ICT285 Databases

Semester 2, 2020
Assignment 2

DATE DUE: Friday 23rd October, 1130pm (GMT +08)

PLEASE NOTE:

1. **Assignments submitted BEFORE the due date and time, will be returned PRIOR to the examination.**
2. **Assignments can be submitted any time until 1130pm on Friday 30th October without penalty, BUT MIGHT NOT BE RETURNED PRIOR TO THE EXAMINATION.**
3. **Assignments submitted <u>AFTER 1130pm on Friday 30th October</u> AND <u>BEFORE 1130pm on Friday 6th November</u>, will attract a 5 mark penalty for each day, or part thereof, after 1130pm 2nd November.**
4. **Assignments WILL NOT BE ACCEPTED, and WILL NOT BE MARKED if they have not been received by 1130pm November 6th.**
   a. **If you are in a position of not being able to submit your assignment by this deadline, you are advised to apply for DEFERRED ASSESSMENT.**

Some important points worth noting:

- This assignment is worth 20% of your final mark for the unit.

- This assignment consists of 100 marks. Marks are allocated as described in the assignment.

- If you have questions about the assignment, you can ask your tutor, the unit coordinator, or post a question on the LMS discussion board (preferred). Please check the discussion board before asking to make sure that your question has not already been answered.

- The University treats plagiarism, collusion, theft of other students' work and other forms of dishonesty in assessment seriously. **This is an INDIVIDUAL assignment. Any instances of dishonesty in this assessment will be immediately forwarded for investigation.**

In Assignment 01, you designed a database for Drip Drip Water Company. You are now expected to implement the database. There have been some minor changes in the requirements from Assignment 01 needed in order to support the transactions and views listed below. You will need to incorporate these changes and any changes you may have made to your design as a result of the feedback you received on Assignment 01.

An important note about SCOPE:

- Please read the "What you need to do" section below **CAREFULLY**. This lists the things on which you are being marked for this assignment.

What you need to do:

1. Create and submit an ERD for this database that you use as the basis of your implementation. **(10 marks)**
2. A one or two paragraph explanation as to the changes you have made to the ERD on the basis of your feedback from Assignment 1 or as a result of having to support the transactions and views below. **(5 marks)**
3. Create a **data dictionary** that lists **at least** each of the tables, the columns, their domains and any other constraints that apply. **(10 marks)**
4. Implement the database in Oracle SQLPlus on arion.murdoch.edu.au **(20 marks)**
    a. All tables should be created as per your ERD; the marker will check your ERD against your tables.
    b. All **entity and referential integrity constraints** should be created and appropriately named.
    c. All columns should be of an appropriate domain/size and be set as required or not as appropriate.
    d. All tables should be populated with sample data that will allow the marker to test that your database fulfils the application requirements as specified and support the transactions and views listed below.
    e. **SELECT, UPDATE and DELETE permissions should be GRANTED on all database objects (particularly tables and views) to the user MARKERTL. This is most important. If you do not grant this permission, the marker will not be able to mark all or part of your assignment.**
5. Provide an explanation (and any code you used) as to how you implemented (or, if you were not able to successfully implement, how you would have implemented) the following constraints **(20 marks)**:
    a. Meter readers can only read a maximum of 5 meters in any given calendar month (**please note this constraint is modified from Assignment 1 so that you will be able to test it**).
    b. Customers who do not pay their bill within 60 days will their water supply cut off.
    c. Once a customer has had their supply cut off, the person or business responsible for the bill will not be able to create a new account at a different service address until such time as their arrears have been cleared.
6. Provide all the SQL statements that are required for the following transactions to be executed **(15 marks)**:

    Transaction 01:

- A residential customer (Bob Builder) of 53 Drip Drive, Dripwater (post code: 1267) has an account with the water company at the same address. The meter was installed on 30th October <mark>2019</mark> and has the serial number DDWC4763. This customer does not have any outstanding balance for the service at this address.

Transaction 02:

- On 23rd July, 2020, the meter at 53 Drip Drive, Dripwater was read by Karen Karpenter (a meter reader). The reading the last time this meter was read was 123580 kL, at this reading it was 123683 kL. The bill was created and sent on the same day.

Transaction 03:

- On 2nd August 2020, Bob Builder settled the account in full for consumption at 53 Drip Drive, Dripwater using PayPal.

7. Provide VIEWS for the following (views should be named as ViewA, ViewB etc) **(20 marks)**:

   ViewA:
   - The number of meters read in the current month by each of the meter readers (this view should be able to be used at any time without having to be changed to accommodate the date).

   ViewB:
   - List the consumption history of the service address, 53 Drip Drive, Dripwater, 1267, from the beginning of 2020 (you will have to make up the readings yourself) until the September reading.

   ViewC:
   - List the meters that are due for replacement in the next six months (this view should be able to work at any time in the future without needing to be changed to accommodate the date).

   ViewD:

   - Calculate the current bills for all non-residential customers for September 2020. (Your sample data must include at least one non-residential customer who has a bill for September 2020.

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Please note the following about the marking of this assignment:
1. The marker will view your documentation and then match your documentation to your implementation. This means for example, that tables, columns and constraints should be named in your database as they are in your documentation. Relationships defined in your ERD should be defined in your database.

2. The marker will view the sample data in your tables.

3. The marker will check that the data as per the transactions in 6 above have been included.

4. The marker will execute each of the views created for 7 above.

5. **AGAIN, please ensure that you GRANT the appropriate privileges on all relevant objects (tables and views) to the user MARKERTL. If you do not do this, the marker will not be able to mark part of your assignment (and you may be awarded 0 for this section).**