

# Assignment / Assessment Specification

Module		
<b>Title</b> CMPU 3010 Databases 2	<b>Lecturer</b> Dr. Patricia O'Byrne	<b>Class group</b> TU856/3, TU857/3, TU858/3, TU844
Assignment		
<b>Name</b> Relational Modelling	<b>Worth: 6% of module</b> Estimate of time required: 6 hours outside of lab times.	<b>Due date/time</b> 3 <sup>rd</sup> November 2023
<b>Submission mechanism</b> <i>(Only submit through mechanisms listed here – other submissions will be ignored)</i> Brightspace submission – all students in a group must <b>individually</b> submit group and individual parts.	<b>Group and individual</b> Individual and Group parts.	<b>Late submission penalty</b> 10% per week for 1 week. No submissions allowed after that.
<p><b>Overview</b> This assignment involves group and individual work. You will be part of a group of 3 students (maybe 2 in rare cases) who work together to design a relational model.</p> <p><b>As a group:</b> Produce a design, implement and populate tables in a designated schema on the University server.</p> <p><b>As an individual:</b> Take a user role within the system and write a plpgsql function / procedure to manipulate data in your student schema, calling it from a Python program. Write and implement triggers. Details are shown below.</p>		
<p><b>ERD (2 of 6) Group mark:</b></p> <ol style="list-style-type: none"> <li>Design and submit an ERD for the conceptual schema of your allocated case study. Each member of the group should understand and agree with every part of the ERD. Using Oracle DataModeler, document a logical and relational design. Generate a data model using SQL Data Modeler. Save a picture of both the logical and relational models.                         <ol style="list-style-type: none"> <li>Using 'view details', choose 'columns only' to make your diagram more readable.</li> <li>Select all, right click and change format to an accessible readable format.</li> <li>Print the diagram to a picture.</li> </ol> </li> <li>Generate CREATE statements from your DataModeler model. Edit the script to get the code to work in PostgreSQL. You will be allocated a group schema for your model. Run the CREATEs in the group schema and add at least 4 rows to each table.</li> </ol> <p>Each person in the group must submit a MS Word document, with a picture of the logical model and a picture of the relational model embedded in it. Explain your diagrams. You will be asked to demonstrate this. From the group schema, grant <b>appropriate</b> privileges to each role in the system. Marks will be lost if the privileges are not appropriate.</p>		
<p><b>Individual work:</b></p> <p><b>Role Definition (1 of 6) individual:</b></p> <p>Each person should take responsibility for a role or a half a role in the system. Use your student schema to work with the tables in the group schema. In your Word document, explain the role that you are taking in relation to the system. The privileges granted to you for this are dependent on your role. The role each member of the group takes must be different to that of other members of the group.</p>		
<p><b>PROGRAMMED TRANSACTION and TRIGGER (3 marks):</b> Write a PLpgSQL function or procedure with parameters to run a transaction to <b>change</b> the data in the database and leave it in a consistent state. It should include decision-making and error checking and it should be appropriate to your user role. Write a Python program to call the function and handle output. Write a constraint trigger in plpgsql and implement it.</p>		

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### **Submission:**

1. Submit a Word document that contains a readable **picture** of your logical model and your ERD. No marks will be given for unreadable ERDs. Show your thought process while creating your ERD and designing your transactions and queries.
2. Submit 3 x SQL well commented documents:
  - 2.1. 1 for your CREATEs, INSERTs and GRANTs. This should have been run in the group schema and should be the same for everyone in the group.
  - 2.2. 1 for your function / procedure.
  - 2.3. 1 for your constraint trigger.
3. Submit a Python program (or Jupyter Notebook in Python) to run the transaction.

### **Marking:**

You will be asked to demo your code, most probably during a lab session. STUDENTS WHO DO NOT DEMONSTRATE THEIR WORK WILL NOT BE MARKED.

Group interaction will be marked with the aid of peer assessment. Each member of the group will be asked to allocate a percentage amount of group work done by each member of the group.