

Istanbul Bilgi University

Department of Computer Engineering

FALL, 2018
Campus: Santral

CMPE351 DATABASE SYSTEMS I

Homework 4

Make sure that you explain in detail all your steps - thoughts. You may get extra points for an appropriate observation, you may lose some marks due to an obscure solution.

1. {3+3+4 points} Primary, candidate and foreign keys: what are they? Can you provide an example?
2. {5+5 points} Give a brief and clear definition of 'weak entity' and 'partial key'. Can you make an example?
3. {80 points} Your task is to design a database for a bank which is organized into BRANCH(es), considering the following points:
 - For every BRANCH you need to memorize *also but not only* {5 points} its address (composite attribute {5 points}), and telephone number (multi valued attribute {5 points})
 - Every PERSON in the database is either an EMPLOYEEs or a CUSTOMERs {10 points}
 - For every PERSON you need to memorize his-her name and address
 - Every BRANCH employs employees
 - Every BRANCH has also a manager, who is an employee too {5 points}
 - Every BRANCH gives ACCOUNT(s) to CUSTOMER(s)
 - Every account has *also* the "balance" attribute

Considering that:

- (a) Every employee works for only one branch
- (b) We may be interested in selecting all branches of a particular city
- (c) Accounts can be held by more than one customer, and a customer can have more than one account
- (d) The database store the "last_access" info, {10 points}, which is the most recent date on which the account was accessed by each customer holding the account

Questions:

- (a) {5 + 5 points} Design the ER diagram and schema
- (b) {5 + 5 points} Which type of relationships do you have? Discuss both the cardinality and the participation constraints
- (c) {10 points} Give the corresponding relational schema of your database
- (d) {5 points} Give a possible snapshot of your database containing at least 5 entries (better if mean full {5 points})

Note: We will check this homework together during the lectures'hours.

Resources: Chapter1, par.2.1, chapter3, par.4.1, chapter 7 of the Elmasri & Navathe book.
