HOMEOWNERS ASSOCIATION PROJECT CASE
Database Design Project
Fundamentals of Database Systems (CCINFOM)
AY 2023-2024, Term 1

DB Design Techniques that can be Used

1.	Identification of Relations	Assigning appropriate identifiers
2.	Relationships between Relations	Identifying appropriate foreign keys
3.	Required and Unique Values	Determining which fields cannot contain null values; Determining which fields (non-identifiers) should contain unique data
4.	Composite & Multi-Valued Attributes	Dissecting a field into multiple parts; Creating a table for storing multiple values for a single attribute and/or allow special relationships
5.	Controlled-Values	Creating a table to store controlled domain values (i.e. use of ENUM & reference tables)
6.	Generalization & Specialization	Creating a table to store common fields of context-similar tables, special fields,
7.	Other Techniques	
	a. Switchboard Design	Changing fields to multiple Boolean fields
	b. Coded and Artificial Identifier	If identifier is complex, an alternative is to use Coded and Artificial Identifiers (Warning: the use of this technique can reduce integrity of the data)

Criteria for a Good DB Design

1.	Complete	Data needed to be stored can be stored
2.	Integrity	Integrity (value domain, relational, & referential) is attained at its possible highest
3.	Reduced Redundancy	Redundancy is at its possible lowest

Group Assignment of Cases: *to be assigned by the faculty per section*

SECTION 1.0:   Case to be used in the Relational DB Design Lessons

1.1 HOA Registration

Important to the system is the information about the Homeowners Association (HOA) of the subdivision. Although there is only ONE HOA that the system will be used for, storage of HOA information is still important. This information includes the (a) name of the HOA, (b) official office address (details include the street number, street name, barangay, city/municipality, province, region, zip code, X & Y location coordinates on the map), (c) year of establishment, (d) its official website, and (e) subdivision name. The following are also recorded about the HOA:

- Scanned copy of the notarized articles of incorporation signed on each and every page by all incorporators
- Notarized By-Laws signed on each end every page by the members of the board
- Minutes of the General Assembly meeting approving the By-Laws certified by the board by the Secretary and President
- Attendance sheet signed by the homeowners (or their authorized resident) present and their corresponding votes approving or disapproving the By-Laws certified by the board by the Secretary and President
- General Information of each registered homeowner of the HOA
- Certification issued by the President, as to the existence or absence of any HOA in the subdivision. If there are existing HOA in the subdivision, the following information needs to be recorded - Name and address of the HOA (details will include the street no, street, barangay, city/municipality, province, region and zip code, also included is the location in the map)
- Code of Ethics document signed by all members of the board and officers of the HOA
- Regular Monthly Dues (amount) to be collected and its regular collection day (choice of 1st up to 20th of the Month)

Files are not stored directly in the database, but the following information are recorded about them: (a) file name, (b) description, (c) file location, (d) file type (e.g. document, spreadsheet, PDF, image, others), (d) date submitted, (e) file owner, and (f) uploader.

1.2 Homeowner Registration

The general information of each homeowner of the HOA includes: (a) complete name of the homeowner, (b) years as homeowner in the subdivision, (c) properties he/she owns in the subdivision, (d) household in each of his/her properties, (e) birthday, (f) gender, (g) homeowner email address, (h) homeowner mobile numbers, (i) Facebook URL of the member (if there is any), (j) picture of the homeowner, (k) undertaking that the information provided is correct and accurate, and (l) his/her expression to become member of the HOA. If the homeowner is residing in his/her property, then he/she is also a resident. A homeowner is identifiable by a homeowner's ID. A homeowner can own several properties in the subdivision, but can only declare one property as his/her current residence. The homeowner's other address (street number, street name,

barangay, city/municipality, province, region, zip code, X & Y location coordinates on the map), and contact information (other email and other mobile number) are also recorded, especially if the homeowner is not a resident in the community.

1.3 Property Registration

Every property in the subdivision has only one homeowner, one household that lives in the property, and maybe several authorized residents in the household. Properties in the subdivision is identifiable by a property code. Properties are identified by their block and lot (e.g. B06L08). Other details of the property include the (a) size of the property and the (b) date it was turned over to the homeowner. A property can also be classified as either residential or commercial. Properties owned by the HOA are registered as assets (details can be found in Asset Registration). For commercial properties, the type of property (e.g. office, leisure, retail, or mixed-use) and the maximum number of tenants should also be provided.

