Assessment details for <u>ALL</u> students

Assessment item 2—Assignment 2

Due date:	Friday of Week 10 (Midnight AEST time)	**ASSESSMENT**
Weighting:	30%	
Length:	Typically 10-20 hours	**2**

Objectives

This assessment item relates to all learning outcomes in the unit profile.

Introduction

This assignment consists of two parts:

- Part A — Entity-Relationship Diagrams (ERD)   (50 marks)
- Part B — Data Model Transformation   (50 marks)

Part A — Entity-Relationship Diagrams   (50 marks)

Draw an Entity-Relationship Diagram (ERD) for the data storage requirements described in the case study below.

The case study will contain conflicting, ambiguous, vague, and missing information. Seek clarification and/or make reasonable assumptions to complete the requirements: your assumptions and clarifications need to support all details of the ERD that are not already provided by the case study. Document any assumptions you make and clarifications you obtain in an appendix named 'Assumptions and Clarifications'. There are two options:

- Seek clarification about the case study by searching the forums. If your question has not already been discussed, please post your question.
- Make *reasonable assumptions* about missing or ambiguous information in the case study. However, marks may be lost for *unreasonable assumptions*. For example, it is unreasonable to assume that people only ever drive around with one passenger in their car.

Notes:
- Your ERDs should be neat, clear and easy to read.
- Please follow the modelling standard used in the text book and lecture slides.

The Case Study

We are creating a web service/app that is a rideshare service to chauffeur kids to events such as school or extra-curricular activities. You will need to record information about the cars, the drivers, the kids and the trips that they make. When one person decides to drive somebody else's kids, they both need to give permission, and these permissions need to be recorded. Please specify the data storage requirements.

Number	Requirement
1	Car trips need to be recorded. Trips allow people to attend events at the trip stops. • Example: Jamie taxis his kid Ben from home to Freshwater school each morning at 7:50am. Jamie then ends his trip by returning home. • Example: Karen drives her child Thomas from her home to Freshwater school each morning at 7:50am. Karen then proceeds to her work. • Make an assumption about how many locations a trip can consist of.
2	The system records the information used to determine which trips are optional "taxi trips". That is, record who needs to attend which stops. • Example: Jamie does not need to be the person who taxis Ben to school. In fact, Jamie would be happy if somebody else could take Ben. However, Karen feels compelled to drop Thomas off each morning.
3	If an optional trip overlaps with another trip, and there is room in the car, then the system will offer the (optional) taxi trip to the other driver. Do not record the offers made, just the acceptance of the offers. You do not need to figure out which trips are optional. You only need to record the information that will be needed to determine which trips are optional taxi trips. • Example: Karen lives near Jamie, and Karen's son, Thomas, goes to the same school as Jamie's kids. Since Jamie's trip is an optional taxi trip, and Karen has room, then Karen is asked whether she would be willing to take Jamie's kids. The system records Karen's acceptance of the offer. • Make an assumption about how to calculate "room in the car".
4	Two stops overlap another if their locations are close and both parties are at their stop within 10 minutes of each other. Record enough information so that we can determine which stops overlap. • The specifications of locations are not crucial at this stage. Make your own assumption about what 'close' means.
5	Permission is sought from the (original) driver when their trip is offered to another driver. Do not record the offers made, just the acceptance of permission. • Example: Jamie gives his permission for Karen to take Ben.
6	Once we have permission from both the original and new drivers, the system will assign the trip to the new driver. • Example: since Jamie and Karen have accepted the offer for Karen to take Jamie's kids, the system will record that Karen's trip is a substitute for Jamie's trip.

How You Are Marked for the Entity-Relationship Diagram (ERD)

You need to ensure you pay attention to the following aspects when developing your ERD:

- Correct entities are identified   (6 marks)
- Correct unique identifiers   (6 marks)
- Appropriate attributes for each entity   (8 marks)
- Appropriate notation   (10 marks)
- Correct relationships and cardinalities (min/ max cardinalities)   (10 marks)
- Assumptions/ clarifications support all details provided in the ERD   (10 marks)

Part B — Data Model Transformation   (50 marks)

Implement the ER model you developed in Part A as a relational database design.

1. Transform your ER model into a relational database design.   **(25 marks)**

    Note: Document the tables in your design using the Relation Notation shown below.

    ```
    Customer(CID, Name,  Street, Suburb, State, PostCode, DiscountPercent, Email)

    SalesOrder(SOID, CID,  Number, FullPrice, Discount, FinalPrice, TotalPaid, Status)
       foreign key (CID) references Customer(CID)
    ```

    Provide a brief explanation about cascades for each foreign key.

    How You Are Marked for the relational database design
    Please pay attention to the following aspects when developing your ERD:

    - Correct tables and primary keys   (7 marks)
    - Correct foreign keys   (6 marks)
    - Correct cascades   (6 marks)
    - Documentation of cascades   (6 marks)

2. Implement enough of the database to demonstrate the following.   **(25 marks)**
    You do **not** need to implement the entire database.
    - A. **primary key constraints**: provide **five** examples   (5 marks)
    - B. **foreign key constraints**: provide **five** examples   (5 marks)
    - C. **cascading delete**: provide **one** example   (5 marks)
    - D. **validation rule with a validation text**: provide <u>**one**</u> example   (5 marks)
    - E. **table constraint** (a constraint that compares more than one column): provide **one** example. You will need to check the SQL Server Compatibility (ANSI 92) for your database before you write an SQL alter table query.   (5 marks)

You need to include a brief documentation (in a word document) that highlights where the above items are demonstrated in your database, e.g. *<u>where</u>* the ***primary key constraints*** are. Marks may be lost if your documentation is missing, unclear or not concise.

How and what to submit

Submit your assignment on the unit web site. Please submit two files:

1. A Microsoft Word document containing:
    - Your Entity Relationship Diagram (ERD) for Part A
    - Your *reasonable* assumptions/points of clarification for Part A (if you have any)
    - Documentation for Part B.
2. A Microsoft Access file containing the tables and features you have implemented to support the requirements for Part B.

Marking, model solutions, and deadlines

Marked assignments and marking feedback will be made available to you approximately two weeks after the due date or two weeks after submission, whichever is later. Any Assignment 2 submitted two weeks after the due date will NOT be accepted or marked.