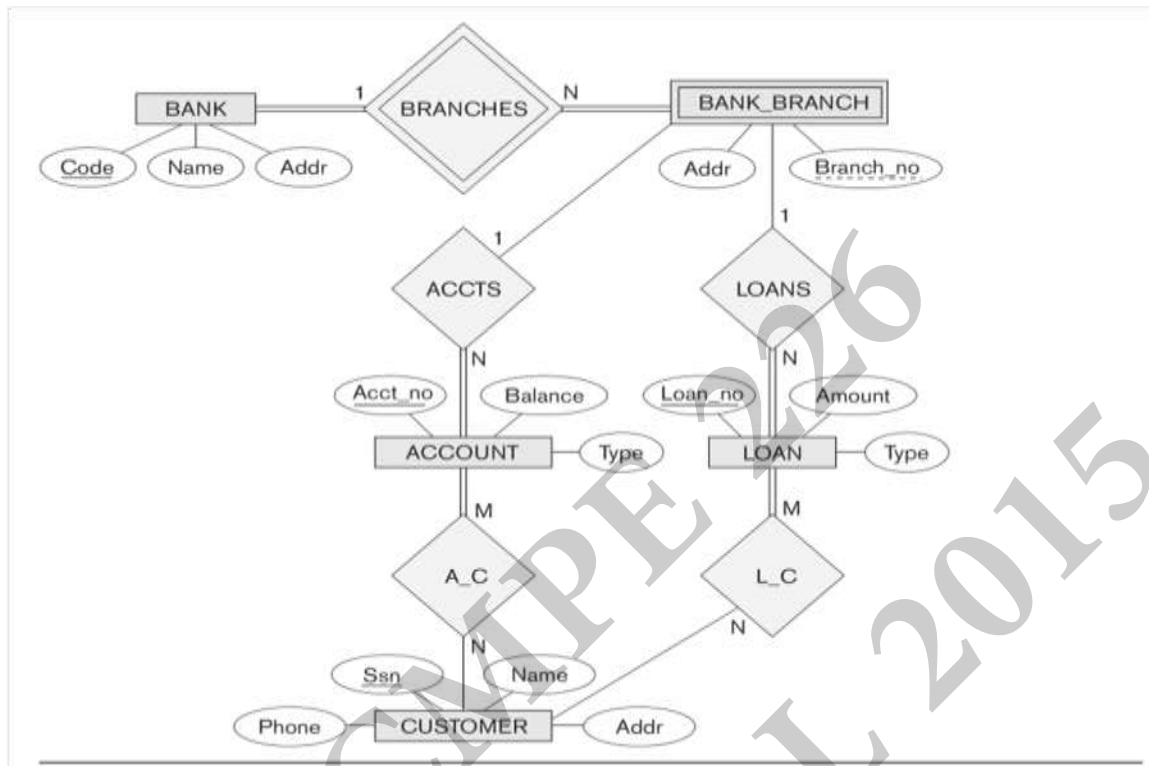


SJSU CMPE 226 HW3 FALL 2015

1. Map the following ER diagram into a relational database schema. For each table, specify the primary key (underline) and, if any, foreign keys (directed arcs, to which column in which table).



2. Consider primary key (PK) based normalization only. Given a relation $R = \{A, B, C, D, E, F, G, H, I, J\}$, R 's primary key $\{A, B\}$, and the set of functional dependencies

$$F = \{ \{A, B\} \rightarrow \{C\}, \{A\} \rightarrow \{D, E\}, \{B\} \rightarrow \{F\}, \{F\} \rightarrow \{G, H\}, \{D\} \rightarrow \{I, J\} \}.$$

a. Is this relation in primary key based 1NF, 2NF, or 3NF? Justify your answer.

1NF: Yes/No, justify:

2NF: Yes/No, justify:

3NF: Yes/No, justify:

b. Apply primary key based normalization successively until you reach 3NF or you cannot decompose the relations further (e.g., $n \text{ NF} \rightarrow n+1 \text{ NF} \rightarrow \dots$). For each normalization step, list all the resulting tables, underline the primary key for each table, and state the reasons behind each decomposition.

Submit the following single file

- CMPE226_HW3_YourName (.pdf, .doc, or .docx)

The ISA and/or instructor leave feedback to your homework as comments and/or in Crocodoc of your submission. To access Crocodoc, click "view feedback" button. For details, see the following URL:

<http://guides.instructure.com/m/4212/l/106690-how-do-i-use-the-submission-details-page-for-an-assignment>