For every residential property in the subdivision, the household residing in the property must also be registered. This information is being used in order to identify who are residents of the subdivision and for the issuance of the resident's ID. The authorized resident/s of the household is/are responsible for maintaining (adding, modifying or deleting) resident members of the household. A resident member cannot be a member of multiple households. A household is provided with a household ID and is associated with only one property within the subdivision. If the homeowner is an authorized resident of the household in his property, this means that he is residing in his/her property. A household has several resident members. When an authorized resident of the household deletes a resident in the household, the resident ID card of the deleted household member is cancelled. It is possible for a resident transfer household. Since resident information is not deleted, at any time, the homeowner is the only one that can change the authorized resident/s in his/her property.

1.4 Resident Registration

For each resident, the following information is needed: (a) complete name of the resident, (b) renter or not, (c) resident email address, (d) birthday, (e) gender, (f) resident mobile information, (g) Facebook URL of the resident if there is any, (h) picture of the resident, (i) relationship to the homeowner, (j) undertaking that the information provided is correct, accurate, and signifies representing being a valid resident. Every resident has a unique resident ID.

1.5 Resident ID Card Issuance

A resident ID card is provided to each resident as part of the security of the subdivision. It is possible that a resident requests and is provided with a resident ID card multiple times within their stay in the subdivision, especially in situations where the ID card gets lost. The HOA maintains a record of all the resident ID cards issued to a resident, that contains the (a) date it was requested, (b) reason for requesting the ID card, (c) the date it was provided, (d) the HOA officer that authorized the ID card, and the (e) OR number representing the payment made for the ID card. The first time the ID card is provided, it is given for free, but succeeding generations of ID cards has a fee. When generating the ID card, the resident information is being used. This is why it is important for the resident to update his/her information annually. If the resident information is more than one year old, the HOA will require the resident to update his/her information. The ID Card has its own unique card number.

1.6 Vehicle Registration

Homeowners must also register their vehicles with the HOA. The following information are recorded about vehicles: (a) plate number, (b) complete name of the owner, (c) the owner's resident ID, (d) vehicle classification (e.g. private or commercial), (e) vehicle type (e.g. sedan, SUV, MPV/AUV, van, truck, motorcycle/scooter, others), a (f) copy of the latest OR/CR, and the (g) date when the vehicle was registered with the HOA. A fee must be paid by the resident upon registration. Each registered vehicle must acquire a sticker from the HOA. Each sticker is assigned a unique sticker ID and validity year. The HOA also keeps track of the vehicle owner type (resident or non-resident), plate number of the vehicle where the sticker is placed on, the authorizing HOA officer of the sticker sale, as well as the date when the sticker was acquired. For residents, the first two (2) stickers are included in the registration fee of the first two registered vehicles. A higher amount is required to be paid for the registration of succeeding vehicles. New stickers must be acquired every year, by the end of the declared month by the HOA. Updated OR/CRs must also be submitted accordingly. Non-residents may also acquire stickers for a fee. Sticker requirements and necessary information for non-residents are the same as those collected for vehicle registration, except for the resident ID: (a) plate number, (b) complete name of the owner, (c) the owner's contact number, (d) vehicle classification (e.g. private or commercial), (e) vehicle type (e.g. sedan, SUV, MPV/AUV, van, truck, motorcycle/scooter, others), and a (f) copy of the latest OR/CR.

1.7 HOA Officer Registration

Only homeowners can be elected as officers. Officer information includes (a) position in the HOA (President, Vice-President, Treasurer, Auditor, Secretary), (b) date start of the office, (c) expected end date of the office, (d) election details that made them officers (date of election, election venue, if the quorum was reached or not, complete name and mobile number of an outside witness). Officers are identified by their homeowner's ID, the position they ran for, and the election that made them officers.

Elected officers are required to have their regular availability declared. This information is being used to check if there is consistently an available officer every day, to manage the affairs of the HOA. Availability is on the morning or afternoon of (any or combinations of) Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, or Sunday.

