The City College of New York
Department of Computer Science
Fall 2021 Semester

CSc 33600 Introduction to Database Systems

Assignment 1

A report uploaded on the Blackboard's course page for section showing [1] *the problem,* [2] *solution methods,* [3] *codes developed, and* [4] *outputs produced for the queries indicated, is due during and/or before the end of the class on Wednesday,* 6 October 2021. ***The deadline is strictly observed***.

Family Relations - I

Consider the family Entity-Relationship (E-R) diagram[s] discussed in the class.

A. Given the relation PERSONS that has tuples holding the attributes of persons (*p*), and the relation FAMILY that has tuples of the form (*pId*, *fId, mId*), where *pId* is the *Id* person in PERSONS, *fId* is the *Id* of the father of *p*, and *mId* is the *Id* of the mother of *p*, with *f* and *m* are also persons in PERSONS.

1. Provide the E-R diagram and corresponding relational database schema used for this assignment. Indicate for each relation: the key or keys, primary key, foreign keys, essential constraints, and any appropriate checks.

2. Provide appropriate data manipulation expressions to create the relations in a RDBS of your choice.

3. Give appropriate relational algebra trees-expressions that return:

   a. Children of a given couple;
   b. Grandparents of a given person; and
   c. Nephews -- sons of one's brother or sister -- of a given person.

4. Provide appropriate SQL expressions for the queries in A3.

B. Implement A above using your RDBS of choice. Test your implementation of the queries using an appropriate set of data. The data utilized must be representative and sufficient to demonstrate the validity of your queries.

Best wishes,

Hesham A Auda
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