Normalization Notation Example

Table name: DATA_ORG_1NF **Database name: Ch06_ConstructCo**

PROJ_NUM	PROJ_NAME	EMP_NUM	EMP_NAME	JOB_CLASS	CHG_HOUR	HOURS
15	Evergreen	103	June E. Arbough	Elect. Engineer	84.50	23.8
15	Evergreen	101	John G. News	Database Designer	105.00	19.4
15	Evergreen	105	Alice K. Johnson *	Database Designer	105.00	35.7
15	Evergreen	106	William Smithfield	Programmer	35.75	12.6

The following summarizes how to show the normalization process from 1NF to 3NF using the example above. Please see the lectures for more information.

1NF

PROJECT(**PROJ_NUM**, **EMP_NUM**, PROJ_NAME, EMP_NAME, JOB_CLASS, CHG_HOURS, HOURS)

Full: (PROJ_NUM + EMP_NUM) → HOURS

Partial: PROJ_NUM → PROJ_NAME

EMP_NUM → EMP_NAME, JOB_CLASS, CHG_HOUR

Transitive: JOB_CLASS → CHG_HOUR

2NF

PROJECT(**PROJ_NUM**, PROJ_NAME)

Full: PROJ_NUM → PROJ_NAME

EMPLOYEE(**EMP_NUM**, EMP_NAME, JOB_CLASS, CHG_HOUR)

Full: EMP_NUM → EMP_NAME, JOB_CLASS, CHG_HOUR

Transitive: JOB_CLASS → CHG_HOUR

ASSIGNMENT(***PROJ_NUM***, ***EMP_NUM***, ASSIGN_HOURS)

Full: PROJ_NUM + EMP_NUM → HOURS

3NF

PROJECT(**PROJ_NUM**, PROJ_NAME)

Full: PROJ_NUM → PROJ_NAME

EMPLOYEE(**EMP_NUM**, EMP_NAME, ***JOB_CLASS***)

Full: EMP_NUM → EMP_NAME, JOB_CLASS

JOB(**JOB_CLASS**, CHG_HOUR)

Full: JOB_CLASS → CHG_HOUR

ASSIGNMENT(***PROJ_NUM***, ***EMP_NUM***, ASSIGN_HOURS)

Full: (PROJ_NUM + EMP_NUM) → HOURS

For BCNF, we must add a BCNF dependency in 3NF. For example:

3NF

TABLE(**A**, **B**, C, D)

Full: (A + B) → C, D

BCNF: C → B

BCNF

TABLE1(**A**, ***C***, D)

Full: (A + C) → D

TABLE2(**C**, B)

Full: C → B