LIS 470 Final Project Report

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Abstract

Over the course of three and a half months, I have learned concepts in database management and design via Microsoft Access. LIS 470 required a final database project, which emulated a database used by a museum. Using these concepts, I was able to complete a function database, equipped with forms for data input queries, and reports of the data. This paper will illustrate my procedure in completing my final. It will also highlight the bottlenecks, troubleshoots, and current state of the database.

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Going into my senior year of college at the University of Arizona, I was filled with excitement to graduate, but also anxiety of not knowing what exactly to pursue after. LIS 470 introduced me to database management design and management concepts and turned out to be my favorite class this semester; so much so that I am looking to get certified by Microsoft this Winter by taking the MTA 98-369. Throughout LIS 470 I learned components of a relational database along with necessary terminology, such as primary keys, foreign keys, entities, etc. I also learned about the database design process with entity-relationship diagrams, schemas, and the actual physical design via Microsoft Access. In the last three weeks I have finally completed my final database project for a fictional museum that includes: forms, queries and reports. This database all started as a few circles and lines on a blank canvas; here is the process.

# Conceptual Design

The database I made was for a fictional museum, Metropolis Museum of Art. The museum was planning to hold monthly talks, hosted by curators, about articles present in the museum. Members of the public would attendee these talks. Members paid a price of ten dollars, while non-members paid a full fifteen dollars. When designing a database, you must take into consideration what are its functions or its purpose? In my project, the function of the database was to create talks, the curators for the talks, and the article(s) presented in that talk. The database also needed to allow for reservations for the talk and record the attendee information for future marketing promotions. These individual functions are split into separate requirements called user-views. Split up functions of a database into user-cases helped me divide and conquer this final project because I knew if I addressed and satisfied each function then the database as a whole would satisfy the needs of Metropolis Museum. The conceptual design also dealt with determining all of the entities that have relationships in the user-views. I like to think of entities as nouns and each noun having attributes. For the project, I created a talk, curator, article, attendee and an address table. The conceptual design was done with ERD Plus online.

# Logical Design

The next step in designing the database was diving deeper into the relationships between these entities and the data types of the attributes. The conceptual design provided a strong foundation. Based on the user-views, I chose either a one-to-many (one entity can be related to many of another entity type) or a many-to-many (many entities could be related to many of another entity type) relationship for each entity from the conceptual design. For many-to-many relationships I added junction tables to reduce the amount of repetitive data in my database. I was wary about how I was going to distinguish if an attendee was a member or not. I ended up just making a field that acted as a check box to show whether an attendee was a member and using a calculated field in a query to show the price that attendee would pay. I also debated about the relationship between an attendee and an address. In the end I decided that one address could belong to many attendees, especially since married couples would probably be interested in a museum, to take a child. This decision along with others created some problems in creating forms in the physical design.

# Physical Design

After the conceptual and logical designs, the next step was to actually implement the database on Microsoft Access. Creating the tables was a matter of just copying the entity-relationship diagram. I looked at the entity-relationship diagram to verify the relationships between each entity. For each field in a table, I used my best judgement for the data type and if a field like, “Phone Number” would require an input mask to prevent data entry errors by users.

**Forms**

Forms are necessary for users of the database to input data. I made a form for each entity in the database, including: talks, articles, attendees, addresses, and curators. I also created forms that connected entities in a way that the users did not need to look up an entity’s “ID” field; which. Uniquely defined them. I was able to use lookup fields so that a user was able to select a preexisting record from a drop-down menu. I also added functional buttons to add records, search records, and clear user entry from a form if a mistake was made. The only problem I ran into was creating a attendee form with an address sub form. For some reason, I was not able to put the attendee information first (first name, last name, etc.) before the address information. Though it is a bit abnormal to enter your address before your personal information, that is how I structured this form to avoid errors. I believe this had to do with the relationship between attendee and address and also the rules I set regarding referential integrity and cascading update/delete.

**Queries**

Queries are used for answering questions about data. I did not have trouble creating queries with the query wizard in the Microsoft Access. I think the hardest part was thinking of a question that Metropolis Museum of Art would ask. I set up queries that connected entities to what they are related to, for better understanding, instead of having a junction tables with numbered primary and foreign keys. For example, I made a query of all talks along with the fields in the talk table (title, time, date) with the curator in charge of the talk and the article(s) being presented in the talk.

**Reports**

Reports are the Microsoft Access object that is used to print data in an easy-to-read format. I made two reports; one being an attendance sheet that would be printed out and used to sign-in people at the door for a talk event. The report was labeled by talk and then by price (ten or fifteen dollars). Each attendee would be placed in the appropriate field, so a front desk assistant would know if a person reserved a spot for the talk and how much to charge them. I also made a report of all attendees and their address details, for mailing and marketing purposes. Since many attendees could belong at the same address (a family), the report is categorized by address and you are able to see the attendee that live at each address under.

**Conclusion**

I really enjoyed the concepts I learned in LIS 470. I learned how to use Microsoft Access, a database management system, the functions and attributes of a database, and even some SQL code. I look to further my knowledge in this area by getting my certification from Microsoft this Winter. After completing this project and I more aware of how a database retrieves the data it stores, and I hope to create more databases with Microsoft Access or even MySQL in the future.