



UNIVERSITY OF ALBERTA
ALBERTA SCHOOL OF BUSINESS

Department of Accounting and Business Analytics

BTM 211

Management Information Systems

DM Assignment – Winter 2025

Table of Contents

Table of Contents	1
Case Study – Alberta Aerospace Museum	2
Background	2
Problem	2
Requirements	4
Marking Scheme	5
Submission Instructions	6
Cheating and Plagiarism	7



Case Study – Alberta Aerospace Museum

Background

Established in 2018, the Alberta Aerospace Museum (AAM) has become the standard for aerospace education in Canada. While its priority lies in showcasing Canada's contribution to space exploration, historic pieces from some of the most legendary space exploration missions can be seen at this state-of-the-art institution.

Located on the outskirts of Edmonton, AAM is complete with a modern education center and its most impressive addition, a vast hanger that houses larger aircraft and ongoing restoration projects. AAM's curator, Christina Hadfield, prides herself on ensuring that the museum always offers top-of-the-line interactive exhibits that offer educational fun for everyone!

Problem

As AAM has attracted more patrons and showcased bigger and better artifacts, Christina has found that the museum's current computer system is ill-equipped to handle the amount of data they have. She has also begun to worry about the safety of her data, especially with how many priceless artifacts the museum houses. She would also like to update the museum's website to be more mobile friendly.

After evaluating her situation, Christina decided her best course of action would be to hire a team of business analysts. She contacted you for your expert opinion on her business operations, and during the initial meeting with her, she explained the current state of AAM.

"Our museum houses some of the best artifacts in the world and protecting their data is one of my greatest priorities. I want to make sure our new system has top of the line security measures to ensure the data remains safe."

You ask her to provide some information about the type of data she wants to track, and she begins to explain the museum's current process.

"I'll begin with information unique to our museum. We need to keep track of all 200 of our employees with a unique employee ID, including their first and last names, their job type, hire date, salary, and education level."

Some of our employees are also supervisors, and we keep track of that person and the employees they manage.

“Next, we track our visitors (45,000). For the sake of our visitor’s privacy, we only track information that will help us improve their experience. This includes their age, any feedback they provide us with, and if the feedback is generally positive or negative, which we track with a P for positive, or a N for negative. All of this is contained under their unanimous visitor ID.”

“Finally, we track information regarding our 20 exhibits, which can be identified by a unique number. This includes tracking the employees assigned to work the exhibit, the visitors the exhibit attracts, and a description of the exhibit. For planning purposes, we also keep track of the square-footage required for the exhibit, the budget, and whether the exhibit is temporary or not.”

When she’s finished, you look around her office and see boxes surrounding her desk. Your eye catches on a shard of moonrock she has encased in glass on her desk, and you ask her about the artifacts the museum has.

“Artifacts are what add life to our exhibits, and we track plenty of data specific to each artifact to ensure we are properly presenting it to the public. Broadly speaking, we categorize each artifact by an artifact type (25), which is represented by a four-letter code, and its corresponding description. Given that many types of artifacts are fragile, we also add a special-storage indicator that tells us if it requires special handling.”

Christina notices you are looking at the shard of moonrock and she puts it in front of you so you can take a closer look as she continues.

“For each artifact (70000) we have in our system there is an associated artifact ID. We also add a description to the artifact, the associated type-code for the artifact, and most importantly we track the acquisition date of the artifact. For our purposes we also track the exhibit the artifact is paired with. On top of everything, we track the mission code (200) the artifact is from, the mission name, the mission description, country, and the start and end dates. Oh, and the museum the artifact came from.”

You ask her to clarify what she means by museum, and she begins to explain the process behind acquiring artifacts. She opens a binder on her desk and pulls out a piece of paper for you to examine. (see below)

As you study the paper, you notice that it contains information about the loaning process.

LOAN				
Loan ID:	111			
Effective Date:	2018-09-26			
Expiry Date:	2019-12-31			
Item ID	Artifact ID	Return Date	Cost	Insurance Premium
1	6648	2019-12-01	\$15000	\$10000
2	7984	2019-12-01	\$2500	\$0
3	1215	2019-12-01	\$1796	\$0
4	1436	2019-12-01	\$18000	\$10000
5	64	2019-12-01	\$5000	\$10000
Loaner Museum ID:	1			
Loaner Signature Date:	2018-08-20			
Loanee Museum ID:	5			
Loanee Signature Date:	2018-08-23			

“Most of the artifacts in this museum are on loan (14,000) to us from other museums, but we also loan out some artifacts from time to time if we get a request for an item (38,000). For each museum (15), we track their unique ID, a code for the country they are located in, the name of the museum, their street address, municipality, and postal code, along with the last name of the curator.”

You ask her to email you a copy of this document, and you conclude your meeting saying that you should have everything you need to get started on a prototype data model for her.

“That’s wonderful! I can’t wait to see what you come up with!”

Requirements

Using **Draw.io** software and the attached “**AAM_DM_Assignment_Starting_Point.drawio**” file as your starting point, create an Entity Relationship Diagram (i.e., data model) of the **Alberta Aerospace Museum** business, as shown in the case above.

Starting from the provided starting point diagram, completely and correctly specify all **Entities, Relationships, and Attributes** as described in the lecture and lab materials on Entity Relationship Diagramming. Include all relevant facts from the case in your model, including **primary keys, volumes, data types for all fields, descriptive labels, and foreign key fields**.

There is no need to create or assume any new entities or attributes other than what is required for the above case. Your final model should have exactly **NINE** entities.

You can use any naming convention you want as long as we can understand what you’re trying to say. (ie. first name instead of given names)

When making relationships, ensure that your lines **DO NOT** overlap as you will be deducted marks.

Use a white background when creating your diagram. If you use a dark background, you will be deducted marks.

When describing your relationships, you can use the same root words (has, is in, contains) but the overall descriptions should be different for each relationship.

Use **PascalCase** for entities and **camelCase** for primary keys, foreign keys, and attributes.

NOTE: In the starting point diagram, the number of lines with ‘?????’s indicates the total number of expected attributes (including all keys). **DO NOT** reorganize the diagram.

All work is to be done individually. Do not copy, in whole or in part, the work of others, including paper printouts, electronic files, or computer programs. Do not use the work of others as a starting point and then modify it. All work submitted under your name must be yours and yours alone.

Marking Scheme

DATA MODEL:

- Correct entities (well named, identified, volumes)
- Correct relationships ((Connected to correct entities, cardinalities (1-M? M-1?) correct, well described, NO crossing of lines)
- Correct Attributes (Each in the correct entity, well named, correct data type, unique primary key, and foreign key fields are italicized)
- Submitted file created using draw.io, named correctly, delivered electronically through eClass, on time.

Submission Instructions

Before the submission deadline, you must submit electronically the following:

- One (1) data model in .png file type.
 - **We will not accept any other file types.**

File naming convention: *AssignmentCode_FirstNameLastName_LectureSection*

Example: **DM_LadyGaga_A02**

Cheating and Plagiarism

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