

IT 235 Final Project Guidelines and Rubric

Overview

Database design is an integral step in the overall development of a database solution; a bad design can lead to many issues and problems with queries and potential expansion for any database. Getting the database design right is the first and most important step in creating a successful database.

For this final project, you will solve a database design situation as outlined in [this scenario](#). As you read through the scenario, be sure to pay close attention to the business requirements that the business owners note in the narrative. Over the course of two milestones, you will need to define the need for the database and pick out the business requirements. Next, you will frame the entity-relationship model (ERM) and define the entities and attributes for the business. Your next steps will be to normalize your entities, define primary and foreign keys, and finally, draft an initial entity-relationship diagram (ERD). After referencing feedback from your instructor for appropriate revisions, you will submit a **database design report package**.

The package will contain your final design proposal, including an ERD and dependency diagrams, an explanation for the determinations you made while filling in your ERD and making adjustments after normalization, and a summary explanation of how your design will allow the database to achieve the desired end result, including a consideration of the user requirements, business processes, and restrictions.

Throughout the course, you will submit milestone components that will be evaluated by your instructor, and detailed feedback will be provided. This feedback should be used as the basis for the revision of your project documents and proposal, as it will serve as a foundation to the subsequent milestones and ultimately, your final project submission. The project is divided into **two milestones**, which will be submitted at various points throughout the course to scaffold learning and ensure quality final submissions. These milestones will be submitted in **Modules Two and Five**. The final product will be submitted in **Module Seven**.

Note: Due to the nature of the project within this course, you will notice that a “Staying on Track” theme appears in each module. This theme will give you the information you need to stay on track and successfully complete the final project.

In this assignment, you will demonstrate your mastery of the following course outcomes:

- Assess end user requirements for identifying the appropriate database designs and types that solve information management needs
- Determine appropriate entity-relationship models (ERMs), including underlying entities and attributes, for designing database solutions
- Design entity-relationship diagrams (ERDs) and table relationships that meet end user requirements for appropriately designed database management solutions

- Complete normalization processes utilizing entity-relationship diagrams (ERDs) and dependency diagrams for producing appropriate database designs

Prompt

You have been hired to design a database that meets an outlined set of requirements in order to solve an information management problem. After reading through the provided scenario, you will first determine the overall purpose of the database and the user requirements. You will then work through a conceptual design process, design revision, and design finalization. Your final submission should be in the form of a final entity-relationship diagram (ERD) in third normal form (3NF) and an explanatory report that summarizes your process and recommendations for the database solution. Along with your final ERD and new work for the assignment, the document should incorporate the text and diagrams from your milestones, including revisions.

Specifically, the following **critical elements** must be addressed:

- I. **Requirement Gathering:** Read the provided scenario in order to determine the overall purpose of the database and the user requirements, specifically the following:
 - A. Define the **purpose, goals, and objectives** of the database as determined by the scenario.
 - B. Assess the **user requirements** associated with the database according to its owners and stakeholders.
 - C. Explain the **business processes and restrictions** that the database addresses in support of the user requirements.
 - D. Explain what the **end result** of the database should be as determined by the scenario.
- AI. **Conceptual Design:** Using your analysis of the provided scenario, address the following in order to determine an appropriate entity-relationship model (ERM) that will inform your final design:
 - A. Assess various ERMs for their **design applicability** to your database design.
 - B. Determine the **appropriate ERM** and explain your choice.
 - C. Identify the **data sets** for the database, including all entities and attributes.

- BI. **Design Revision:** During this stage, you will draft your entity-relationship diagram (ERD), addressing the following elements:
- A. Construct your **ERD**, utilizing your identified entities and attributes.
 - B. Determine appropriate **primary and foreign keys** for each entity and note them on your ERD.
 - C. Determine **table relationships** and note them on your ERD.
 - D. Determine appropriate **data types and sizes** for each attribute and note them on your ERD.
 - E. Complete the **normalization process** utilizing dependency diagrams in order to prove tables are in third normal form (3NF), and adjust your ERD if necessary.
- IV. **Design Finalization:** Finalize your ERD after normalization, and conclude your report package, addressing the following elements:
- A. Draft your recommended **final ERD**, which accounts for any adjustments made to its elements as determined through the normalization process.
 - B. Summarize your **process** for developing your database design, including an explanation for the determinations you made while filling in your ERD and making adjustments after normalization.
 - C. Explain how your design will allow the database to **achieve** your desired **end result**, including consideration of the user requirements, business processes, and restrictions.