1.8 Asset Registration
A subdivision owns assets, which are managed by the HOA. Some of these assets can be availed or rented by residents. These assets can be properties, equipment, furniture and fixtures, and other assets. Each asset has an asset ID. Property assets include basketball courts, swimming pools, clubhouse, meeting or conference rooms, and the like. Equipment assets include projectors, speakers, microphones, electric fans, aircons, and the like. Furniture includes tables, chairs, whiteboards, cabinets, paintings, decorations, among others. When registering assets, the following information are provided: (a) asset name, (b) asset description, (c) acquisition date, (d) for renting or not, (e) asset value, (f) type of asset (property, equipment, furniture and fixtures, other assets), (g) status of the asset (working condition, deteriorated, for repair, for disposal, disposed), (g) current location of the asset (including its map location). Property assets may contain other assets inside. For example, a meeting room may have a projector, a whiteboard, cabinets, paintings, decorations, air-conditioning unit, electric fans, etc.

SECTION 2.0: DB Design Specifications

1. Using the official database that your teacher will provide about the HOA covering the specifications on page 1-3, continue the design considering the specifications assigned to your group
2. You are expected to submit the following:
   a. your database design model* (.mwb) using MySQL Workbench
   b. the non-forward engineered* database creation script (.sql) following the standard writing style and notation (that also includes statements that will put initial data into the implemented database)
   c. an Excel file (.xlsx) containing the simulated tables and corresponding sample records
3. During the DB Design Defense, you are to present why your design is correct by simulating how data will be recorded in the database.

NOTE: The data model and database creation script should be created from scratch. The Reverse Engineer and Forward Engineer features in MySQL Workbench shall not be used. Using these features will result to a grade of 0.0 in the DB Design Project.

Design Case 01: Monthly Dues, Billing, and Payment & Asset Donation
There are regular dues collected by the HOA to help manage the subdivision and provide good facilities and services to its residents.

1A: Monthly Billing & Payment
Monthly dues is made up of the regular monthly due and other dues. Other dues include penalties, payment for asset rehabilitation, damages to community properties, among others. At the end of the month, a monthly due bill is generated per household itemizing the regular monthly due, the unpaid past due/s, discounts awarded, all the penalties incurred by all the members of the household, and the total amount to be collected. Each bill is identified by a bill ID. Other information recorded in the bill includes the month and year of the bill and the date it was generated. It is possible that a bill deduction amount is reflected and debited from the bill, which is based on the incentives and/or discounts awarded to all members of the household. The bill is sent to each household and payments will be collected on the recorded day of collection. The authorized resident of the household can pay the monthly due in partial or full payment. Payments can also be made in advance. Payments are recorded to include the following: (a) date of payment, (b) amount paid, (c) resident who made payment, (d) receiving officer of the payment. Payments are identified by the OR number. Moreover, OR numbers are controlled values.

1B: Incident Reporting
Other dues are imposed to residents when they violate rules or made to pay for any incident in the community. These are recorded when the incident was reported. The information includes (a) the date of the incident, (b) description of the incident, (c) complete name of the person/s involved in the incident, (d) whether the person involved is a resident or non-resident, (e) officer that investigated, (f) penalty imposed, (g) rule number in the book of rules and policies of the community violated, (h) seconding officer to the violation, and (i) penalty imposed. Each incident is identified by an incident ID. If the incident happened while an asset is rented, the incident ID is added to the rental information. If the incident happened while an asset is being transferred, the incident ID is added to the transfer information. Some incidents require some evidence to be presented and they are also recorded. Each evidence is assigned an evidence ID. Since the evidences are digital copies of the actual evidences, the information recorded includes (a) name of the evidence, (b) description of the evidence, (c) filename of the evidence, (d) resident that submitted the evidence, (e) officer that accepted the evidence, (f) date of the submission of the evidence.

1C: Incentives & Discounts
Discounts are awarded to households which paid their previous monthly due bill in advance. Residents who donated assets within the year will receive discounts on their monthly dues, depending on the value of donated assets. To easily monitor incentives and/or discounts given to residents, the following information are recorded: (a) monthly due bill period where the incentive/discount will be applied to (month & year), (b) resident awarded, (c) classification (incentive or discount), (d) incentive amount or discount rate (%), (e) reason for incentive/discount, and (f) officer authorizing the incentive/discount. Additional discounts are given to households which have consistently paid their monthly dues for the entire year. Incentives can also be in the form of privileges determined by the HOA (e.g. priority lane for HOA services/transactions, free vehicle sticker, priority participant in programs, etc.). Information about non-monetary incentives awarded to residents are recorded accordingly: (a) incentive ID, (b) resident awarded, (c) incentive description, (d) incentive validity start date, (e) incentive validity end date, (f) status (valid, expired, availed, cancelled), (g) reason for incentive, and (h) officer authorizing the incentive. Both incentives and discounts are not transferrable to other residents.

