TITLE

NAME(s)
DATE

1 Introduction

Instructions [delete from report]*: Introduce in* ***one page*** *what kind of website or application you want to build. What data would you store? What interfaces do you want? This is an introduction / executive summary that captures the points below AND provides some context to the reader on what you are doing and why.*

Update this section with each deliverable adding to your summary of your overall design and application implementation.

Insert your content here

2 Deliverable 1: Project Description:

***Instructions [delete your report]**: Describe the problem concisely (less than about 250 words). Then, in 2-3 paragraphs, justify why a database would be suitable for this project?*

Insert your content here

2.1 User Classes:

***Instructions [delete your report]**: Describe the intended classes of users of your database system.*

Insert your content here

2.2 Stored Information:

***Instructions [delete your report]**: Identify 3-5 main "things" about which you will need to keep information, and the information you will need to keep. Focus on things that would be associated with an entity-set or relationship, and less capturing their associated attributes. Describe each in about 1-2 sentences each.*

Insert your content here

2.3 Database Operations Needed:

***Instructions [delete your report]**: Describe how the user of your system will be manipulating the data stored within the database. Define as user stories, i.e. one paragraph descriptions of what the user would do to the system and the anticipated system response.*

Examples: Consider the standards tracking project discussed in class, this section could include the following:

Researchers shall enter information regarding each standard surveyed including its name, identifier, publishing standard development organization, and date published. Upon entering a new standard, it will appear in a list of all stored standards.

Researchers shall query the database to determine which software development organizations (SDOs) are responsible for a proposed standard. The result will be a table of SDOs and their point of contact.

The goal is to make sure you understand your problem and how you will be performing queries to achieve CRUD, Create, Retrieve, Update, or Delete, on the data stored and manipulated by your application.

Insert your content here

2.4 Mockup of Application

***Instructions [delete your report]**: Draw a sketch of the user interface you plan to implement as a front-end to your database leveraging application. Your user interface does not have to be a GUI. You can implement a command line interface.*

For GUI-based applications, show the layout of the user interfaces to be used by the user with labels showing where data would be displayed from the database or user input would be received to trigger a change to the database. You should have about 2-3 interfaces for your application to be sufficiently complex. It should enable data creation, update, deletion, and retrieval.

For console/command-line based applications, following the guidance above for the GUI-based application, but instead show the command line input/output representative of a user engaging with the system.

Your examples do not have to use real-data. You can use junk data. Just make sure you are showing what would be a representative example of how your application should look and feel to a user.

The goal of this task is to help you think beyond just the database and consider the application that must leverage the database to solve the problem it was meant to solve. You will have to implement this application by the end of the project.

Insert your content here

3 *Deliverable 2:* Design of Relations

In this section, the design of the relational database is described. First an E/R diagram models our problem. We translate the model into a relational schema. Analysis demonstrates that the schema is in 3rd normal form.

3.1 E/R Modeling

Instructions [delete your report]*:Translate your project concept from deliverable into an entity relationship model. Hand drawn figures are permitted if neat and the scan/photograph of the work is clear. Draw.io includes many of the symbols needed and provides a simple interface to construct E/R diagrams.*

1. *Show your figure. It should be clear and readable.*
2. *Document/describe/explain the conceptual schemas. Discuss any design choices that you needed to make based upon the E/R design principles in Module 3.*
    a. *Discussion of at last two design principles in the context of your project are required.*

Insert your content here

3.2 Relational Schema

Instructions [delete your report]*: Convert your E/R diagram to a database schema using relational algebraic syntax. Each relation's schema must be complete and identify: relationship name, attributes, attribute data types, and the key attributes must be underlined.*

Next, trace through the analysis of your schema to confirm that it meets at least third-normal form (3NF). If you hand write your analysis, please make sure that you scan or photograph the work and insert it into this document as a figure that is legible to the reader if printed out.

Insert your content here

4 Deliverable 3: Implementation of Database

> ***Instructions [delete your report]****:You are required to submit your application source code and database schema with your submission of this report.*

This section discusses the translation of the design into an actual database in SQL. It focuses upon the database exclusively, and does not include detailed design/implementation of the application that utilizes the database.

4.1 Definition of SQL Database Schema

This section presents the SQL schema for the database designed in the previous section.