Milestones

Milestone One: Requirement Gathering (Section I)

In **Module Two**, you will analyze the scenario in detail and then define the goals and objectives of the database, assess the user requirements, explain the business process and any related restrictions for the database, and explain what the end result of the database should be. **This milestone will be graded with the Milestone One Rubric.**

Milestone Two: Conceptual Design (Section II) and Design Revision (Section III)

In **Module Five**, you will work through the design and revision process, including determining your initial data set of entities and attributes, drafting and revising the project ERD, determining primary and foreign keys and table relationships, and completing the normalization process via dependency diagrams. **This milestone will be graded with the Milestone Two Rubric.**

Final Submission: Database Design Report Package

In **Module Seven**, you will submit your final project. It should be a complete, polished artifact containing **all** of the critical elements of the final product. It should reflect the incorporation of feedback gained throughout the course. **This submission will be graded with the Final Project Rubric.**

Final Project Rubric

Guidelines for Submission: Submit assignment as a Word document with double spacing, 12-point Times New Roman font, and one-inch margins.

Critical Elements	Exemplary	Proficient	Needs Improvement	Not Evident	Value
Requirement Gathering: Purpose, Goals, and Objectives	Meets “Proficient” criteria, and response demonstrates keen insight into determining the goals and objectives of a database (100%)	Defines the purpose, goals, and objectives of the database as determined by the scenario (85%)	Defines the purpose, goals, and objectives of the database as determined by the scenario, but response is incomplete or contains inaccuracies (55%)	Does not define the purpose, goals, and objectives of the database as determined by the scenario (0%)	4.75

Requirement Gathering: User Requirements	Meets "Proficient" criteria, and assessment provides keen insight into the needs of a database's owners and stakeholders as they relate to the user requirements associated with a database (100%)	Assesses the user requirements associated with the database according to its owners and stakeholders (85%)	Assesses the user requirements associated with the database, but assessment is cursory or incomplete, contains inaccuracies, or lacks accordance with the database's owners and stakeholders (55%)	Does not assess the user requirements associated with the database (0%)	4.75
Requirement Gathering: Business Processes and Restrictions	Meets "Proficient" criteria, and explanation makes cogent connections between business processes and restrictions and the user requirements of a database (100%)	Explains the business processes and restrictions that the database addresses in support of the user requirements (85%)	Explains the business processes and restrictions that the database addresses, but explanation is cursory, incomplete, or illogical, or it contains inaccuracies or lacks accordance with the user requirements (55%)	Does not explain the business processes and restrictions that the database addresses (0%)	4.75
Requirement Gathering: End Result	Meets "Proficient" criteria, and explanation demonstrates keen insight into determining what the end result of a database should be (100%)	Explains what the end result of the database should be as determined by the scenario (85%)	Explains what the end result of the database should be as determined by the scenario, but explanation is cursory or illogical or contains inaccuracies (55%)	Does not explain what the end result of the database should be as determined by the scenario (0%)	4.75
Conceptual Design: Design Applicability	Meets "Proficient" criteria, and assessment demonstrates a complex grasp of the design applicability of ERMs (100%)	Assesses various ERMs for their design applicability to the database design (85%)	Assesses various ERMs for their design applicability to the database design, but assessment is cursory or illogical or contains inaccuracies (55%)	Does not assess various ERMs for their design applicability to the database design (0%)	7.92
Conceptual Design: Appropriate ERM	Meets "Proficient" criteria, and explanation provides cogent reasoning for choosing an appropriate ERM (100%)	Determines the appropriate ERM and explains the choice (85%)	Determines an ERM and explains the choice, but determination is inappropriate, or explanation is cursory or illogical or contains inaccuracies (55%)	Does not determine an ERM or explain the choice (0%)	7.92