1D: Asset Donation
Some assets are donated. Donors do not have to be homeowners nor residents of the subdivision. When assets are donated, donation information needs to be recorded after the assets are registered. Donation information includes (a) donor's complete name, (b) donor type (resident or non-resident), (c) donor's address, (c) item/s donated (multiple items donated at the same time are part of one donation record/transaction), (d) amount of each item donated, (e) accepting officer of the donation, (f) pictures of the donation event (if it exists), (g) donation form officiating the donation, (h) date of donation. These information is being publicly shared to all homeowners. Deleting donation information is prohibited, and only allowed if there is an approval of the HOA President. Donation information is technically not deleted but only its status is marked as deleted.

Design Case 02: Community Programs & Asset Transfer
The survival of the subdivision is in the participation of its members to its programs and the affairs of the community.

2A: Programs & Committees
The association creates different programs to be supervised by a committee. A program is identified by a program ID. Other details include (a) program description, (b) purpose of the program, (c) intended participants in the program, (d) officer sponsoring the program, (d) maximum number of participants, (e) start date of the program, (f) end date of the program, (g) start date of participant registration, (h) status of the program (open for registration, closed for registration, ongoing, cancelled, completed), and (i) budget for the program. A program has a committee head and three (3) members. Committee heads and members are all residents of the subdivision. Committees, including the identification of the head and members, are organized by an HOA officer. Each committee may supervise multiple programs simultaneously and residents may concurrently be heads and/or members of different committees at one time.

2B: Expenses & Evidences
Since committee work in the program incurs expenses (before, during, or as part of post-program activities), these are important to be recorded in the program. For each expense, details needed include (a) date of expense, (b) expense description, (b) amount, (c) committee member that incurred the expense, (d) the type of expense (manpower, services, materials, others), (e) scanned official receipt of the expense, and the (f) endorsement of the sponsoring officer. A single expense may be classified as several types (e.g. both manpower & services). Should the program require additional budget on top of what was previously declared in the program details, a request shall be made by the committee head. Other information about the additional budget request should be captured: (a) request ID, (b) the program it is being requested for, (c) justification for additional budget, (d) date of request, (e) endorsement of sponsoring officer, (f) status (for approval, approved, disapproved). The HOA President is the approving officer of additional budget requests and indicates the reason for disapproval should the request be disapproved. When the program starts, some evidence may be collected and recorded in the program (e.g. pictures and documents). Each evidence is assigned an (a) evidence ID, (b) description, (c) filename of the evidence, (d) resident that submitted the evidence, (e) officer that accepted the evidence, and the (f) date of submission of the evidence.

2C: Participant Registration, Attendance, & Feedback
Residents sign-up to a program. Not all residents who signed-up are accepted into the program (some residents may be the priority to be participants of the program than other residents). Any of the committee members decide whether a registrant is accepted or not, and records the reason for not accepting a resident to the program. During the program, the program committee records the attendance of participants in the actual program. Walk-ins may be entertained with the discretion of the committee members and it is also possible that not all who registered will

be attending the program. At the end of the program, participants place their feedback and rating about the program. They are also encouraged to provide their suggestions to the program for improvement.

2D: Asset Transfer

Asset transfers are also recorded. Information about assets that are transferred from one location to another (except for rentals and activities) includes (a) scheduled date of transfer, (b) the officer authorizing the transfer, (c) actual date of transfer, (d) location it came from, (e) location it was transferred to, (f) cost of the transfer, (g) official receipt of transfer spending, (h) status of the transfer (scheduled, ongoing, completed, deleted), (i) complete name of the person that made the transfer, and (j) mobile number of the person that made the transfer. Deleting a transfer information is prohibited, and only allowed if there is an approval of the HOA President. Transfer information is technically not deleted but only its status is marked as deleted.

Design Case 03: Elections & Asset Rental

An election is held usually every year or every two years.

3A: Election Details

Aside from the HOA officers, board members are elected by the homeowners. Every election is described by (a) year of the election, (b) date of the election, and the (c) status of the election (scheduled, on-going nomination, on-going election, voided, closed, cancelled, completed), and the (e) resident acting as the chair of the election committee. An election committee, aside from the chair of the committee, has four (4) other members, each is a resident of the subdivision. The minimum number of candidates running for each position is determined by the HOA for the scheduled election to proceed. An election may be cancelled (e.g. due to a typhoon) or voided (e.g. due to lack of voters or candidates). In these cases, a new election date must be identified and the reason for cancelling/voiding the election must be recorded.

