MONASH University
Information Technology

FIT2094 Databases

2020 Semester 2

Assignment 1A - Conceptual Model - Fire Damage Assessment System (FDAS)

Assignment weighting 5% - Lecturer in Charge: Dwi Rahayu

Your task for this assignment is to design a database which can be used to support tracking of the building damage caused by bushfires - a Fire Damage Assessment System (FDAS).

When a bushfire starts it is noted as a fire event. Each fire event is assigned a unique identifier such as F20200135 and given a name such as "West Forest Fire" (fire event names are not unique, the same name may be reused many times). For a given fire, the date on which the fire started, the coordinates of the estimated start location (latitude and longitude), and the number of hectares which were burnt, are recorded. Sometimes one fire event may spark further fire events, for example when embers travel many kilometres in the wind and start a new fire. The FDAS needs to record if a particular fire event was started by sparks from another fire event. Fire events occur within Local Government Areas (LGAs) - a given fire event may involve many LGAs.

A bushfire may impact a property and damage buildings located on that property. The assessment of such damage is the major task of the FDAS.

Properties are identified by a unique national property id and have their street address/location and property size in hectares recorded as part of the system. Such properties may be a farm property, a residential property (in a city or town) or a business property. Each property has a single owner who is identified by an owner id. The owner's name and contact phone number are also recorded. A particular owner may own several properties. For properties such as groups of apartments/villas or units owned by individuals which share lawns, roads etc (i.e. a strata title), the owner of the property, for this scenario, will be taken as the body corporate. In this way, all properties will be regarded as having only a single owner.

Properties are located in a local government area or LGA. Each LGA is assigned a unique LGA code, for example, 45. The LGA's name, for example, "Wardinia", size (in hectares), Chief Executive Officer's name and bushfire contact phone number are recorded.

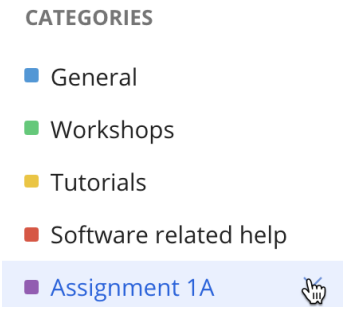
A property may have one or more buildings located on the property. Each building on the property is assigned a building number for that property. These building numbers are reused for each property - for example, property 1234567 may have a building number 1, but also property 2134578 may have a building number 1. Some properties may have no buildings located on them. For a building, the FDAS must record the date the building was approved for construction and the size of the building in square metres.

For this system, we will assume that insurance takes place at a building level only. Each building may be insured by an insurance company, although not all buildings are covered in this manner. For a given building there will only be a single insurance cover. Note the FDAS is not concerned with the actual cover or premium etc, only that a particular insurer insures a given building. Each insurer is identified by an insurance code, the insurer's name and contact phone number are also recorded.

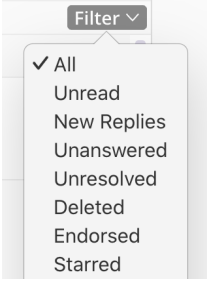
Insurance companies employ Insurance Assessors to visit each building which has been damaged by a fire event and evaluate the building damage cost. The total dollar cost of the damage to the building is recorded. Only one assessor is used to assess the damage of a given building due to a particular fire event. An assessor is identified by an assessor id. The system needs to record the assessor's name, their contact number and the insurer they work for.

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

To view Assignment 1A only posts, select the Assignment 1A 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 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** you include your **name and ID 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 working directory in your Assignment 1A folder and ***regularly pushed to the FIT GitLab server*** to build this history of development. Any submission with less than two pushes to the FITGitLab server will incur a grade penalty of 10 marks (a 10 mark deduction).

Students 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.

The task to complete:

Using LucidChart, prepare a **FULL conceptual model** (Entity Relationship Diagram) using crow's foot notation for the Fire Damage Assessment System (FDAS) 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 FIT2094 ERD standards listed in tutorial 3.

Submission Requirements

Assignment 1A:

Due: Wednesday 2nd September 2020 (Week 5) 5 PM (AEST)

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

- A **single page pdf file** containing your full final conceptual model (ERD). Name the file **fdas_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 and committing/pushing to GIT as you work on your model.
- A PDF document containing any assumptions you wish to make your marker aware of (create the document in MS Word or Google Docs and save it as PDF). Name the file **fdas_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 GitLab account (for Google Docs simply download as Microsoft Word before adding to your repo).

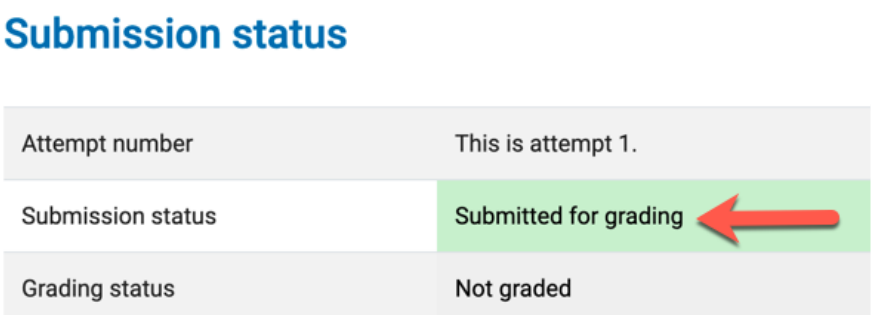
These **two PDF files must be submitted via Moodle before the due date/time** (times are expressed in Aust/Melbourne local time). Do not zip these files into one zip archive; submit two independent PDF files.

Late submission will incur penalties of 5 marks deduction per 12 hours or part thereof late. Submissions are not accepted beyond 7 days late.

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**.

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.



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 (HD)	Adequate (Range P - D)	Not Adequate (N)
Identified the required Entities [30 marks]	• All/most entities identified. • All/most keys are correctly identified. • No "extra" entities included	• Majority of entities identified. • Majority of keys are correctly identified.	• None or few of entities identified. • None or few of keys are correctly identified
Identified the correct attributes for each Entity [30 marks]	• All/most required attributes identified and placed in correct entities. • No "extra" attributes included	• Majority of required attributes identified and placed in correct entities.	• None/few required attributes identified and placed in correct entities.
Identified the required Relationships [10 marks]	• All/most required relationships identified. • No "extra" relationships included	• Majority of required relationships identified.	• None/few required relationships identified. .
Identified correct Connectivity and Cardinality for each relationship [20 marks]	• All/Most of depicted relationships Connectivity and Cardinality correctly identified.	• Majority of depicted relationships Connectivity and Cardinality correctly identified.	• None/few of depicted relationships Connectivity and Cardinality correctly identified.
Able to correctly use the required notation convention and be consistent in its usage. [10 marks]	• All notations in the model are consistent and follow FIT2094 ERD standards.	• Most notations in the model are consistent and follow FIT2094 ERD standards.	• Few notations in the model are consistent or follow FIT2094 ERD standards.
Able to correctly push the model to FITGitLab server with a development history of at least two pushes.			If less than two pushes showing a clear development history a ***grade deduction of 10 marks applied***.