Conceptual Design: Data Sets		Identifies the data sets for the database, including all entities and attributes (100%)	Identifies the data sets for the database, but identification is incomplete, contains inaccuracies, or lacks inclusion of all entities and attributes (55%)	Does not identify the data sets for the database (0%)	7.92
Design Revision: ERD		Constructs the ERD, utilizing the identified entities and attributes (100%)	Constructs the ERD, but diagram is incomplete, contains inaccuracies, or lacks all the identified entities and attributes (55%)	Does not construct the ERD (0%)	5.94
Design Revision: Primary and Foreign Keys		Determines appropriate primary and foreign keys for each entity and notes them on the ERD (100%)	Determines primary or foreign keys for entities and notes them on the ERD, but determination is illogical or incomplete or contains inaccuracies, or notation is incomplete or contains inaccuracies (55%)	Does not determine primary and foreign keys or note them on the ERD (0%)	5.94
Design Revision: Table Relationships		Determines table relationships and notes them on the ERD (100%)	Determines table relationships and notes them on the ERD, but determination is illogical or incomplete or contains inaccuracies, or notation is incomplete or contains inaccuracies (55%)	Does not determine table relationships or notes them on the ERD (0%)	5.94
Design Revision: Data Types and Sizes		Determines appropriate data types and sizes for each attribute and notes them on the ERD (100%)	Determines data types or sizes for attributes and notes them on the ERD, but determination is illogical or incomplete or contains inaccuracies, or notation is incomplete or contains inaccuracies (55%)	Does not determine data types and sizes for attributes or note them on the ERD (0%)	5.94

Design Revision: Normalization Process		Completes the normalization process utilizing dependency diagrams in order to prove tables are in third normal form (3NF), and adjusts the ERD if necessary (100%)	Completes the normalization process utilizing dependency diagrams, but tables are not in 3NF, or ERD is inappropriately adjusted (55%)	Does not complete the normalization process utilizing dependency diagrams (0%)	7.92
Design Finalization: Final ERD		Drafts the recommended final ERD, which accounts for any adjustments made to its elements as determined through the normalization process (100%)	Drafts the recommended final ERD, but draft is incomplete or illogical, contains inaccuracies, or lacks accordance with any adjustments made to the ERD's elements as determined through the normalization process (55%)	Does not draft the recommended final ERD (0%)	7.92
Design Finalization: Process	Meets "Proficient" criteria, and summary is exceptionally clear and contextualized (100%)	Summarizes the process for developing the database design, including an explanation for the determinations made while filling in the ERD and making adjustments after normalization (85%)	Summarizes the process for developing the database design, but summary is cursory, incomplete, or illogical, or it contains inaccuracies or lacks an explanation for the determinations made while filling in the ERD and making adjustments after normalization (55%)	Does not summarize the process for developing the database design (0%)	7.92
Design Finalization: Achieve End Result	Meets "Proficient" criteria, and explanation provides cogent connections between the end result of a database and the user requirements, business processes, and restrictions considered in a design (100%)	Explains how the design will allow the database to achieve the desired end result, including consideration of the user requirements, business processes, and restrictions (85%)	Explains how the design will allow the database to achieve the desired end result, but explanation is cursory or illogical, contains inaccuracies, or lacks consideration of the user requirements, business processes, or restrictions (55%)	Does not explain how the design will allow the database to achieve the desired end result (0%)	4.75

Articulation of Response	Submission is free of errors related to citations, grammar, spelling, syntax, and organization and is presented in a professional and easy-to-read format (100%)	Submission has no major errors related to citations, grammar, spelling, syntax, or organization (85%)	Submission has major errors related to citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas (55%)	Submission has critical errors related to citations, grammar, spelling, syntax, or organization that prevent understanding of ideas (0%)	4.97
Total					100%