

PRACTICE PROBLEM SET #4

CSC 261/461 (Database Systems), Spring 2018,
University of Rochester
02/22/2017

Problem 1

Convert the following ER diagram into a relational database schema

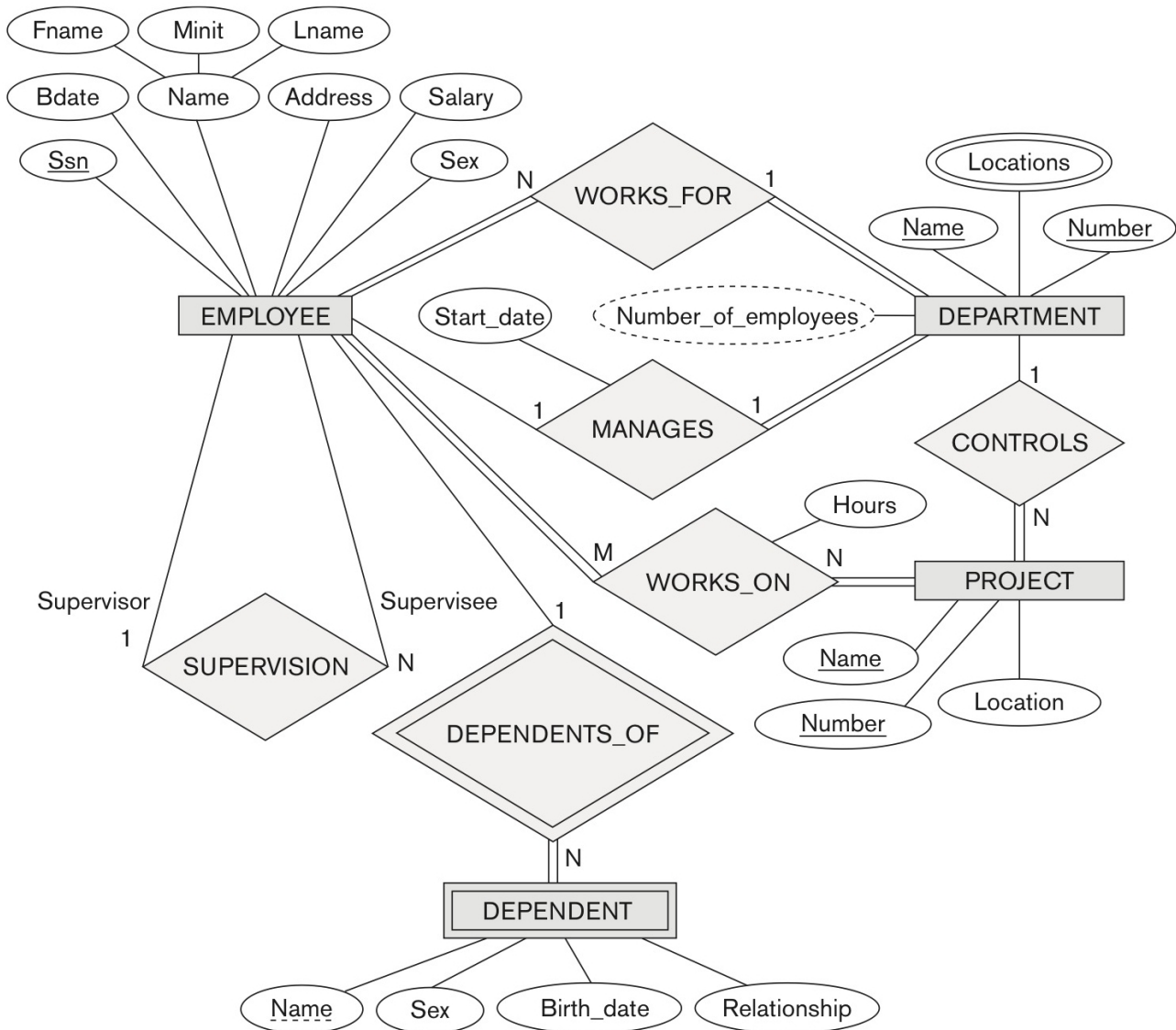


Figure 1: ER diagram for Company Database

Problem 2

Consider figure 2. Show scenarios where insertion, deletion, and modification anomalies may be present in the relation.

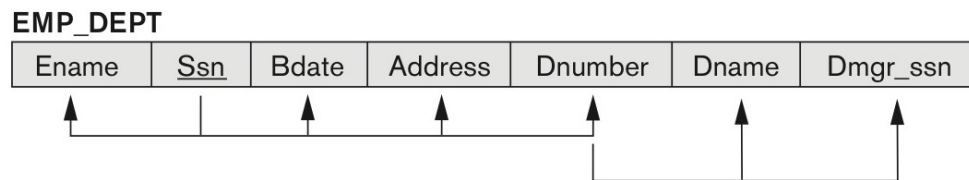


Figure 2: Emp_dept relation

Problem 3

Prove Armstrong's axioms (reflexive rule, augmentation rule, and transitive rule).

Problem 4

Consider a schema with attributes $X=A,B,C,D,E,F,G,H$. Determine $\{A, B, F\}^+$, the closure of $\{A, B, F\}$. The following FDs are provided:

$$\begin{aligned}
 A, C &\rightarrow D \\
 D, H, G &\rightarrow E \\
 A, B &\rightarrow G \\
 F, B, G &\rightarrow C
 \end{aligned}$$