A9 GAG1 – Atli Gíslason atlig17@ru.is

1. C →D, C → A, B → C.

a) Identify the candidate keys.

Rewrite the relations: B → C, C →A, C → D.

Transitive rule 3: B →C, B→A, B →D.

B → all: A, B, C, D.

B is a key.

b) Identify the best normal form.

R = ABCD

B → ACD.

R is a BCNF.

c) Decompose to set of BCNF

R is in BCNF form.

2. B → C, D → A.

a) Identify the candidate keys.

BD → A, BD → C.

BD is a key.

b) Identify the best normal form.

R = BDCA

BD →A, BD → C.

R is a BCNF.

c) Decompose to set of BCNF

R is in BCNF form.

3. ABC → D, D →A.

a) Identify the candidate keys.

BC → A, BC → D, A → D, D →A.

BC is a key.

b) Identify the best normal form.

R = <u>BC</u>DA

R is a BCNF, and also 2NF.

c) Decompose to set of BCNF

BC → A, BC → D, A → D, D → A

=> BC → A, BC → D.

4. A → B, BC → D, A → C.

a) Identify the candidate keys.

A → B, A → C, BC → D.

Transitivity: A → B, A → C, A → D, BC → D.

A is a key.

b) Identify the best normal form.

R = <u>A</u>BCD

R is a BCNF, and also a 2NF.

c) Decompose to set of BCNF

A → B, A → C, A → D.

5. AB → C, AB → D, A → C, C → A.

a) Identify the candidate keys.

AB is a key.

b) Identify the best normal form.

R = AB<u></u>CD

R is a 3NF.

c) Decompose to set of BCNF

There is no possible BCNF.