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IT 650 Final Project Guidelines and Rubric

Overview

The final project for this course is the design and proposal of a **database management system** (DBMS) solution. You will select a case study from those provided, analyze the organizational issues and needs, and work your way through the conceptual, logical, and physical designs of a DBMS solution. This will require substantial research of best practices in design, available products, and the legal and ethical standards to which you must adhere during design. The skills required in this assessment will be valuable in the role of an IT manager or DBMS professional, as these individuals are often tasked with developing solutions to various organization data problems while also adhering to legal, ethical, and financial considerations. The ability to craft and present professional and logical proposals will also be expected of IT professionals, especially those at the management level.

You will use Visio or a comparable tool to illustrate design models and will also have access to Microsoft SQL for implementation of the DBMS design or solution. While the length of the proposal will depend on many factors (including the type of organization, the scope of the identified challenge, and operational requirement differences), it should be long enough to address all aspects of the prompt accurately and comprehensively without unnecessary detail.

The project is divided into **four 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, Four, Five, and Seven. The final submission will occur in Module Nine.**

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

- Construct and refine conceptual and logical models that include the necessary entities, relationships, attributes, and business rules for solving database management issues
- Evaluate and recommend database products that address requirements for given business scenarios
- Articulate the differences in data and database security needs for various organizational computing environments to align to organizational needs
- Develop enterprise database management system models that accurately reflect fundamental organizational operating rules
- Create physical designs that account for organizational application, hardware, network, operating system, and data communications requirements
- Determine best practices for ensuring ethical and legal compliance for data usage and storage based on established industry-wide information technology standards and regulations

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Prompt

Based on the real-world case you selected, design and propose a DBMS solution that meets the organizational requirements while adhering to design best practices, legal regulations, and ethical standards.

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

I. **Organization**
   A. **Problem:** Analyze the organization to determine the problem/challenge, business requirements, and limitations of current system(s).
   B. **Departments and Operations:** Explain how the various departments and operations within the organization are impacted by the issue or challenge

II. **Analysis and Design**
   A. **Conceptual Model:** Based on the business problem or challenge, devise a conceptual model that would best address the problem. Your model should include all necessary entities, relationships, attributes, and business rules.
   B. **Logical Model:** Based on the conceptual model, illustrate a logical model for your DBMS that accurately represents all necessary aspects of the DBMS to address the solution.
   C. **Physical Design:** Create a physical database design that builds on the nonphysical (conceptual and logical) models you crafted.

III. **DBMS**
   A. **Research:** Research the various DBMS products available for your scenario and compare the top contenders to highlight similarities and differences.
   B. **Analysis:** Analyze these database products for their appropriate uses, strengths, and weaknesses in comparison with the needs of your organization.
   C. **Recommendation:** Recommend and defend the best DBMS product(s) for fully addressing the broad, high-level technological and operational needs of the organization.
   D. **Hardware, Software:** Recommend and justify needed software and hardware to fully meet operational applications in various departments. These will supplement the DBMS product you recommend to fully meet specific needs or requirements left open by the DBMS product.

IV. **Data Model:** For the three sections of this element, you will focus on a particular group or department within the organization (such as Sales or Customer Service).
   A. **Enterprise Data Model**: Develop and illustrate a comprehensive enterprise data model for the selected group.
   B. **Operating Rules:** Articulate the operating rules within the group to allow for an applicable model.
   C. **Rule Reflection:** Assess the extent to which your data model reflects the operating rules of the organization.

V. **Law, Ethics, and Security**

A. **Standards:** Articulate the relevant legal and ethical standards that need to be considered in your solution design and in future implementation.
B. **Legal Compliance:** Determine the best practices in design, data use, and storage to ensure legal compliance. The regulations in place and the best practices for aligning operations will likely change depending on the type of industry in which your company resides. Support your conclusions with research support.
C. **Ethical Practices:** Determine best practices in design, data use, and storage to ensure the ethical operation of your company. These best practices will likely change depending on the industry in which your company resides. Support your conclusions with research support.
D. **Security Needs of Solution:** In consideration of the type of organization you selected, the data used, and your consideration of legal and ethical standards, discuss the security needs of your DBMS solution. Considering the group/department for which you constructed your enterprise data model, discuss the differences in security needs at this level in comparison with those of the company as a whole.
E. **Database Security Plan:** Given the comparisons and discussions above, recommend a comprehensive but high-level (pertaining to the solution as a whole rather than the particular department) security management plan for your design that will align to organizational needs.

