Exercise 1 (triadic FCA)

Let \( F = (U, T, R, Y) \) be a triadic context where

- \( U = \{\text{Bolzano, Dresden, Lisbon, Vienna}\} \)
- \( T = \{\text{English, German, Italian, Portuguese}\} \)
- \( R = \{\text{Street, University, EMCL Lectures}\} \)
- \( Y = \{ (B, E, U), (B, E, L), (B, G, S), (B, G, U), (B, I, S), (B, I, U), (D, G, S), (D, G, U), (D, E, U), (D, E, L), (L, E, U), (L, E, L), (L, P, S), (L, P, U), (V, E, U), (V, E, L), (V, G, S), (V, G, U)\} \)

a) For a given triadic context \( F = (U, T, R, Y) \) and some \( u \in U \), the \( u \)-slice of \( F \) is the formal context \((T, R, I)\) with \((t, r) \in I\) iff \((u, t, r) \in Y\). One can represent a tricontext by providing all its \( u \)-slices. Provide the crosstable representations of the \( B \)-, \( D \)- and \( L \)-, and \( V \)-slices of \( F \).

b) Use the algorithm from the lecture to determine all frequent triconcepts of this tricontext for \( \tau_u = \tau_t = \tau_r = 1 \).

c) What are the infrequent triconcepts?