

Homework 3 – Example Solution

1. 1) SQL DDL

ESSAY 30 points 0.10 penalty monospaced

1) Write down the SQL DDL commands for the political party database.

Notes for grader:

- See HW3-P1-DDL.sql.

2. 2(a) FDs

ESSAY 10 points 0.10 penalty monospaced

2(a) Write down the important FDs for the Rentals relation detected using your program.

Notes for grader:

- $PID \rightarrow PN$, $HID \rightarrow HS$, $HID \rightarrow HZ$, $HZ \rightarrow HC$

3. 2(b) Decomposition

ESSAY 10 points 0.10 penalty monospaced

2(b) Write down the decomposed relations for the Rentals relation.

Notes for grader:

- Rentals1(HZ, HC)
Rentals2(HID, HS, HZ)
Rentals3(PID, PN)
Rentals0(PID, HID, S)

4. 2(c) SQL DDL

ESSAY 5 points 0.10 penalty monospaced

2(c) Write down SQL DDL commands to create and populate the decomposed relations for Rentals.

Notes for grader:

- See HW3-P2-DDL.sql

5. 2(d) Normal Form

MULTI 5 points 0.10 penalty Single

2(d) Select the lowest normal form for any relations of the decomposed Rentals schema:

- (a) All relations are in BCNF (and therefore also 3NF) (100%)

(b) Some relations are only in 3NF, not in BCNF

6. **3) Query 1**

☐ MULTI ☐ 5 points ☐ 0.10 penalty ☐ Multiple

3) Index selection for Query 1:

- (a) Part(id) (−16.66667%)
- (b) Part(stock) (100%)
- (c) Part(price) (−16.66667%)
- (d) Part(stock, price) (−16.66667%)
- (e) Part(stock, price, id) (−16.66667%)
- (f) Part(stock, price, descr) (−16.66667%)
- (g) No index (−16.66667%)

7. **3) Query 2**

☐ MULTI ☐ 5 points ☐ 0.10 penalty ☐ Multiple

3) Index selection for Query 2:

- (a) Part(id) (−16.66667%)
- (b) Part(stock) (−16.66667%)
- (c) Part(price) (100%)
- (d) Part(stock, price) (−16.66667%)
- (e) Part(stock, price, id) (−16.66667%)
- (f) Part(stock, price, descr) (−16.66667%)
- (g) No index (−16.66667%)

8. **3) Query 3**

☐ MULTI ☐ 5 points ☐ 0.10 penalty ☐ Multiple

3) Index selection for Query 3:

- (a) Part(id) (−20%)
- (b) Part(stock) (50%)
- (c) Part(price) (50%)
- (d) Part(stock, price) (−20%)
- (e) Part(stock, price, id) (−20%)
- (f) Part(stock, price, descr) (−20%)
- (g) No index (−20%)

9. **3) Query 4**

☐ MULTI ☐ 5 points ☐ 0.10 penalty ☐ Multiple

3) Index selection for Query 4:

- (a) Part(id) (−16.66667%)

- (b) Part(stock) (-16.66667%)
- (c) Part(price) (-16.66667%)
- (d) Part(stock, price) (-16.66667%)
- (e) Part(stock, price, id) (-16.66667%)
- (f) Part(stock, price, descr) (-16.66667%)
- (g) No index (100%)

Total of marks: 80