FIT2094 Databases

Assignment 1 - Conceptual

Paris Arrow Transit (PAT)

Purpose	**Given the provided case study, students are asked to transform the information provided in the case study into a full conceptual model as the first step towards a database design. This task covers learning outcomes:** **1. Apply the theories of the relational database model.** **2. Develop a sound relational database design.**
Your task	**This is an open book, group task (students will work in groups of two or three students with members selected randomly). The final output for this task will be a PDF document of a conceptual model as the first step towards a relational database design in Assignment 1 Logical**
Value	**10** % of your total marks for the unit
Due Dates	**Task Submission: Week 6 - Mon, 8th Apr 2024, 11:55 pm** **Self and Group Evaluation (Feedback Fruit): Mon, 15th Apr 2024, 11:55 pm** **(note: staff support is unavailable after business hours)**
Submission	• Via Moodle Assignment Submission. • **FIT GitLab check ins will be used to assess history of development**
Assessment Criteria	• **Identification of the entities which support the case study.** • **Identification and placement of attributes to support the case study.** • **Determination of relationships which support the case study.** • **Consistent use of industry standard notation and convention**
Late Penalties	• 10% deduction per calendar day (-8 marks) or part thereof for up to one week • Submissions more than 7 calendar days after the due date will receive a mark of zero (0) and no assessment feedback will be provided. • 0 marks for peer evaluation component (see marking guide) if the Self and Group Evaluation is not completed by the due date (**no late submission permitted**)
Support Resources	See Moodle Assessment page
Feedback	Feedback will be provided on student work via: • general cohort performance • specific student feedback ten working days post submission • ***a sample solution following Assignment 1 Logical marking***

INSTRUCTIONS

Your task for this assignment is to design a model for Paris Arrow Transit (PAT). Paris Arrow Transit is a private company subcontracted by the Olympic Federation to transport officials around during the Olympic competition. The company realises that it needs a completely new computerised system to more efficiently manage and record their services during the Games. You have been asked to develop a database system, which can meet PAT's needs, which are detailed below.

PAT owns a fleet of vehicles. Each vehicle is identified by its 17 character vehicle identification number (VIN), the company also records the registration plate (7 characters such as AB126FD), the make, such as Peugeot, the current odometer reading and the number of passengers which the vehicle can transport.

206 National Olympic Committee's (NOC) will compete at the Paris Games - each represents a particular country or region of the world. For each country/region, an identifying IOC code is recorded and also the name of the country/region and its population. Each NOC will enter a team into the competition. The PAT system must track all officials which are part of these teams since they are the ones who will need to book official vehicles. One member of each NOC team is designated as the Chef De Mission (the team manager). For each official, PAT will record the officials olympic id, their name and the role they play such as administrator, head coach, judge, physician etc. The Chef De Mission is recorded as an official with an administrator role. The system must be able to identify the Chef De Mission for each official which is recorded.

An official will book a trip with PAT to transport members of their team between various locations (these to/from locations will be further examined in Assignment 1 Logical - they should be omitted for now). A trip only involves a single vehicle. An official may use PAT's services multiple times (even during a single day); the only limiting factor is whether a suitable vehicle and driver is available at the date and time they wish to book travel. The vehicle is booked in the name of the official making the booking, the details of the actual passengers do not need to be recorded. The official booking the trip will also indicate the preferred language to be spoken during the trip so that the travellers can be understood by the driver and vice versa. Only a single preferred language for the trip will be indicated/recorded. For each booked trip, the intended pick up date and time and the projected drop off date and time are recorded. In addition PAT records the number of passengers needing transport for each booked trip.

PAT vehicles are driven by the company's drivers. Each driver is assigned a unique drivers ID. The driver's name (given and family), licence number (18 characters in length), date of birth and the level of security clearance granted to the driver are recorded. Due to issues/problems which may arise a driver may need to be suspended while a particular matter is investigated, while suspended a driver cannot drive any PAT vehicle - the system must be able to flag this. Only a single driver drives for a particular booked trip.

All drivers must complete an initial 'Transport of VIPs' training module before they are permitted to drive PAT's vehicles. Drivers are also able to complete additional training modules in areas such as specialist first aid training, advanced security training etc. These modules vary in length from 1 to 5 days. Not all drivers will complete these additional training modules. PAT wishes to record, for *all* modules successfully completed, the code, the name and the description of the module a driver has completed. PAT also records the date on which the driver completed the module. Some modules have an expiry period set, such as three months (different modules may have different expiry periods). Such modules require a driver to retake/refresh the module after the period has expired. In addition, PAT wish to maintain a total count (as an attribute within the system) of all the training modules a driver has completed since they were employed at PAT. PAT records the languages that a driver speaks – some drivers speak several languages.

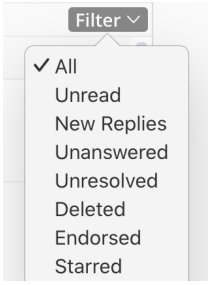
To record languages, PAT will make use of ISO639-1 two character language codes, for example EN as English and ZH as Chinese – PAT records the ISO639-1 code and the name of the language.

