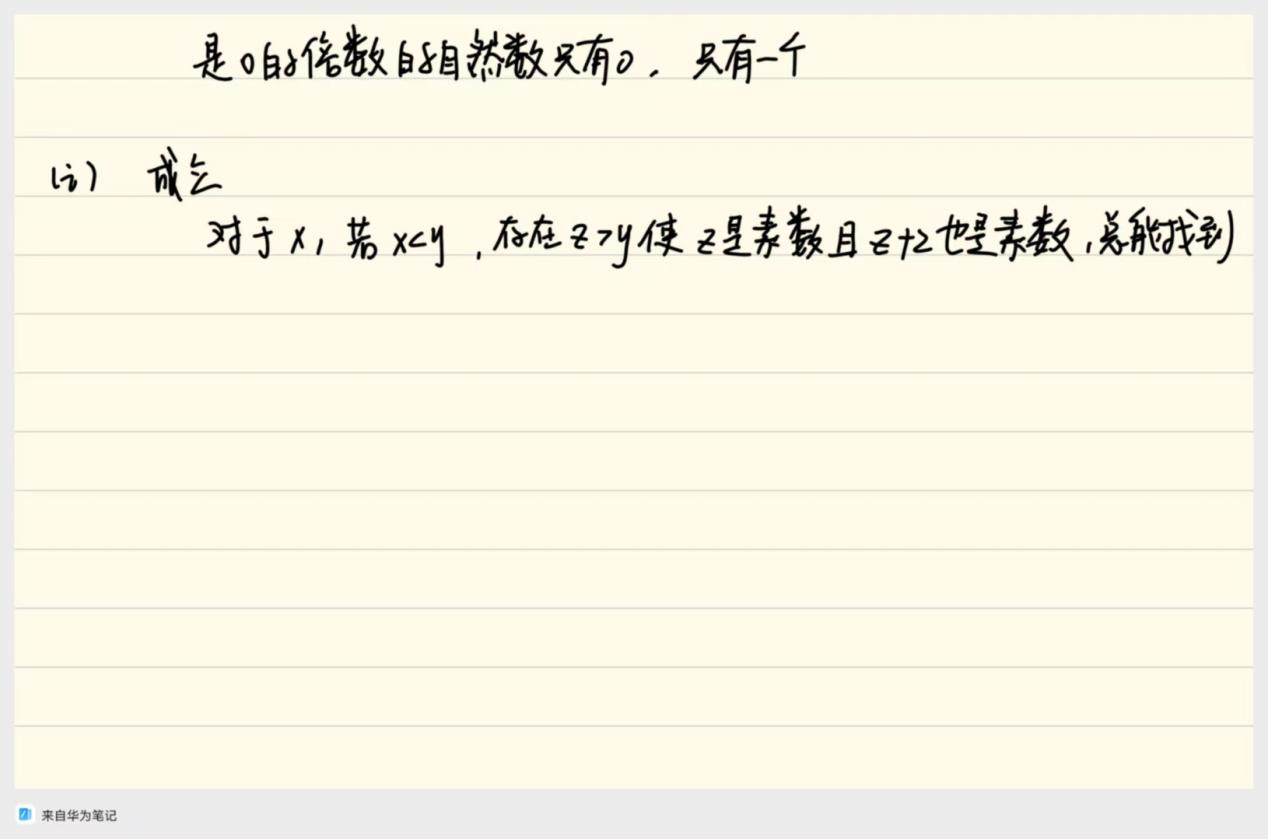
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1. Decide whether the following axioms are satisfied by the interpretation  from Exercise 4.









1. Show using the  tableaux algorithm that the following knowledge base is unsatisfiable.