Milestones

Milestone One: *Analysis of Organization*

In **Module Two**, you will submit an **analysis of the organization** that will use the database developed for the final project. Select one of the scenarios provided for the final project. Using the selected scenario, analyze the organization to determine the problem/challenge, business requirements, and limitations of the current system(s). Explain how the problem or challenge impacts the various departments and operations within the organization. **This milestone will be graded with the Milestone One Rubric.**

Milestone Two: *Database Analysis and Design*

In **Module Four**, you will submit the **preliminary design of the database** for the final project. Devise a conceptual model that will best address the scenario you selected for the final project. Your model should include all necessary entities, relationships, attributes, and business rules. Based on the conceptual model, illustrate a logical model for your DBMS that accurately represents all necessary aspects of the DBMS to address the solution. Create a physical database design that builds on the nonphysical (conceptual and logical) models you crafted. This design includes the conceptual and logical models of the database, as well as the physical design of the database. **This milestone will be graded with the Milestone Two Rubric.**

Milestone Three: *DBMS Research and Recommendation*

In **Module Five**, you will submit **research and analysis** of available database management systems to host the database, as well as a **recommendation** for the specific database management systems for the database. Research the various database management system (DBMS) products available for your scenario and compare the top contenders to highlight similarities and differences. Analyze these database products for their appropriate uses, strengths, and weaknesses in comparison with the needs of your organization. Recommend and defend the best DBMS product(s) for fully addressing the broad, high-level technological and operational needs of the organization. Recommend and justify needed software and hardware to fully meet operational applications in various departments. These will supplement the DBMS product you recommend to fully meet specific needs or requirements left open by the DBMS product. **This milestone will be graded with the Milestone Three Rubric**.

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Milestone Four: *Database Data Model*

In **Module Seven**, you will submit **a detailed data model** of the database with analysis and justification based on a specific group or department within the organization. Select one particular group or department (such as Sales or Customer Service) within the organization in your chosen scenario from *Hands-On Database.* Then develop and illustrate a comprehensive enterprise data model for the selected group. Articulate the operating rules within the group to allow for an application model. Assess the extent to which your data model reflects the operating rules of the organization. **This milestone will be graded with the Milestone Four Rubric.**

Final Project Submission: *Law, Ethics, and Security Plan and Database Management System*

In **Module Nine**, you will submit the **legal and ethical** considerations relative to the database and include a **security plan** that addresses the legal and ethical considerations. Articulate the relevant legal and ethical standards that need to be considered in your solution design and in future implementation. Determine the best practices in design, data use, and storage to ensure legal compliance. The regulations in place and the best practices for aligning operations will likely change depending on the type of industry in which your company resides. Support your conclusions with research support. Determine best practices in design, data use, and storage to ensure ethical operation of your company. These best practices will likely change depending on the industry in which your company resides. Support your conclusions with research support. In consideration of the type of organization you selected, the data used, and your consideration of legal and ethical standards, discuss the security needs of your DBMS solution. Considering the group/department for which you constructed your enterprise data model (Milestone Four), discuss the differences in security needs at this level in comparison with those of the company as a whole. Given the comparisons and discussions above, recommend a comprehensive but high-level (pertaining to the solution as a whole rather than the particular department) security management plan for your design that will align to organizational needs.

You will submit this law, ethics and security plan as part of your completed **database management system**. This should be a complete, polished artifact containing **all** of the critical elements of the final product. This will include the materials developed in all of the milestones, as well as the Law, Ethics, and Security plan. Your final submission should reflect the incorporation of feedback gained throughout the course. **This submission will be graded with the Final Project Rubric.**

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Deliverables

Milestone	Deliverable	Module Due	Grading
1	Analysis of Organization	Two	Graded separately; Milestone One Rubric
2	Database Analysis and Design	Four	Graded separately; Milestone Two Rubric
3	DBMS Research and Recommendation	Five	Graded separately; Milestone Three Rubric
4	Database Data Model	Seven	Graded separately; Milestone Four Rubric
	Final Submission: Law, Ethics, and Security Plan and Database Management System	Nine	Graded separately; Final Project Rubric

Final Project Rubric

Guidelines for Submission: Your final project submission should be a complete, polished artifact that incorporates all of the pertinent documents from each of the four milestones. This is an opportunity for you to pull all of your work from the term together into one complete project. This database management system design proposal should not only be an organized, neat compilation of your previous work, but it should also reflect the incorporation of any feedback gained throughout the course. Please use 12-point Times New Roman font, double spacing, and one-inch margins. Citations should be formatted according to APA style.