A particular trip requires the matching of a suitable driver (availability and languages spoken) and a suitable vehicle (availability and seating capacity) based on the needs expressed by the official. This matching will take place via a computer program to be created; you are not concerned with this program, only the back end database to support such decisions.

REMEMBER you must keep up to date with the Moodle Ed Assignment 1 Conceptual forum where further clarifications may be posted (this forum is to be treated as your client).

To view Assignment 1 Conceptual only posts, select the Assignment and then the Assignment 1 Conceptual forum from the Categories list in the left panel.

Once selected you can Filter the posts via the Filter option at the top of the list of posts:



Please be careful to ensure you do not publicly 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**. *Use private posts or email your allocated tutor to raise questions which may reveal part of your reasoning or solution.*

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). **Normally such assumptions would only relate to minimum cardinality where not expressed in the case study**.

Group Communication

Your group MUST make use of your private group channel in MS Teams *for all group communication during this assignment which is not face to face*. Microsoft Teams provides facilities to support group interaction including chat, group email, shared desktop, meetings, video/audio calling and shared files.

Activity in your private group channel is only visible to your group members and the teaching staff. It is important that you use Microsoft Teams for your group activities as it may be necessary for your tutor/marker to check the group members' contributions to the task and attendance at meetings - **such a decision will be based ONLY on the activity recorded in your private group channel**.

TASKS to be Completed

Please **ENSURE** you include your **full group name 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

Your work for these tasks **MUST** be saved in your **group** working directory in the Assignment 1 Conceptual folder and ***regularly pushed to the FIT GitLab server*** to build a clear history of development of your model. Please refer to the marking guide for details about the required actions for use of FIT GitLab by the group. Six pushes are required as a minimum for your group's PDF file of your model (remember all pushes must be of a file with the same name - **pat_conceptual.pdf**). Please note that six pushes are a minimum, in practice we would expect more. **This number of pushes must be evenly distributed amongst group members**.

Groups must regularly check that their pushes have been successful by logging in to the web interface of the FIT GitLab server; you must not simply *assume* they are working. Before submission, via Moodle, you **must** log in to the web interface of the GitLab server and ensure your submission files are present on the GitLab server.

GIT automatically maintains a history of all files pushed to the server, you do not need to, *and MUST not,* add a version name to your various versions, please ensure you use the same name for all versions of a particular file. Check Git File Versions video under the topic 3 block on Moodle if you need to clarify this.

The tasks to complete:

(i) Using LucidChart, prepare a **FULL conceptual model** (Entity Relationship Diagram) using crow's foot notation for Paris Arrow Transit (PAT) as described above.

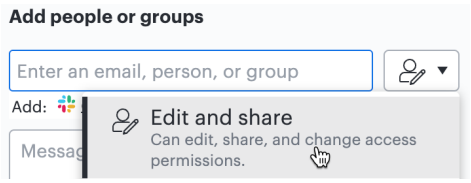
- For this FULL conceptual model (ERD), include:
  - identifiers (keys) for each entity
  - all required attributes, and
  - all relationships. Cardinality (min and max) and connectivity for all relationships must be shown on the diagram.

- **Surrogate keys must not be added to this model**.

Your model must conform to the unit ERD standards listed in the Applied 3: Conceptual Modelling (A3-2) lesson on ed.

Note that you can share your LucidChart working model between group members via the Share button

in the top right of an open LucidChart document - one student in the group should set up the initial model in a new empty tab and then share this with fellow group members, giving the other group members edit access:



(ii) Maintain a Group Diary which records when the group met/communicated to discuss/work on the task, including the date, who was present and a brief statement of what occurred. This Group Diary must be maintained in Microsoft Teams as a shared document in your private group channel.

As part of submission of your assignment *each* group member will be required to provide confidential feedback on the group members performance/interactions. *The final mark awarded for each member of the group may differ based on the member's contributions to the task, please see the marking guide below for further details - under the criteria "Peer Evaluation".*

Use of Generative AI tools

In this assessment, you can use generative artificial intelligence (AI) in order to assist with design decisions only. Any use of generative AI must be appropriately acknowledged (see Learn HQ)

Submission Requirements

The following files are to be submitted and **must exist** in your Group FITGitLab server repo:

- A **single page pdf file** containing your full final conceptual model. Name the file **pat_conceptual.pdf**. This file must be created via File - Export (or Download As) - PDF from LucidChart (**do not use screen capture**) and must be able to be accessed with a development history via GIT. You can create this development history by downloading your PDFs (don't forget to use the same name - DO NOT use version 1 etc) and committing/pushing to GIT as you work on your model. In exporting from LucidChart please select a page size of A4.
- A PDF document containing any assumptions you wish to make your marker aware of. Name the file **pat_assumptions.pdf**. If you have made no assumptions, submit the document with a single statement saying, "No assumptions made". The source document, as an MS Word document must be available in your MS Teams private group channel.
- A PDF document of your Group Diary named as **pat_####_diary.pdf** (replace #### with your full group name, e.g. pat_G001_diary.pdf). The source document, as an MS Word document must be available in your MS Teams private group channel. A template is available on the Moodle Assessments page to provide a suggested structure for your group diary.

