INFS1200/7900 Module 1 Case Study

Focus

Purpose: The purpose of this task is to develop experience in applying the Entity Relationship Model to a real-world scenario. Additionally, you will have an opportunity to develop team collaboration skills through consultation with your peers.

Task

Using the correspondence on the pages below, complete the following task. Please ask your tutors for help if you require clarification on any aspects of the brief.

Section A – Extended Entity Relationship (EER) Diagrams

Please read Correspondence 1, Correspondence 2 and Correspondence 3 before attempting this section.

Using the correspondence on the pages below, create an EER diagram for *Dirt Road Driving*. An answer box has been included at the end of the case study. **Note: There may be several correct ways to construct an EER diagram for this case study**. You are strongly encouraged however to justify your decisions as a group. Although there may not be one correct answer for a given problem, there may be a more efficient/scalable solution.

You may either hand draw or digitally create your EER diagram. If you wish to create your EER diagram digitally, we recommend you use diagrams.net however you may use other software if you prefer. Regardless of the software or method used to create your EER diagram, it **must** conform to the notation standards taught in this course.

Click the link here to skip to the answer box.

Correspondence

Correspondence 1:

From: peter@dirtroaddriving.com.au
To: INFS1200_7900@uq.edu.au
Date: 17/3/2020 11:42 AM
Subject: Student Support for Industry Project

Dear INFS1200/7900 Student Team,

I am emailing in regard to your lecturer's offer for student assistance in a database project our company is undertaking. I am the cofounder of a rural rideshare company called "Dirt Road Driving." We specialise in offering our clients rideshare services in locations which are not serviced by other companies such as DiDi or Uber.

We are currently storing our data in an excel spreadsheet, however, to accommodate future growth we would like to implement a database system to track our ridesharing activities. I have tried to summarise the data stored currently in the excel sheet below. Would you please be able to create an Entity-Relationship diagram for us to use in our planning phase?

Users: When a user signs up to create an account with us we ask them to provide their full name and DOB. We also assign them a unique id number. A user can also register emergency contact(s) specific to their account. Each emergency contact includes a name and contact details, with the name being unique per user account.

Staff: We split staff into two categories, Administration and Drivers. All staff members have a staffID but for administration staff their desk number is also recorded. By law we are required to record the licence number of each driver. A staff member could work both as a driver and in administration.

Vehicles: We store the VIN number, make and model of each car used in our ride sharing service. However, if the car is a 4WD then we also record the ride height and wheel type. For 2WD cars we record if the car is front wheel drive or back wheel drive.

Trip: A trip is made up of a user, a vehicle and a driver as well as a time stamp of when the booking is made. Two additional timestamps demonstrating the start and end of the trip are also recorded. This allows us to calculate a ride fare. In a trip, the user may request to stop at several locations, which are all recorded for safety purposes. After a trip is made the user can submit a rating.

On behalf of the company I would like to extend our sincere thanks for your help and assistance.

Kind regards,
Peter Thompson
Director of Innovation | Dirt Road Driving

Correspondence 2:

From: INFS1200_7900@uq.edu.au
To: peter@dirtroaddriving.com.au
Date: 18/3/2020 04:23 PM
Subject: RE: Student Support for Industry Project

Hi Peter,

Thank you so much for your email! The student cohort will indeed be very excited to assist with your company's project.

In order to produce an Extended Entity Relationship diagram which best meets Dirt Road Driving's needs, I have a few follow-up questions I want to ask to clarify some points of ambiguity.

Users: What "contact details" are stored for an emergency contact?

Staff: Do you store any personal information about staff members (name, DOB, address) in addition to their staffID?

Trip: Just out of interest, why do you record the vehicle used for each trip? Wouldn't a driver just drive the same vehicle each time?

Ratings: You mentioned in your previous email that after each trip is completed the user provides a rating? Could you please provide some more information on how this works? For example, does the user rate the driver, vehicle or both? Is the rating stored in a numerical format or as a text-based response? Also, if a user takes another trip with the same driver or vehicles does a new rating get stored or is the old one updated?

Once we can clarify these points, I will forward our correspondence onto our student teams. We look forward to working with you and your company!

Your sincerely,
Elaine Smith
INFS1200/7900 Student Representative

Correspondence 3:

From: peter@dirtroaddriving.com.au
To: INFS1200_7900@uq.edu.au
Date: 27/3/2020 08:56 AM
Subject: RE: Student Support for Industry Project

Hi Elaine,

Sorry for my late response. Thank you for your email requesting clarification. After checking with our administration staff, I can provide the following information in response to your questions.

What "contact details" are stored for an emergency contact?
We just store an email address and a phone number.

Just out of interest, why do you record the vehicle *used for each trip? Wouldn't a driver just drive the same* vehicle *each time?*
Actually, a driver could potentially driver any vehicle in our system when they complete a trip. Drivers often switch cars depending on the trip, especially in areas where there are no roads or just dirt tracks. As such we need to record the vehicle used for each individual trip as well. A driver is never permanently assigned to a specific vehicle.

Do you store any personal information regarding staff members (name, DOB, address) in addition to their staffID?
Yes, we record each staff members full name (first, middle and last), DOB, address and their phone number(s) as well.

Regarding Ratings…
After a trip is completed the user is encouraged to rate the driver and the vehicle. However, they rate the driver and the vehicle separately. Each rating is stored as an integer out of 10. If a user takes another trip with the same driver or vehicle and decides to submit another rating, a new rating is not created, instead their old rating is updated.

I hope this helps! Please feel free to contact me if you require any more information/clarifications. I look forward to viewing the student responses!

Kind regards,
Peter Thompson
Director of Innovation | Dirt Road Driving

Section B – Critical Thinking

Propose a change to the ER diagram that can help Peter develop new insights into how he can make data-informed decisions which is not possible in the current version of the diagram.

This is an open-ended question, so a variety of answers are possible. Based on your own experience of ride-sharing businesses, see if you can identify anything that might be useful to add into the ER diagram. These changes could either extend what is already there, or add something new entirely. If you are unsure about your solution, please consult your practical tutor.

Answer Box

Please attempt your EER diagram solution for Section A below in the space provided. A partial solution with some entities (not including all of their attributes, relationships or subclasses) has been provided.