3B: Voter & Candidate Registration

In each election, eligible voters are listed and determined. Only homeowners or authorized residents belonging to households with no pending payments in the previous year are allowed to vote in the current election. Furthermore, candidates are registered every election. Information needed per candidate includes their (a) resident id, (b) current description of work, (c) previous work experiences or community leadership experiences, (d) priorities if elected, (e) recent picture, (f) video of them presenting themselves to the entire community as a candidate, (g) undertaking that the information provided is correct, accurate, and signifies that they have reviewed their qualifications as valid, (h) year of continuous residence in the subdivision, (i) position they are running for (President, Vice-President, Treasurer, Auditor, Secretary, Board Member), and the (j) status of candidacy (filed, accepted, withdrawn, rejected). Candidacies can be rejected if the election committee discovered that the candidate have committed acts disqualifying him/her to run for the election. The reason for the committee rejecting the candidacy is recorded.

3C: Election Results

During election, only homeowners (or their authorized resident) can vote. Only one (1) vote per household will be counted. Even if the authorized resident voted, it will still be recorded as a vote of the homeowner, if they belong to the same household. Homeowners/Authorized residents vote for five (5) HOA officers and nine (9) members of the board from the candidate list. Their votes are recorded, accordingly. At the end of the election, and the number of voters did not reach 50%+1 of the total homeowner population, the election is declared void, along with the initial votes casted, and a new election date is selected. Voided votes are still kept for documentation purposes. A new election record is created for the new election schedule. If the election is completed, then the candidate with the highest number of votes for each HOA officer position is declared the winner. Additionally, the top nine (9) candidates for board membership are declared the new board members of the association.

3D: Asset Rental

Some assets are tagged to be available for renting and can be rented by any resident. When an asset is rented, the following information are recorded: (a) reservation date, (b) rental date, (c) expected return date, (d) resident that rented the asset, (e) officer that authorized the rental, (f) rental fee, (g) discount provided, (h) status of the rental (reserved, cancelled, on rent, returned, deleted), (i) official receipt of the rental fee payment, (j) actual return date, (k) inspection details when the asset was returned, (l) accepting officer of the return, and the (m) assessed value to pay for assets returned not in the condition it was rented. A separate official receipt is recorded for the payment of additional fees upon return of the asset. When an asset with assets are rented, all the inclusion assets are automatically rented as well. When the asset with assets are returned, then all the inclusion assets are automatically returned as well, although some of the information upon returning needs to be encoded manually by the accepting officer. Deleting a rental information is prohibited, and only allowed if there is an approval of the HOA President. Rental information is technically not deleted, but only its status is marked as deleted.

Design Case 04: Commercial Business Establishments & Asset Transfers

Commercial establishments are accessible within the subdivision to provide necessary products and/or services to the residents.

4A: Business Registration

Residents and non-residents alike can setup a business within the subdivision as long as they register it with the HOA. For each business, the HOA collects information including the (a) business name, (b) complete name of the owner, (c) whether the owner is a resident or non-resident, (d) business address (details include the street number, street name, barangay, city/municipality, province, region, zip code, X & Y location coordinates on the map), (e) business email, (f) description, (g) business type (e.g. sole proprietorship, partnership, corporation), (h) start date of operations, (i) operating schedule, (j) website/Facebook URL of business page, (k) copy of valid business permit, the (l) expiration date of business permit, and the (m) HOA officer who processed the registration. A copy of renewed business permits must be submitted to the HOA before the expiration date. The list of store employees (their complete name, mobile number, and position) who work at the business establishment are provided as well. One of the employees is also identified as the authorized employee, who can transact with the HOA aside from the business owner. When the business closes, the end/last date of operations is also recorded.

4B: Business Monthly Dues, Billing, and Payment

Monthly dues is made up of the regular monthly due and other dues, similar to monthly due bills issued to residents/households. Other dues include penalties, damages to community properties, among others. At the end of the month, a monthly due bill is generated per registered business itemizing the regular monthly due (the amount depends on the business type), the unpaid past due/s, discounts awarded, all the penalties incurred (including those by all the employees of the company), and the total amount to be collected. Each bill is identified by a bill ID. Other information recorded in the bill includes the month and year of the bill and the date it was generated. It is possible that a bill deduction amount is reflected and debited from the bill, which is based on the incentives and/or discounts awarded to the business. The bill is sent to each business and payments will be collected on the recorded day of collection. The business owner or the authorized employee can pay the monthly due in partial or full payment. Payments can also be made in advance. Payments are recorded to include the following: (a) date of payment, (b) amount paid, (c) person who made payment, (d) receiving officer of the payment. Payments are identified by the OR number. Moreover, OR numbers are controlled values.

