



FIT9132 Introduction to Databases

2021 Semester 2

Assignment 1B - Full Database Model and Implementation Monash Movement (MM)

Assignment weighting 15%

Assignment marked out of 100 and released as a grade out of 15

This task continues the work you have started in assignment 1A by refining/extending the model you developed and implementing it as a set of tables under your Monash Oracle database account.

Since this is an ongoing development process based on your assignment 1A submission and marker feedback, ***you must ensure that your assignment 1A submission and the marker feedback remains confidential and is only seen by yourself and the FIT9132 teaching staff.***

Assignment 1B's brief must be read in conjunction with the assignment 1A brief - i.e. your final model must encompass both sets of requirements.

You may change your assignment 1A conceptual model in *any manner you wish* as you work through assignment 1B, **provided your final logical model meets both sets of requirements.** These changes, if any, to your conceptual model are not required to be submitted, they simply provide the basis for your working as you proceed with the modelling.

In developing your final logical data model, composite attributes present on your conceptual model must be expanded into their component simple attributes, unless specifically otherwise directed. If the supplementary material presented in this document does not guide you in deciding the components you may make any reasonable decision on their simple component attributes.

Monash Movement management have indicated the following further information which they wish considered within your design.

- Staff appointed to a centre are required to provide a mobile number, also members are required to provide a phone number they can be contacted on.
- The current types of classes Monash Movement run include Core, Gym, HIT, Pilates, Swimming, Spin, Yoga and Zumba. This list is added to regularly as new types of classes are added at their various centres.
- In the past, members have shared concerns about unwanted attention during mixed classes and have requested gendered-classes so they can focus on achieving their fitness goals in a supportive environment, for example HIT for Women. In order to ensure all members can focus on their fitness goals in a supportive environment without unwanted attention, Monash Movement would like to run a number of restricted-gender classes (for example HIT for Women). Management asks that your model allows them to specify the gender specific or unrestricted nature of each class.
- Staff employed by the centres are assigned a role as a single letter code from the following (fixed) list:
 - Administration (A)
 - Cleaner (C)
 - Instructor Dry (D)
 - Instructor Pool (P)
 - Manager (only one per centre) (M)
 - Sales (S)
 - Security (T)

Monash Movement Sample forms

1. Class Staffing Report

Monash Movement Class Staffing Report

Centre Id 10
 Centre Name Clayton ARC Centre
 Centre Address
 Street 123 Wild Rd
 Town Clayton
 Postcode 3168

Class Number 123
 Class Duration (mins) 45
 Facility Room No 5
 Start Date/Time 23 Aug 2021 18:00
 No of Sessions 4

Staff ID	Staff Name	Class Leader	First Aid Certified
321	Avery Xue	Yes	No
421	Haven Perry	No	Yes

2. Class Attendance Report

Sample 1:

Monash Movement Member Class Attendance Report

Centre ID 10
Centre Name Clayton ARC Centre

Class Number 123
Class Type Spin
Class Description Beginners Spin Training
Facility Room No 5
Start Date/Time 23 Aug 2021 18:00
No of Sessions 4

Member No	Payment Date	Session Date				Total Attendance
		23 August	30 August	6 September	13 September	
12	20 August	Attended	Attended	Attended	Attended	4
31	10 August	Attended	Attended	Attended	Attended	4
54	22 August	Attended	Absent	Absent	Absent	1
123	10 August	Attended	Attended	Attended	Attended	3
256	21 August	Attended	Attended	Absent	Absent	2
453	10 August	Attended	Attended	Attended	Attended	4

Sample 2:

Monash Movement Member Class Attendance Report

Centre ID 10
Centre Name Clayton ARC Centre

Class Number 127
Class Type HIT
Class Description HIT Early AM Power Zone
Facility Room No 4
Start Date/Time 25 Aug 2021 06:00
No of Sessions 1

Member No	Payment Date	Session Date	Total Attendance
		25 August	
45	18 August	Attended	1
54	6 August	Absent	0
62	6 August	Absent	0
78	7 August	Attended	1
123	21 August	Attended	1
325	10 August	Absent	0

REMEMBER you must keep up to date with the ed assignment 1B forum where further clarifications may be posted (this forum is to be treated as your client).

Please be careful to ensure you do not post anything which includes your reasoning, logic or any part of your work to this forum, *doing so violates Monash plagiarism/collusion rules* and has significant academic penalties.

You are free to make assumptions if needed however they must align with the details here and in the assignment forums and must be clearly documented (see the required submission files).

TASKS

Please **ENSURE** your name and ID are shown on every page of any document you submit. If a document is a multipage document, please also make sure you include page numbers on every page.