> ***Instructions [delete your report]****: In your report, you must present your database schema, i.e. a script that defines your database table and any initial data that you need to populate your database with. Please follow along with the descriptions below for each element of the schema.*
>
> *First, under "Database Schema" cut-and-paste from your schema the declaration of the database relations (i.e. tables) in the SQL language (must be valid). Each relation (i.e. table) declaration must include the appropriate declaration of data type for each attribute, default values for attributes (if needed), and the primary key attribute(s) for the relation.*
>
> *Second, under "Sample Data" cut-and-paste from your schema a set of insert statements that insert 4-8 rows per table.*
>
> *Third, under "Schema Test Results", perform a SELECT * FROM… for each table in your database. Cut-and-paste the results for each, or take a screen shot of your terminal. Be sure to clearly label each result by showing indicating " Results from SELECT * FROM <tablename>". This demonstrates that you can actually implement your database with your schema.*

Insert your content here

4.1.1 Database schema

> ***Instructions [delete your report]****: see instructions above under section 4.1*

Insert your content here

4.1.2 Sample Data

> ***Instructions [delete your report]****: see instructions above under section 4.1*

Insert your content here

4.1.3 Schema Test Results

Instructions [delete your report]*:insert cut-and-paste or screen caps of the results from the MySQL terminal (or similar tool) showing that the database schema can successfully store the data that you inserted, i.e. show the results of SELECT * on each table.*

Insert your content here

4.2 Database Operations

Instructions [delete your report]*: Outside of your application implementation, define* ***all*** *operations that you anticipate performing on the database (i.e. insert, delete, update, and select) within your application. For each, indicate the operation, table, any conditionals, etc.*

The goal of this task is to ensure you know how to structure each query and run samples of each outside of your Application, which will be much easier for debugging. Trust me. Bad database design should not be debugged along with the Java code.

Insert your content here

4.3 Operations Testing / Demonstration

Instructions [delete your report]*: Using your SQL test environment (either MySQL terminal or a simple program/script that interacts with your database), show the result of every operation from your list above upon your database. It is understood that you do not have user input so you will have to use reasonable values in place of the user input. The purpose of this activity is to ensure that you know how to write each query prior to trying to tie it into an application.*

Insert your content here

5 Deliverable 4: Application Implementation

This section briefly describes the application that was developed. Appendix A contains a code listing of all applications. In this section, each source file is briefly described in the same order in which it is presented in the appendix.

> ***Instructions [delete your report]****: For each file of your implementation, provide a summary using the template below (copy and paste if more are needed). Replace the instruction in each table cell with the details of your implementation.*
>
> *Once done, go to Appendix A and copy-and-paste the source code for each of your source files. Please add a header for each so that it is easy to see when one source code file ends and the next begins.*
>
> *You are required to submit your application source code and database schema with your submission of this report.*

5.1 Filename_1

Description	<one to two paragraph overview of what the file does and where it fits within your application.>
User Input	<What input comes form the user for this file (if any)? Describe each briefly>
User Output	<What output is presented to the user from this file (if any)? Describe each briefly>
Database Operations	<What database transactions (from previous section) are performed by this source file?>

5.2 Filename_2

Description	<one to two paragraph overview of what the file does and where it fits within your application.>
User Input	<What input comes form the user for this file (if any)? Describe each briefly>
User Output	<What output is presented to the user from this file (if any)? Describe each briefly>
Database Operations	<What database transactions (from previous section) are performed by this source file?>

6 Conclusion

Instructions [delete your report] *Briefly summarize the state of your design and/or implementation.*

Update this section as necessary with every version of your report.

Insert your content here

References

Instructions [delete your report]: you must cite the sources you use to guide your project's design. At a minimum, cite the textbook and course Canvas website. Additional references might come from any problem specific information that you *must use to guide your database design.*

For instance, if you are building a Pokedex, I darn well expect a citation on the source for the attributes you selected and the data you input for your demonstration and test.

As students in an EECS department class, you are expected to follow the IEEE Citation and Reference guidelines found at: .

Update this section as necessary with every version of your report.

Insert your content here

Appendix A: Source File Listing

Instructions [delete your report]:<list each source file>