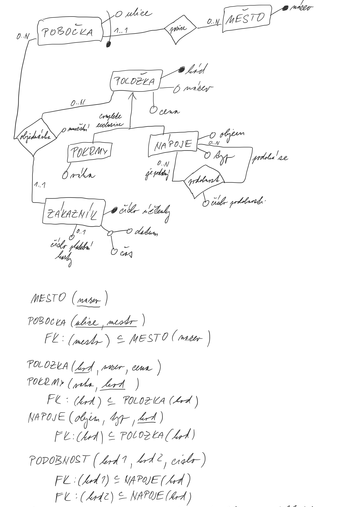
Praxe 1. test

19.06.18 15:33



MESTO (mesto)

POBOCKA (ulice, mesto)
FK: (mesto) ⊆ MESTO (mesto)

POLOZKA (kod, nazev, cena)

PODNIK (cislo, kod)
FK: (kod) ⊆ POLOZKA (kod)

NAPOJE (objem, typ, kod)
FK: (kod) ⊆ POLOZKA (kod)

PODOBNOST (kod1, kod2, cislo)
FK: (kod1) ⊆ NAPOJE (kod)
FK: (kod2) ⊆ NAPOJE (kod)

OBJEDNAVKA (mesto, ulice, mesto, kod, datum, cas, cislo účtenky, cislo řádku)
FK: (ulice, mesto) ⊆ POBOCKA (ulice, mesto)
FK: (kod) ⊆ POLOZKA (kod)

```
SELECT DISTINCT prijmeni
FROM zakaznik AS z1 JOIN zakaznik AS z2 ON (z1.email <> z2.email
WHERE NOT EXISTS ( SELECT *                                  AND z1.telefon = z2.telefon)
                     FROM kniha
                     WHERE (z1.kniha = kniha.cislo) AND (
                       (kniha.odkud = "Ulice") OR (kniha.kam = "Ulice"))
                   );
```

```
SELECT
FROM zakaznik AS z1 JOIN zakaznik AS z2 ON (z1.email <> z2.email)
     JOIN kniha AS k1 ON (z1.kniha = k1.cislo)
WHERE NOT EXISTS (
      SELECT *
      FROM zakaznik AS z2 JOIN kniha AS k2 ON (z2.kniha = k2.cislo)
      WHERE (z1.email = z2.email) AND NOT (z1.id = z2.id) AND
            NOT (k2.cislo = k1.cislo) AND
            (((z2.datum_cas < k2.dalsi) AND z1.prijmeni = z2.prijmeni) AND
              (z2.datum_cas <= z1.datum_cas + k1.dalsi)) OR
            OR (((z2.datum_cas >= z1.datum_cas) AND
                 (z1.datum_cas + k1.dalsi >= z2.datum_cas + z2.dalsi)))
```

```
SELECT e.kategorie, COUNT(*) AS pocet
FROM zakaznik AS z JOIN zakaznik AS z1 ON (z.email = z1.email)
     JOIN kniha AS k ON (k.cislo = z1.kniha)
WHERE NOT (z.prijmeni = "Bílý") AND (k.odkud = "Ulice")
GROUP BY e.kategorie
HAVING pocet = 10000
```

```
SELECT id,
  XMLELEMENT(NAME "zakaznik", XMLATTRIBUTES(
    datum_cas AS odjezd), XMLELEMENT(NAME "odkud",
    cislo_uctenky), XMLELEMENT(NAME "cil",
    XMLELEMENT(NAME "prijmeni", prijmeni),
    XMLELEMENT(NAME "prijmeni", prijmeni)
FROM zakaznik NATURAL JOIN pobocka;
```

```
(((ZAKAZNIK
  /
 ZAKAZNIK (kategorie = "obchodnik") )
 *
 JIZDENKA ) [kniha = cislo] LINKA) [cislo, prijmeni, prijmeni]

 ÷
 LINKA (odkud = "Ulice" ∨ kam = "Ulice") [cislo]
```

$\{X, Y, Z, U, W\}$

$XYZ \to U$
$Y \to W$
$W \to Z$
$U \to XZ$
$UW \to Y$

$XYZ \cup UW \to XYZ \cup UW$
$\exists X : XYZ \cup U^1 = XYZ \cup X$
$XZ \cup U \to XYZ \cup W$
$\exists Y : ZUW^1 = ZUWXY$
$ZUW \to XYZ \cup W$
$\exists Z : UW^1 = UW \subseteq XY$
$UW \to XYZ \cup W$
$\exists U : W^1 = WZ$

klíče: UW

- UW
  1.) $UW \wedge U \neq \emptyset$
  $(UW / U) \cup XYZ = XYZW$ nadklíč
  $XYZW \to XYZUW$
  $\exists Y : YZW^1 = YZW$
  $\exists Z : XZW^1 = YZW$
  $\exists Z : XZW^1 = YXW \subseteq U$
  $XYW \to XYZUW$
  $\exists W : XY^1 = XYW \subseteq U$
  XY je klíč
  2.) $UW \wedge W \neq \emptyset$
  $(UW / W) \cup Y = UY$ nadklíč
  $UY \to XYZUW$
  $\exists U : Y^1 = YU$
  $\exists Y : U^1 = U \not\subseteq$
  UY klíč
  3.) $UW \wedge Z = \emptyset$
  4.) $UW \wedge XZ = \emptyset$
  5.) $UW \wedge Y = \emptyset$

- XY
  1.) $XY \wedge U = \emptyset$ 2.) $XY \wedge W = \emptyset$
  3.) $XY \wedge Z = \emptyset$ 4.) $XY \wedge YZ \neq \emptyset$
  $(XY \setminus YZ) \cup U = YU$ už máme
  5.) $XY \wedge Y \neq \emptyset$
  $(XY \setminus Y) \cup UW = XUW$ podmn. je klíč

- UY
  1.) $UY \wedge U \neq \emptyset$
  $(UY \setminus U) \cup XYZ = XYZ$ pod. je klíč
  2.) $UY \wedge W = \emptyset$ 3.) $UY \wedge Z = \emptyset$
  4.) $UY \wedge XZ = \emptyset$ 5.) $UY \wedge Y \neq \emptyset$
  $(UY \setminus Y) \cup UW = UW$ je klíč

klíče $= \{UW, XY, UY\}$

	1NF	2NF	3NF	BCNF
$XYZ \to U$	✓	✓		
$Y \to W$	✓	✓		
$W \to Z$	✓	X		
$U \to X$	✓	✓		
$U \to Z$	✓	X		
$UW \to Y$	✓	✓		

2NF ČÁST KLÍČE $\not\to$ NEKLÍČ AT.

SCHÉMA JE 2NF