Instructor Feedback: This activity uses an integrated rubric in Blackboard. Students can view instructor feedback in the Grade Center. For more information, review these instructions.

Critical Elements	Exemplary	Proficient	Needs Improvement	Not Evident	Value
Organization: Problem	Meets "Proficient" criteria and evidences keen insight into identifying key aspects of complex, multifunctional data challenges (100%)	Analyzes the organization to highlight the problem or challenge, business requirements, and limitations of current systems (90%)	Analyzes the organization to highlight the problem or challenge, business requirements, and limitations of current systems, but lacks necessary detail (70%)	Does not analyze the organization to highlight the problem or challenge, business requirements, and limitations of current systems (0%)	5.28
Organization: Departments and Operations	Meets "Proficient" criteria and shows in depth knowledge of the intricacies, interrelationships, or interdependencies between data challenges and departments and operations (100%)	Accurately explains the how the various departments and operations within the organization are impacted by the issue or challenge (90%)	Explains the how the various departments and operations within the organization are impacted by the issue or challenge, but with gaps in accuracy or detail (70%)	Does not explain the how the various departments and operations within the organization are impacted by the issue or challenge (0%)	5.28

Analysis and Design: Conceptual Model	Meets "Proficient" criteria, and model evidences detailed attention or keen insight into conceptual design needs and skills (100%)	Devises a comprehensive conceptual model that would logically address the identified problem (90%)	Devises a conceptual model that does not attend to all necessary entities, relationships, attributes, and business rules or would not logically address the identified problem (70%)	Does not devise a conceptual model (0%)	5.28
Analysis and Design: Logical Model	Meets "Proficient" criteria and evidences keen insight into representation, communication, or depiction of logical model design needs for business scenarios (100%)	Illustrates an accurate logical model that details the necessary aspects of the DBMS needed to address the business needs and identified problem (90%)	Illustrates a logical model that lacks accuracy or necessary detail regarding aspects of the DBMS needed to address the business needs and identified problem (70%)	Does not illustrate a logical model (0%)	5.28
Analysis and Design: Physical Design	Meets "Proficient" criteria and exemplifies the knowledge and skills necessary to extrapolate a physical design from nonphysical models for solving data challenges (100%)	Creates a physical design that precisely builds on the nonphysical models with incorporation of physical aspects (90%)	Creates a physical design that builds on the nonphysical models with incorporation of physical aspects, but with a lack of precision (70%)	Does not create a physical design that builds on the nonphysical models with incorporation of physical aspects (0%)	5.28
DBMS: Research	Meets "Proficient" criteria and evidences keen insight into the wider business contexts and needs during comparison (100%)	Compares relevant and applicable DBMS products to highlight similarities and differences based on research (90%)	Compares DBMS products that are not relevant or applicable to the scenario, or does not base comparison on research (70%)	Does not compare DBMS products (0%)	5.28
DBMS: Analysis	Meets "Proficient" criteria and evidences systems-level perspective or analysis is of quality to support or qualify possible recommendations (100%)	Analyzes the database products for their appropriate uses, strengths, and weaknesses in comparison with the needs of the organization (90%)	Analyzes the database products for their appropriate uses, strengths, and weaknesses but not in comparison with the needs of the organization (70%)	Does not analyze the database products for their appropriate uses, strengths, and weaknesses (0%)	7.91
DBMS: Recommendation	Meets "Proficient" criteria and evidences innovative, creative, or exceptionally defended recommendations beyond the general approach for solving the type of challenge (100%)	Recommends and defends the best DBMS product(s) for fully addressing the technological and operational needs of the organization (90%)	Recommends and defends product(s) for addressing the technological and operational needs of the organization, but there are other, more appropriate choices or recommendation would not fully address organizational needs (70%)	Does not recommend and defend product(s) for addressing technological and operations needs of the organization (0%)	7.91

