Programming Assignment #1

CS 317 Data Management and Information Processing
Spring'03
Instructor Goce Trajcevski
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due: Friday, May 16, 2003, at 9:59PM

1 General Info

This assignment is the first part of the three-stage project that you will have in this quarter. In general, whenever you submit a project, there should be a formal *report* to accompany it, the main purposes of which are:
1. To describe the *goal* of the project.
2. To describe your approach to the solution.

These should be done in such a manner that even a person who has no clue about the project should get the idea of the intended problem and about some general aspects of your solution/approach.

For a typical programming assignment, this would be part of the code – comments and layout/indentation, as well as the use of the mnemonic names for the variables and functions/procedures. In this particular case, it will be a separate (short) document. An idea (possible approach) is to paraphrase the requirements specifications' in a more coherent and self-contained way.

2 Project's Specification

For this particular assignment, you are to provide a complete *design* of the *database schema* (recall that a database schema is a set of relational schemas – one for each "table-to-be") for a banking enterprise. The domain-requirements are given to you in the form of an ER diagram.

The entities involved in the model of the banking enterprise, as well as the relationships among (some of) them are depicted on Figure 1. Note that there is a basic form of the inheritance (IS-A) for the types of the accounts.

Following are the dependencies that exist among the sets of attributes for the given entities:
$branch - name \rightarrow branch - sity$
$branch - name \rightarrow assets$
$customer - name \rightarrow customer - city$
$customer - name \rightarrow customer - street$
$loan - number \rightarrow amount$
$loan - number \rightarrow branch - name$
$account - number \rightarrow branch - name$
$account - number \rightarrow balance$

3 What to turn-in

The completion of this assignement should provide your grader with the following:
1. A description document;
2. The set of relations (i.e. tables) and the respective schemas of each of them. The design of the set tables should be such that, based on the lecture notes and the textbook, you should ensure that you have decomposed your initial translation of the set of tables in a manner that they satisfy some of the normal forms (first, second, BCNF or third). This should be done with respect to the functional dependencies. You

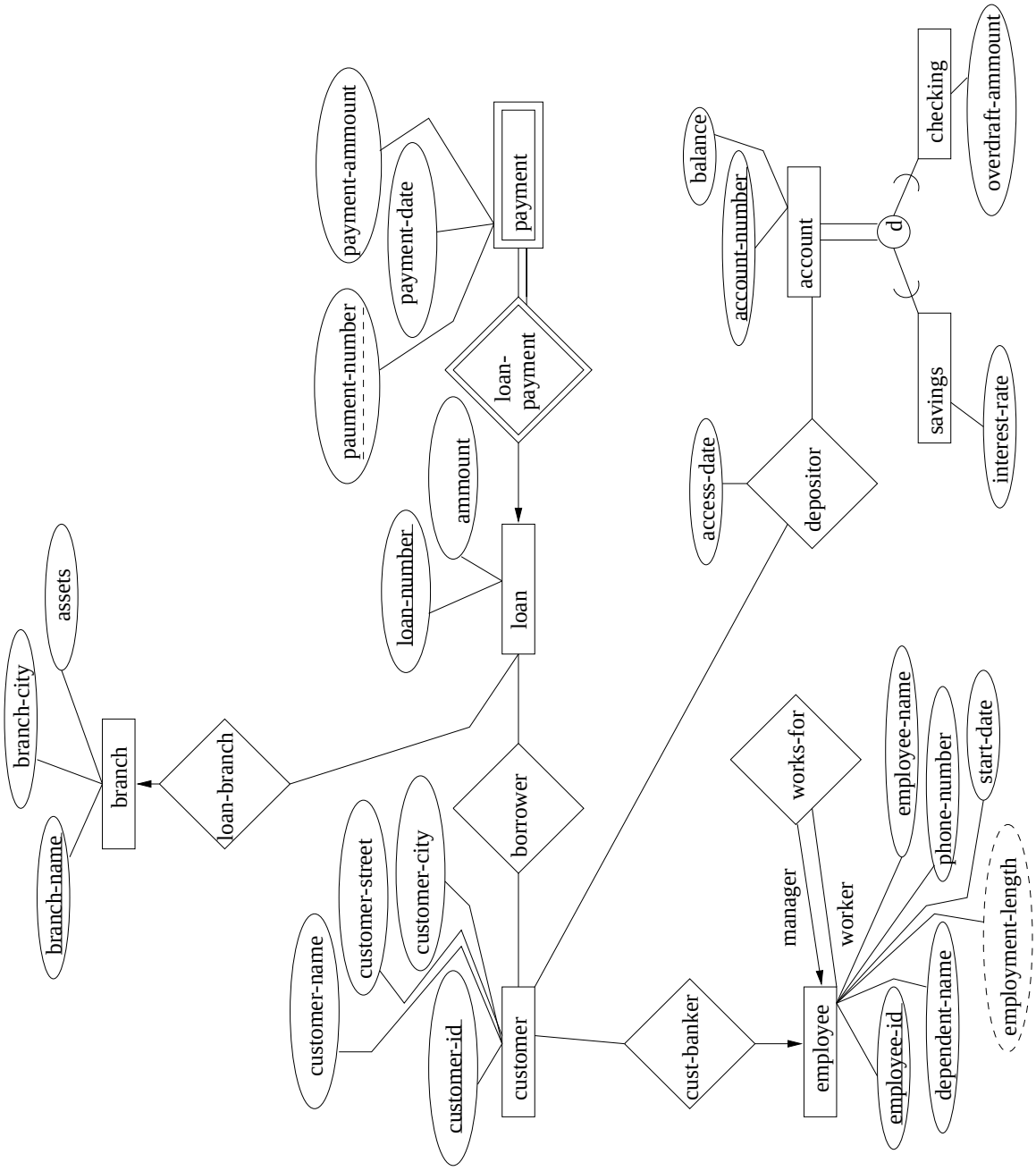

Figure 1: ER Diagram for the Banking Enterprise

should provide a separate document *jystifying* your decomposition;
3. A Microsoft Access-based format of the design of the initial schema (i.e. the one which would be obtained after straightforward translation of the ER diagram to relations), which will include the relational schemas AND the relationship among them;
4. A Microsoft Access-based format of your final schema (c.f. item 2. above).