Foundations of Logic Programming
Tutorial 1 (on October 21th)

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Exercise 1.1:
Using the Prolog program from Slide 3-6 (Lecture 1), give the answer for the following queries:

- ?-connection(frankfurt,X).
- ?-connection(X, maui).

Exercise 1.2:
Define in Prolog a predicate for multiplication. (You may want to use the predicate *add* defined on Slide 10, Lecture 1.) Give the output for the following queries:

- ?-mul(s(s(0)),s(s(s(0))),Z).
- ?-mul(s(s(0)),s(s(0)),s(s(s(s(0))))).

Exercise 1.3:
Now use your definition from Exercise 1.2 to define the factorial function.

- Example: ? - fact(s(s(s(0))), F) has the result F = s(s(s(s(s(s(0)))))).

Exercise 1.4:
Define a predicate palindrome(L) which checks if the list L is a palindrome, i.e. the reverse of L is identical to L .

- Example: ? - palindrome([a,b,c,b,a]) has result yes.

Exercise 1.5:
Compute the substitution composition θ, η, τ, where w, x, y, z are variables and

$$\theta = \{y/a(x,z), z/y\} \qquad \eta = \{y/x, x/f(w)\} \qquad \tau = \{w/g(a), x/z, z/b\}$$