

# Comp624121-Week1

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## Task1

1. ***Return the name of any country that has a lake.***  
 $\{S \mid \exists g \in \text{geo\_lake} \exists c \in \text{Country}(g.\text{Country} = c.\text{code} \wedge S.\text{name} = c.\text{name})\}$
2. ***Return all the information available on cities whose population is between 3 and 5 million inhabitants.***  
 $\{S \mid \exists c \in \text{City}(c.\text{population} > 3000000 \wedge c.\text{population} < 5000000 \wedge S.\text{name} = c.\text{name} \wedge S.\text{country} = c.\text{country} \wedge S.\text{province} = c.\text{province} \wedge S.\text{population} = c.\text{population} \wedge S.\text{latitude} = c.\text{latitude} \wedge S.\text{longitude} = c.\text{longitude})\}$
3. ***Return the country code and the continent of every country not in Europe or in Australia/Oceania.***  
 $\{S \mid \exists e \in \text{encompasses}((e.\text{continent} \neq \text{"Europe"} \vee e.\text{continent} \neq \text{"Australia/Oceania"}) \wedge S.\text{code} = e.\text{country} \wedge S.\text{continent} = e.\text{continent})\}$
4. ***Return the names of countries that also give their name a province.***  
 $\{S \mid \exists p \in \text{Province} \exists c \in \text{Country}(p.\text{name} = c.\text{name} \wedge S.\text{name} = c.\text{name})\}$
5. ***Return countries that are not landlocked (i.e., have a sea coast).***  
 $\{S \mid \exists g \in \text{geo\_sea} \exists c \in \text{Country}(g.\text{Country} = c.\text{code} \wedge S.\text{name} = c.\text{name})\}$