

COMP315-05A Tutorial Assignment 2

Entity-Relationship Diagrams and Normalisation

Assignment:

This assignment is based on the exercises carried out as part of the tutorials on Entity-Relationship diagrams and normalisation. It is to provide further practical exercise in using ERDs as part of the process of defining a data base schema. The assignment will allow you to demonstrate your understanding of the creation of a data model and its refinement toward a database schema.

For the description overleaf, you are to:

- i) Draw an E-R diagram, including all attributes and cardinality.
- ii) Prepare a text description explaining your E-R diagram.
- iii) Convert the E-R diagram drawn above, to relations.
- iv) Draw a functional dependency diagram from the above.
- v) Normalise the relations.
- vi) For each relation you are to state the normal form, and why you consider the relation to be in that normal form.

The E-R diagram(s) may be hand drawn. The text elements must be typed.

This assignment is to be individual work. While it is understandable that there will be similarities between student submissions given similar exercises have been discussed in tutorials, any submitted work that displays undue similarities will be treated as suspicious and as a potential case of plagiarism. Such submissions will be subject to the University's discipline procedures.

You are to submit the completed assignment (i.e. the E-R diagram(s), the text description, the initial relations, the functional dependency diagram, the normalized relations, and the statements of normal form) to the 315 hand-in box in the G_block stairwell by 5pm on Friday June 3. Late assignments will not be graded.

This assignment is a compulsory item of assessment. It is worth 2.5% of your final grade.

Problem Description:

“The Tour Bus Company wishes to keep records of all staff and tour buses assigned to tours. The company has a number of buses available for tours.

Each Bus requires a number of staff (a driver and tour guides) and has a maximum capacity (the number of seats available) and an availability status (available, on tour, under maintenance, etc). Availability of a bus depends on the maintenance of the bus. The company operates a number of garages along their routes, which maintain the buses. Each of the garages has their name, address, and phone number recorded. Staff data required for each garage includes name, address, phone number, and the type of licence (in case they have to retrieve a bus) for each staff member. The date, duration, and type of each maintenance occurrence are recorded. After maintenance the availability status of the bus is updated. In the event of a bus becoming unavailable during a tour, another bus will be substituted

Each tour has a tour name, size, departure date, and length of tour. Staff data includes name, address, phone number, and the type of licence they have. Some drivers act as tour guides on occasion. There is a limit on the number of consecutive days a staff member may work. The tours stop at a number of hotels, which have their name, address, phone number, standard room rate and number of rooms recorded. The Tour Bus Company need to know which tours are at what hotel for any given day.

Passengers booked on each tour have their name, contact address and phone number and a number of other details recorded. Particulars the Tour Bus Company need to know include whether passengers have any allergies, medical conditions, if they have booked other tours with the company, and if they have paid for the current tour. Passengers who have booked but not paid are not permitted to start a tour.”

Hint: Think very carefully about what needs to be recorded. Note that some of the elements in this description may be ‘red herrings’ (i.e. not relevant). Note any decisions you make in your text description of your E-R model.

You may assume any further information as is reasonable to complete the assignment. Any such assumptions should be recorded and submitted with your assignment.