CSC2001F DATABASE ASSIGNMENT TWO

This assignment is to be done in the groups of 5. Use the Vula Forum for queries. If necessary, state any assumptions made wherever this specification is ambiguous/incomplete.

Client's Specification

A new online registration system is planned for UCT BSc students. They will give their student number and be shown the results of all courses already taken (if any); they will then be asked which majors they plan to have, as well as which courses they plan to take this year and in which periods (and also in future years of their BSc if applicable). The system will then point out any problems with their plan (e.g. timetable clash, missing pre-requisites, too many courses, insufficient credits to graduate or to meet readmission criteria, lacking a compulsory course, etc). You will NOT build the registration application, but you must design a relational database to support it. Your design should thus cover student results from previous years (e.g. as currently given on Peoplesoft), as much of the BSc degree and undergraduate course rules as possible [http://www.students.uct.ac.za/sites/default/files/image_tool/images/434/study/handbooks/2021/2021_SCI_Handbook.pdf], and student registrations (curriculum for all remaining years of their degree).

Submission (approximate marks for each sub-section are indicated in square brackets):

(a) Where you feel the specification is unclear or ambiguous, state the **assumptions** you made about the system in order to deal with those problems/omissions. [0]

(b) Draw an **Entity-Relationship model** for this database. Use the notation exactly as used in lectures. Include as much of the semantics in the diagram as possible. You will not lose marks if you submit a scanned copy of a hand-drawn model: so hand-draw or use a tool like drawio, as you prefer. [10]

(c) Give an appropriate **relational database design** for this data. Just write the name of each relation followed by the names of its attributes in brackets; and underline the attribute(s) in each primary key. Example: CrazyTable (studentNumber, period, result) [10]

(d) Write down **any one foreign key** attribute in your design (relation name and column name). [1]

(e) Write down **any one functional dependency** (FD) that applies to this data. [1]

(f) State in simple English **what that functional dependency means**. [1]

(g) Write down **any one transitive dependency** (transitive FD) that applies to this data. [1]

(h) Write down briefly each group **member's contribution** to this assignment. [1]

(i) Read the accompanying description of an extended ER model for handling temporal data. Draw an ER model using as much of this extended notation as possible in order to show as many temporal characteristics and transitions as possible. Your ER model must be for the same domain/context i.e. that of UCT. Secondly, state clearly in English everything this ER model describes. Lastly, each group member must then **answer the following questions independently (separately)**: [10]

1. Which would you rather use if you are designing a system: TREND or English? Why?
2. To understand someone else's data, which would you rather be given: TREND or English? Why?
3. How clear is the distinction between `CHG` and `EXT`?

very confusing / somewhat confusing / OK but takes some getting used to / fairly clear / not confusing at all

4. How clear would it be using `TRAN`(transform) instead of `CHG`, & `ALSO` instead of `EXT`?

very confusing / somewhat confusing / OK but takes some getting used to / fairly clear / not confusing at all

5. Can you suggest better words to use instead of `CHG` and `EXT`?
6. How clear is the distinction between past (lowercase) and future (uppercase) transitions?

very confusing / somewhat confusing / OK but takes some getting used to / fairly clear / not confusing at all

7. Which direction do you think `chg` (or `ext`) arrows should go: as they are now / opposite direction

Only one group member must submit. The file name must be your 5 student numbers in alphabetical order.