DBMS: Hardware, Software	Meets "Proficient" criteria and evidences organizational perspective to consider departments, operations, or future needs and growth (100%)	Recommends and justifies needed software and hardware to complete physical design and fully meet operational applications in various departments (90%)	Recommends and justifies software and hardware additions that are not needed or would not fully satisfy operational applications in various departments (70%)	Does not recommend and justify software and hardware additions to the DBMS product (0%)	5.28
Data Model: Enterprise Data Model	Meets "Proficient" criteria and evidences keen ability to narrow the enterprise/organizational perspective to the needs of key operational groups to ensure needs are met (100%)	Develops and illustrates a comprehensive enterprise data model that meets the general operational and technological needs of the selected group (90%)	Develops and illustrates an enterprise data model that would not meet the general operational and technological needs of the selected group, or lacks necessary detail (70%)	Does not develop and illustrate an enterprise data model for the selected group (0%)	5.28
Data Model: Operating Rules		Articulates the operating rules within the group to establish basis for the model (100%)	Articulates operating rules within the group but lacks detail, full representation, or clarity needed to establish basis for the model (70%)	Does not articulate operating rules within the group (0%)	5.28
Data Model: Rule Reflection	Meets "Proficient" criteria and evidences keen insight into complexities, intricacies, and nuances of departmental operating rule applications (100%)	Accurately assesses the extent to which the data model reflects the operating rules of the organization (90%)	Assesses the extent to which the data model reflects the operating rules of the organization with gaps in accuracy or detail (70%)	Does not assess the extent to which the data model reflects the operating rules of the organization (0%)	5.28
Law, Ethics, and Security: Standards	Meets "Proficient" criteria and pays particular attention to the product approaches to scalability (personal vs. mobile vs. department vs. enterprise) (100%)	Accurately articulates the relevant legal and ethical standards that need to be considered for solution design and implementation (90%)	Articulates legal and ethical standards inaccurately, or standards are not relevant for solution design and development in this scenario (70%)	Does not articulate legal and ethical standards for solution design and development (0%)	5.28
Law, Ethics, and Security: Legal Compliance	Meets "Proficient" criteria and evidences keen insight into interpreting and applying legal standards to real-world cases (100%)	Determines the best practices in design, data use, and storage needed to ensure legal compliance in this case with support (90%)	Determines best practices in design, data use, and storage for ensuring legal compliance, but without specificity to this case or without support (70%)	Does not determine best practices in design, data use, and storage for ensuring legal compliance (0%)	5.28
Law, Ethics, and Security: Ethical Practices	Meets "Proficient" criteria and evidences keen insight into interpreting and applying legal standards to real-world cases (100%)	Determines the best practices in design, data use, and storage needed to ensure ethical operations within the company with support (90%)	Determines best practices in design, data use, and storage for ensuring ethical operations, but without specificity to this case or without support (70%)	Does not determine best practices in design, data use, and storage for ensuring ethical operations (0%)	5.28

Law, Ethics, and Security: Security Needs of Solution	Meets "Proficient" criteria and evidences keen insight into the variable and nuanced nature or operational or organizational data security needs (100%)	Accurately contrasts the security needs of the solution at the department level versus the organizational level (90%)	Contrasts the security needs of the solution at the department level versus the organizational level, with gaps in accuracy or detail (70%)	Does not contrast the security needs of the solution at the department level versus the organizational level (0%)	5.28
Law, Ethics, and Security: Database Security Plan	Meets "Proficient" criteria and evidences sophisticated organizational perspective or long-term needs awareness (100%)	Recommends a reasonable, high-level security management plan for the solution that aligns to the organizational needs (90%)	Recommends a security management plan for the solution but does not align to the organizational needs, is not reasonable, or contains overly specific or cursory detail (70%)	Does not recommend a security management plan for the solution (0%)	5.28
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 (90%)	Submission has major errors related to citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas (70%)	Submission has critical errors related to citations, grammar, spelling, syntax, or organization that prevent understanding of ideas (0%)	4.98
				Earned Total	**100%**