GIT STORAGE

All working files, as you work on this assignment task, **must be stored in GIT and must show a clear history of development**. Your work for this task **MUST** be saved in your local repo in your Assignment 1B folder **and regularly pushed to the FIT GitLab server** to build this history of development. Any submission with less than three pushes for your model will incur a grade penalty of 10 marks (a 10 mark deduction).

Before submission via Moodle you **must** log into the [web interface of the FIT GitLab server](#) and ensure your files are present.

All source documents must be available in your FIT GitLab server account and must not be modified in any manner after you have made your Moodle submission. *For example with your normalisation you are required to submit a PDF copy of your work, however your source documents (MS Word, Pages or an MS Word export from Google Docs) must exist in your FIT GitLab account for your work to be acceptable for marking.*

Task to complete:

1. Perform **normalisation to 3NF** for the data depicted in the sample MM reports. Note that only one normalisation is required for the Class Attendance Report, you have been provided with two samples so you can appreciate some of the variety which occurs.

The approach **you are required to use** is the same approach as shown in the normalisation tutorial solution. *The normalisation must be carried out form by form, beginning by you representing the document you are working on as a **single** UNF form and then moving through 1NF, 2NF and 3NF.*

During normalisation, you must:

- **Not** add surrogate keys.
- Include all attributes (you must **not remove** any attribute as derivable)
- Clearly show UNF, 1NF, 2NF and 3NF.
- Clearly identify the Primary Key in all relations.
- Clearly identify **all dependencies** at the various normalisation stages (Partial at 1NF, Transitive at 2NF and Full at 3NF). You should use the same notation as depicted in the normalisation sample solutions, for example:
attr1 -> attr2, attr3
If none exist you must note this by stating:
No partial dependencies present and/or
No transitive dependencies present
- If required, carry out attribute synthesis.

The attribute names used in your normalisation and those on your subsequent logical model **must be the same**.

2. Based on your assignment 1A conceptual model, your markers feedback, your reading of this case study and the normalisations you carried out in step 1 above, **prepare a logical level design** for the Monash Movement database.
 - The logical model must be drawn using the Oracle Data Modeler. The information engineering or Crow's foot notation must be used in drawing the model. Your logical model must **not** show datatypes.
 - All relations depicted on this model must be in 3NF
 - You are **required to add at least one surrogate key to your design** (you are free to select the most appropriate relation to make this change in)
 - All **attributes must be commented in the database** (ie. the comments must be part of the table structure, not simply comments in the schema file).
 - Check clauses/look up tables must be applied to attributes where appropriate.
 - You **MUST include the legend** as part of your model.
 - Note that your GIT repository must clearly indicate your development history with multiple commits/pushes as you work on your model.
3. **Generate the schema for the database** in Oracle Data Modeler and use the schema to create the database in your Oracle account. The **only** edits you are permitted to carry out to the generated schema file is to add header comment/s containing your details (student name/id) and the commands to turn on and off spool/echo for your script. Ensure you:
 - Capture the output of the run of your schema statements using the spool command.
 - Ensure your script includes drop table statements at the start of the script.
 - Name the schema file as **mm_schema.sql**.

Submission Requirements

Assignment 1B:

Due: Friday 17th September (Week 8) at 4 PM Melbourne Time (AEST)

(Note due date modified from published because of public holiday in Malaysia on Thursday 16th)

The following **files** are to be submitted and **must exist** in your FITGitLab server repo, *along with the source documents from which they were generated*:

- A pdf document showing your full normalisation of the sample MM documents showing all normal forms (UNF, 1NF, 2NF and 3NF). Name the file **mm_normalisation.pdf**
- A single page pdf file containing the **final logical Model** you created in Oracle Data Modeller. Name the file **mm_logical.pdf**. This pdf must be created via File - Data Modeler - Print Diagram - To PDF File from within SQL Developer, do not use screen capture.
- A zip file containing your Oracle data modeler project (in zipping these files be sure you include the .dmd file and the folder of the same name). Name the file **mm_oraclemodel.zip**.
 - Part of the grading of your submission will involve your marker extracting your model from this zip, opening it in SQL Developer Data Modeller, engineering to a new Relational model and from this your marker will generate a schema which will then be compared with your submitted schema (*they must be the same for your schema to be accepted*). For this reason your **model must be able to be opened by your marker and contain your full model otherwise your task 2 and 3 will not be able to be marked resulting in the loss of 60 marks**. For this reason, you **MUST** carefully check that your model is complete - ensure you take your submission archive, copy it to a new temporary folder, extract your submission parts, extract your model and ensure it opens correctly **before** submission. **Please view the video on Moodle under week 6 which demonstrates this process.**
- A schema file (CREATE TABLE statements) generated by Oracle Data Modeller. Name the file **mm_schema.sql**
- The output from SQL Developer spool command showing the tables have been created. Name the file **mm_schema_output.txt**
- A pdf document containing any assumptions you have made in developing the model or comments your marker should be aware of. If you have made no assumptions, submit the document with a single statement saying "No assumptions made". Name the file **mm_assumptions.pdf**

These files must be *submitted as individual files ie. you must upload to Moodle six separate files as named above* (the six files must *not* be zipped into a single archive) before the assignment due date/time.