4C: Incident Reporting

Other dues are imposed to registered businesses when they violate rules or made to pay for any incident in the community. These are recorded when the incident was reported. The information includes (a) the date of the incident, (b) description of the incident, (c) complete name of the person/s involved in the incident, (d) whether the person involved is a resident or non-resident, (e) name of the business involved (f) officer that investigated, (g) penalty imposed, (h) rule number in the book of rules and policies of the community violated, (i) seconding officer to the violation and, (j) penalty imposed. It is possible that the incident involves the violation of more than one HOA rule. Each incident is identified by an incident ID. Some incidents require some evidence to be presented and they are also recorded. Each evidence is assigned an evidence ID. Since the evidences are digital copies of the actual evidences, the information recorded includes (a) name of the evidence, (b) description of the evidence, (c) filename of the evidence, (d) resident that submitted the evidence, (e) officer that accepted the evidence, (f) date of the submission of the evidence.

4D: Asset Activity

Managing the asset is keeping record of what is done with the asset. Some assets are repaired, cleaned, restored, among others. Except for asset rental and transfers, any activity done with the asset is recorded. The information about the activity includes (a) date of the activity, (b) description of the activity, (d) complete name of the person in charge of the activity, (e) mobile number of the person in charge of the activity, (f) location of activity (for movable assets), (g) the officer authorizing the activity, (h) tentative schedule (start and end date) of the activity, (i) when the activity actually started, (j) when the activity actually ended, (k) cost of the activity, (l) official receipt representing payment for the activity, and the (m) status of the activity (scheduled, ongoing, completed, deleted). Deleting an asset activity information is prohibited, and only allowed if there is an approval of the HOA President. Activity information is technically not deleted but only its status is marked as deleted.

SECTION 3.0:   Rubric for Assessment of the Project

Each member of the group will be individually graded based on the criteria below:

Criteria	4.0 Beyond Expectation	3.0 As Expected	2.0 Below Expectation	1.0 Poor	0.0 Unacceptable
Application of DB Design Techniques	Aside from meeting criteria 3.0, the student was able to implement design improvements (if necessary) by applying techniques that can reduce redundancies or improve the quality of data to be recorded if the database was implemented.	Aside from meeting criteria 2.0, the student was able to implement domain integrity by applying the appropriate and correct technique to improve the design's domain integrity.	Aside from meeting criteria 1.0, the student was able to prove that the designed table/s being investigated is involved in complete, correct and appropriate relationship with other tables.	The student was able to prove that the designed table/s being investigated can COMPLETELY store the data required by the specification. This includes the proper implementation of constraints to observe the COMPLETENESS characteristics of quality information.	Criteria for 1.0 was not convincingly met.
Evidence of DB Design Integrity	The tables/s being investigated have adequate sample data to prove that the design improvements were implemented as the best choice amidst possible design repercussions.	The tables/s being investigated have adequate sample data to prove that the DOMAIN INTEGRITY was implemented as the best choice amidst possible design repercussions.	The tables/s being investigated have adequate sample data to prove that the REFERENTIAL INTEGRITY was implemented as the best choice amidst possible design repercussions.	The tables/s being investigated have adequate sample data to prove that the RELATIONAL INTEGRITY was implemented as the best choice amidst possible design repercussions.	The tables/s being investigated have inadequate sample data to prove that any DB design technique was implemented to maintain integrity.
Proficiency in DB Design Rationalization	The student excellently demonstrated knowledge of all components of the data model produced and flawlessly tested the design to prove its integrity.	The student sufficiently demonstrated knowledge of all components of the data model produced and adequately tested the design to prove its integrity.	The student correctly demonstrated knowledge of majority of the data model components and tested the design to prove its integrity with some uncertainty/ errors.	The student correctly demonstrated knowledge of a few components of the data model and was not able to fully test the design to prove its integrity.	The student has a completely wrong understanding of the data model produced and was not able to test the design to prove its integrity.