Exercise 1.1:
Using the Prolog program from Slides I/3-I/6, 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 I/10.) Give the output for the following queries:

- \(?\)-mul(s(s(0)),s(s(0)),Z).
- \(?\)-mul(s(s(0)),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(0)), F ) has the result F = 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 \(\theta, \eta, \tau\), where \(w, x, y, z\) are variables and

\[
\theta = \{y/a(x, z), z/y\} \quad \eta = \{y/x, x/f(w)\} \quad \tau = \{w/g(a), x/z, z/b\}
\]