"Business Rules in Data Modeling"  Please respond to the following:

* Per the text, when databases are developed, they are modeled around business rules, so they accurately support a business function or operation.
  + Based on your experiences, identify one (1) example of a business function / operation. Explain the business function / operation in the context of business data models.
  + Identify the business rules associated with your selected business function / operation. Explain the manner in which such business rules would impact the design of a database.
  + Explain at least one (1) way in which the business function or operation would be affected if these business rules were not adhered to in the development of the database.

A business rule is a rule that defines some aspect of business and always resolves to either true or false. Business rules are there to set up the behavior of the business. Data models is the way data is connected to each other and how they are processed and stored inside the system.

A good example is of rules which are set by the business by rewarding the employees if the met the target of production or achieve some level of training. The rules could be give them a bonus of $1000. The designers should always incorporate, acceptable and non acceptable practices

The rules will be set and the designer of the database will suit the rules of rewarding the bonus. The rules will focus on those targeted goals.

The one major problems arise when the intended target is not met which will result in a different designed of the database. It can change the whole structure of the database.

Relational Database Model"  Please respond to the following:

* In the Week 1 discussion, you identified one (1) example of a business function or operation and the business rules associated with that business function / operation. You will build upon that discussion as you describe the main entities or objects of that business function / operation in question, as well as the manner in which they relate to one another.
  + Describe the main entities or objects of the business function / operation. Specify the attribute that would be the primary key for each entity, and provide a rationale for why you selected such an attribute.
  + Determine whether the relationships between each of the chosen entities are one-to-one, one-to-many, or many-to-many relationships. Justify your response.
  + Explain the key manner in which the business function / operation and the business rules associated with that business function / operation support the relationships mentioned above. Also, explain the fundamental ways in which the relationships could change, based on the interpretation of the given business rules.

The entity is any object in the system that we want to model and store information about. The attribute that the object in question has is the characteristic. The most important one is the primary key which unique identify it. In a student, his or her social security number is the one which uniformly identify them.

The main entity is the students in the database and it attribute is the student IDs number which must be unique to identified the students. This can be the social security number because each student has one social security number which is unique.

The relationship is a one to one which can be define by each person has one social security number which is unique.

The business rule would affect this relationship if they change the student IDs attribute which is the social security number to be replaced by a regular number which can be duplicated in other tables of the database.

"Entity Relationship Modeling"  Please respond to the following:

* As explained throughout this course, entity relationship modeling is a critical element of database design. If the database is not properly modeled, it is unlikely that the database will be properly developed. Using this knowledge, explain the key reasons why entity relationship modeling is important, and determine at least (1) way in which it impacts the overall development of the database.
* Analyze the key ways that entity relationship modeling helps database developers overcome potential design challenges and conflicting goals.
* For the database that you described in the Week 1 and Week 2 discussions, determine the major / minor challenges that might exist when you are creating an entity relationship diagram (ERD) for the business function / operation.

An entity relationship model is a pictorial representation of the entities and the relationship they have to each other. It is important because the model of the data represents the entities framework infrastructure. In addition, a data modeling technique important to software engineers for a conceptual data model of an information system. Moreover, it important to the database development because it used as a blueprint to build the physical database.

Entity relationship modeling helps database developers overcome potential design challenges and conflicting goals by make it easy to design a database which doesn’t have conflict entities. In addition, it helps developers in the design, optimization, and debugging of database programs.

The conflict might be in the student database because some students who registered for classes might withdraw in the late date after the add and drop classes has passed. Such Student might be difficult to be truck because, their statues might not be known.

Normalization and Redundancy"  Please respond to the following:

* Suggest one (1) of the problems that normalization seeks to solve within a database. Describe one (1) example of your suggested problem, and explain the overall benefit that normalization would provide. (**Note**: Your example can be hypothetical.)
* Identify the key determinants that could affect the degree of normalization of a database. Justify your response. Next, identify the aspects of the database design that can be denormalized. Explain the key ways in which the business rules support the degree of normalization and the elements that can be denormalized.

Normalization is the process of organizing a database ‘s attributes and tables to lessen data redundancy. If you have two primary keys in a table, it will be difficult to insert, update, and delete and which could lead to a loss of data integrity. The solution is to normalize the table into two tables in order to separate those two primary keys so that each can be the primary key in the new tables.

The key determinants that could affect the degree of normalization of a database is the change of a primary key in another table which would led to the loss of data integrity. In addition, it can lead to the reduction in data redundancy. The aspects of the database design that can be denormalized is the large numbers of the tables which can be reduced to some small numbers which can improve the maintenance of the database.

The business rules support the degree of normalization by choosing which data to store in the database. This would lead to a database which is easy to access and maintain.

**Lab 2: Modifying a Database Design**

Due Week 4 and worth 75 points

This assignment contains two (2) Sections: Modified Diagram and Design Summary. **You must submit both sections as separate files in order to complete this assignment.**

If you’re using Visio, see “[Appendix A: Designing Databases with Visio Professional 2010: A Tutorial](https://blackboard.strayer.edu/bbcswebdav/institution/CIS/111/1168/27482_Online_App_A1.pdf)” to help you complete Section 1: Modified Visio Database Design. (**Note**: This tutorial focuses on the use of Microsoft Visio. Open source applications are not covered in Appendix A. However, using open source applications or even pen and paper within labs is permitted.)

