

Week1

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November 2015

Task1

1. **Return the name of any country that has a lake.**

$$\{a \mid \exists G \in \text{geo_lake} \exists C \in \text{Country}(G.\text{Country} = C.\text{code} \wedge a.\text{name} = C.\text{name})\}$$

2. **Return all the information available on cities whose population is between 3 and 5 million inhabitants.**

$$\{a \mid \exists C \in \text{City}(C.\text{population} > 3000000 \wedge C.\text{population} < 5000000 \wedge a.\text{name} = C.\text{name} \wedge a.\text{country} = C.\text{country} \wedge a.\text{province} = C.\text{province} \wedge a.\text{population} = C.\text{population} \wedge a.\text{latitude} = C.\text{latitude} \wedge a.\text{longitude} = C.\text{longitude})\}$$

3. **Return the country code and the continent of every country not in Europe or in Australia/Oceania.**

$$\{a \mid \exists E \in \text{encompasses} ((E.\text{continent} \neq \text{"Europe"} \vee E.\text{continent} \neq \text{"Australia/Oceania"}) \wedge a.\text{code} = E.\text{country} \wedge a.\text{continent} = E.\text{continent})\}$$

4. **Return the names of countries that also give their name a province.**

$$\{a \mid \exists P \in \text{Province} \exists C \in \text{Country}(P.\text{name} = C.\text{name} \wedge a.\text{name} = C.\text{name})\}$$

5. **Return countries that are not landlocked (i.e., have a sea coast).**

$$\{a \mid \exists G \in \text{geo_sea} \exists C \in \text{Country}(G.\text{Country} = C.\text{code} \wedge a.\text{name} = C.\text{name})\}$$