Late submission will incur penalties at the rate of 5 marks deduction per 12 hours or part thereof.

Please note we **cannot mark any work on the FITGitLab Server**, you need to ensure that you submit correctly via Moodle since it is only in this process that you complete the required student declaration without which work **cannot be assessed**.

It is your responsibility to **ENSURE** that the files you submit are the correct files - we strongly recommend after uploading a submission, and prior to actually submitting in Moodle, that you download the submission and double-check its contents.

Your assignment **MUST** show a status of "Submitted for grading" before it will be marked.

Submission status

Attempt number	This is attempt 1.
Submission status	Submitted for grading 
Grading status	Not graded

If your submission shows a status of "Draft (not submitted)" it will not be assessed and **will incur late penalties after the due date/time**.

Please **carefully** read the documentation under "Assignment/Tutorial Task Submission" on the Moodle Assessments page.

Marking Rubric

	Outstanding (Range HD)	Adequate (Range P - D)	Not Adequate (N)
Understand and follow normalisation methodology [35 marks]	<p>All/majority of the normalisation steps have been correctly followed:</p> <ul style="list-style-type: none"> • All/most normalisation processes are correct • Dependency diagrams have been provided and match normalisation. • Normalisation result is correctly integrated into logical model 	<p>Some of the normalisation steps have been correctly followed:</p> <ul style="list-style-type: none"> • Majority of Normalisation processes are correct • Dependency diagrams have been provided and match normalisation in the majority of situations. • Majority of normalisation result is correctly integrated into logical model 	<p>Few of the normalisation steps have been correctly followed:</p> <ul style="list-style-type: none"> • Significant errors during the Normalisation processes • Dependency diagrams not provided or have major errors • Normalisation result is not correctly integrated into logical model
Identify the data requirements to support an organisation's operations from the supplied case study and express these via a database logical model. [50 marks]	<p>All MM operations are supported:</p> <ul style="list-style-type: none"> • All/most required relations identified. • All relations are in 3NF • All/most required relationships have been captured by placing FK in correct relation • All/most required cardinality and connectivity have been captured • All/most data types and data integrity requirements (Entity, Referential, Domain) have been correctly identified 	<p>Some of the MM operations are supported:</p> <ul style="list-style-type: none"> • Majority of relations identified. • Majority of relations are in 3NF • Majority of required relationships have been captured by placing FK in correct relation • Majority of required cardinality and connectivity have been captured • Majority of data types and data integrity requirements (entity, referential, domain) have been correctly identified 	<p>Few of the MM operations are supported:</p> <ul style="list-style-type: none"> • None/few of relations identified. • Majority of relations are not in 3NF • None/few required relationships have been captured. Majority of FKs are placed in incorrect relations. • None/few of required cardinality and connectivity have been captured • None/few of data types and data integrity requirements (entity, referential, domain) have been correctly identified

Marking Rubric continued

	Outstanding (Range HD)	Adequate (Range P - D)	Not Adequate (N)
Able to generate a relational model and schema given a logical model in SQL Developer. [10 marks]	<p>All/majority of the schema generation processes have been correctly followed:</p> <ul style="list-style-type: none"> • SQL Developer Relational model correctly generated from the logical model • All drop commands, database comments and spool command included • No “extra” edit in schema file • The DDL script was executed without errors. 	<p>Some of the schema generation processes have been correctly followed:</p> <ul style="list-style-type: none"> • SQL Developer Relational model correctly generated from the logical model • Some of drop commands, database comments and spool command included • The DDL script was executed without errors. 	<p>Few of the schema generation processes have been correctly followed:</p> <ul style="list-style-type: none"> • SQL Developer Relational model not correctly generated from the logical model • There is “extra” edit (other than identity information and set echo/spool commands) in schema file • The DDL script was executed with errors.
Able to correctly use the required notation convention and be consistent in its usage. See page 11-13 of the week 6 tutorial notes. [5 marks]	All notations in the model are consistent and follow FIT9132 Logical Model standards.	Most notations in the model are consistent and follow FIT9132 Logical Model standards.	Few notations in the model are consistent or follow FIT9132 Logical Model standards.
Able to correctly push all files to FITGitLab server with a development history of at least three pushes of your model.			If less than three pushes (for the model) showing a clear development history, a grade deduction of 10 marks applied.