After reviewing your database design from Lab 1: Creating a Database Design, the college has provided more information for the database that they want developed:

* For each student, the college needs to track the student  ID, student names, addresses, start date, phone numbers and types (such as mobile, home, work), email addresses and types (such as personal, school, work), gender, and birth date.
* For each course, the college needs to track the course ID, course name, department, quarters offered, sections, and instructor teaching each course.
* For each instructor, the college needs to track the instructor ID, name, address, phone numbers and types (such as mobile, home, work), email addresses and types (such as personal, school, work), gender, birth date, and the courses that each instructor is qualified to teach.
* Additionally, the college needs to track the final grades for each student after each course has completed.

**Section 1: Modified Diagram**(Using Microsoft Visio is optional; you may also use any other application you know or even modify the diagram with pen and paper and take a picture of it for submission.)

1. Use the application or pen and paper to:
   1. Modify the database diagram from Lab 1 with the entities and attributes that the scenario identified (i.e., a college tracking students, courses, and instructors).
   2. Create the appropriate relationships between each entity within the diagram.

2. Submit your modified diagram.

**Section 2: Design Summary** (Microsoft Word or equivalent)

3. Write a one to two (1-2) page paper in which you:

1. Discuss the degree to which you believe your diagram reflects the database design.
2. Describe any assumptions that you had to make about the business rules to in order to create the diagram and the associated relationships.

Section 2 of your assignment must follow these formatting requirements:

"Database Design and Implementation"  Please respond to the following:

* Now that you have learned the concepts of database models and you have practiced creating entity relationship diagrams, let us focus on the implementation of that design into a Database Management System (DBMS).
  + Based on the example of the business function / operation that you described within the Weeks 1-3 discussions, describe the queries that you would need to create in order to support the business function / operation in question.
  + Based on the database model described in the Week 2 and Week 3 discussions for your business function / operation, determine the major / minor issues that might arise when creating these queries.

The queries that I would need to create to support the business function is the update for the students record at school. Once student write exams, their grades needs to be recorded. Therefore, the following sql will do that. UPDATE student220 SET math=math=80, social=social=90, science=science=75 WHERE id=220.

The minor issues that might arise when creating these queries can be to update the students' records if they enroll in the class but withdraw without given the administration the status of their class.

"Database Life Cycle"  Please respond to the following:

* Per the text, the Database Life Cycle includes the Database Initial Study, Database Design, Implementation and Loading, Testing and Evaluation, Operation, and Maintenance and Evolution phases. However, the actual implementation of each of the phases will likely change, based on the size of the related organization or other organizational factors.
  + Select one (1) phase of the Database Life Cycle, and describe the manner in which the chosen phase would change based on the size of the organization.
  + Using the same phase that you selected in Part 1 of this discussion, describe the manner in which the phase would change, based on the distribution of the organization and the associated distributed database design.

One phase of the Database life cycle is the detailed systems design phase which involves in the designers ‘s completes the design of the system’s processes. This phase can change if the organization is small because of the cost factor which can be an issue on the small organization. Small organization works on small budgets which very important to keep the cost down.

The phase would change on the distribution of the organization and the associated distributed database design because it would result in invest in some more resources. If the database process is to be distributed across the system, the designer must also develop the data distribution and allocation strategies for the database.

"Cloud Services"  Please respond to the following:

* Visit Amazon’s Website, located at <http://aws.amazon.com/ec2/>, and read about the Amazon EC2 cloud solution. Be prepared to discuss the ways in which EC2 provides services to customers.
* Visit Microsoft Azure’s Website, located at <http://www.windowsazure.com/en-us/>, and read about the ways in which Azure provides services to customers. Be prepared to discuss.
* Visit Microsoft Office’s 365 Website, located at <http://office.microsoft.com/en-us/business/office-365-small-business-premium-office-online-FX103037625.aspx>, and read the ways in which Office 365 provides services for business. Be prepared to discuss.
* Many organizations are using cloud services to provide application and database services to their users and their customers.
  + Select one (1) organization from above that you visited that provides application or database support through cloud services. Explain the services that the organization provides through the cloud, and examine the business operation that is enhanced through providing these services through the cloud.
  + Explain the key ways in which the previously identified business operation would be impacted if the cloud did not provide these services. Next, explain at least two (2) advantages and at least two (2) disadvantages that the organization in question incurs by providing these services through the cloud.

The organization I visited was Microsoft which has a OneDrive which gives its user access to their files, seamlessly integrated with Office and pre-installed Windows. In addition, users can preview different file online and work with them to do what is needed. Moreover, HD video can be streamed on demand using the browser.

The using of the cloud computing, saving investments by eliminating the additional server hardware and increasing computing power. Without the cloud, business will be impacted because the cost of capital is going to be increased which will be a negative on the business.

The two advantages are the tools are provided to optimize capacity utilization and the ability of vertical and horizontal scaling of applications. Two of the disadvantages are the security of the cloud is not good because some hacker can get access to the cloud and the other issue is the operational cost of maintaining the cloud which can be high.

"Data Information Decision"  Please respond to the following:

* With the obvious pace of current technology development, data continues to grow daily. Imagine that you are a Database Administrator for a large organization. Identify the primary decisions a Database Administrator must make in order to manage such data, maintain data integrity, and maintain a database at its most ideal level. Provide a rationale for your response.
* Suppose you are also in charge of securing your organization’s data. Identify at least two (2) data security measures that you believe are necessary to prevent data security issues. Justify your response.

As a Database Administrator for a large organization, I would back up the continues growing of daily data and recovery most of them at a quickly and timely manner. This will be achieved by developing a well database, implementing it, and periodically testing a backup and finally put in place a recovery plan for it.

As a Database administrator, security measures are very important which can be done by making sure that data is secure from unauthorized access. Some databases contain financial information which can be secured by updating the ant virus software regularly. To make sure in case of a power outage or other disaster, a backup copy needed to be available all the time and can be stored in another location .