These **three PDF files must be submitted via Moodle before the due date/time** (times are expressed in Aust/Melbourne local time). Do not zip these files into one zip archive, submit three independent PDF files. **The files only need to be submitted by one member of the group after the group has agreed that the submission is complete and ready to be graded**.

Late submission will incur penalties as outlined in the unit guide (10% or 8 marks deduction per 24 hours or part thereof).

Please note we **cannot mark any work on the Git 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**. **Email submission in any form is NOT ACCEPTABLE**.

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 Task Submission" on the Moodle Assessments page.

Please note that the submission deadline has been set at 11:55 PM. Since staff support is not available after business hours, we highly recommend that groups submit during normal business hours to ensure support is accessible. **If you require assistance, such as resubmitting, outside of business hours, it will not be addressed until 9 AM the following day. At that time, your group will incur a late penalty**.

Academic Integrity

Students are expected to be familiar with the University Academic Integrity Policy and are particularly reminded of the following:

Section 1.9:

Students are responsible for their own good academic practice and must:
• undertake their studies and research responsibly and with honesty and integrity;
• credit the work of others and seek permission to use that work where required;
• not plagiarise, cheat or falsify their work;
• ensure that their work is not falsified;
• not resubmit any assessment they have previously submitted, without the permission of the chief examiner; appropriately acknowledge the work of others;
• take reasonable steps to ensure that other students are unable to copy or misuse their work; and
• be aware of and comply with University regulations, policies and procedures relating to academic integrity.

and

Section 2.9:

Unauthorised distribution of course-related materials: Students are not permitted to share, sell or pass on to another person or entity external to Monash:

2.9.1 any course material produced by Monash University (such as lecture slides, lecture recordings, class handouts, assessment requirements, examination questions; excluding Handbook entries) as this is a breach of the Copyright Compliance Policy and such conduct may be a copyright law infringement subject to legal action; or

2.9.2 any course-related material produced by students themselves or other students (such as class notes, past assignments), nor to receive such material, without the permission of the chief examiner.

The penalties for breaches of academic misconduct, include:

- a zero mark for the assessment task
- a zero mark for the unit
- suspension from the course
- exclusion from the University.

Where a penalty or disciplinary action is applied, the outcome is recorded and kept for seven years, or for 15 years if the penalty was exclusion.

Marking Guide

Submitted models will be assessed against the optimal solution for this modelling task - this optimal solution will be available as a sample solution after assignment 1 Final has been graded.

Assignment 1 Conceptual Group submission content graded out of 80 marks as shown below:

Marking Criteria	Items assessed
Identification of the entities which support the case study (20 marks).	**Maximum 10 marks - Entities:** ● Marks awarded for each correct entity identified ● Mark penalty for unnecessary entities included **Maximum 10 marks - Keys:** ● Marks awarded for each correct key selected ● Mark penalty for surrogate or foreign keys added
Identification and placement of attributes to support the case study (15 marks).	**Maximum 15 marks - Attributes:** ● Marks awarded for each necessary attribute identified ● Mark penalty for extra attributes included ● Marks penalty for placement of attribute in incorrect entity
Determination of relationships which support the case study (30 marks).	**Maximum 10 marks - Relationships:** ● Marks awarded for each correct relationship identified ● Mark penalty for unnecessary relationships included ● Mark penalty for redundant relationships included **Maximum 20 marks - Cardinality:** ● Marks awarded for correct minimum and maximum cardinality for every correct relationship
Consistent use of industry standard notation and convention (5 marks).	**Maximum 5 marks - Modelling standards:** ● Marks awarded for application of Unit ERD notation convention ● Mark penalty for use of PK/FK labels ● Mark penalty for incorrectly depicted identifying/non identifying relationships based on determined keys

Correct use of Git by group (10 marks).	**Maximum 10 marks - Git used appropriately:** ● Marks awarded for six pushes showing a clear development history ● Marks awarded for even distribution of pushes amongst all group members ● Marks awarded for correct Git author details used in pushes (see Applied 2-1) ● Marks awarded for the use of meaningful commit messages (ie. not blank or of the form "Push1")

Assignment 1 Conceptual Individual Group Evaluation graded out of 20 marks as shown below:

Peer Evaluation ***Note: No Late Submissions accepted for this component***	**Maximum 20 marks - Contribution and Participation in your group:** ● Communication ● Project Management ● Quality of contribution ● Quantity of contribution ● Use of MS Teams within the group private channel ● Support for the group's working environment as assessed by self-evaluation and group members (peer) evaluation via Feedback Fruits ● This component will be moderated, if necessary, by your tutor based on any group issues/concerns which are not addressed

Final Assignment Mark Calculation

- 80 marks from the content of the group submission
  PLUS
- 20 marks from the individual members group evaluation (self-review, peer review and tutor moderation)
- Total:100 marks, recorded as a grade out of 10