

Formal Concept Analysis  
Exercise Sheet 11, Winter Semester 2016/17

**Exercise 1** (triadic FCA)

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

- $U = \{\underline{B}olzano, \underline{D}resden, \underline{L}isbon, \underline{V}ienna\}$
- $T = \{\underline{E}nglish, \underline{G}erman, \underline{I}talian, \underline{P}ortuguese\}$
- $R = \{\underline{S}treet, \underline{U}niversity, \underline{EMCL} \underline{L}ectures\}$
- $Y = \{(B, E, U), (B, E, L), (B, G, S), (B, G, U), (B, I, S), (B, I, U), (D, G, S), (D, G, U), (D, E, U), (D, E, L), (L, E, U), (L, E, L), (L, P, S), (L, P, U), (V, E, U), (V, E, L), (V, G, S), (V, G, U)\}$

- a) For a given triadic context  $\mathbb{F} = (U, T, R, Y)$  and some  $u \in U$ , the  $u$ -slice of  $\mathbb{F}$  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  $\mathbb{F}$ .
- 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?