INST327 (0202)

Team 2: Final Report

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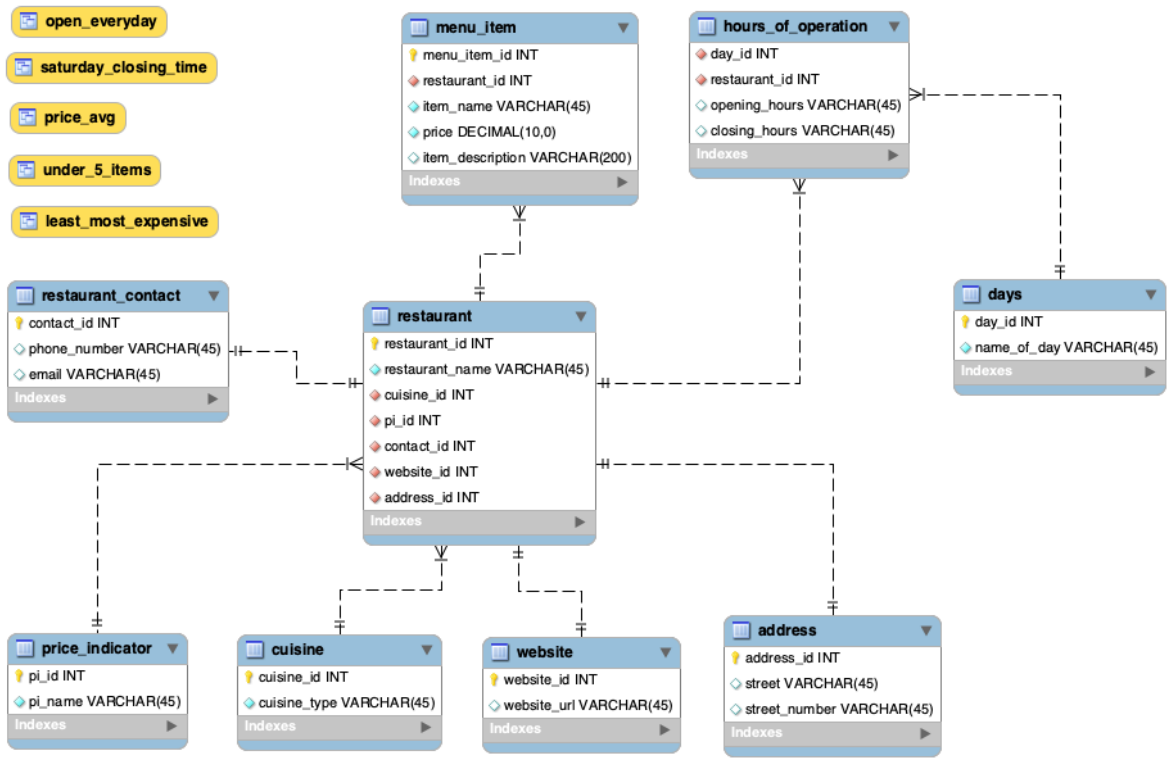
Introduction:

Our team has completed creating a database which contains information for 15 restaurants located in College Park. We have created this database with the goal to provide people in College Park with a resource to navigate various restaurants. It is designed to be used by current and prospective University of Maryland (UMD) students as well as UMD staff. It includes information about a range of restaurants with all different cuisines and prices to help inform users about their food options in College Park, as well as their hours of operation to show when the restaurants are open and closed.

This topic was chosen because we wanted to put together local data in a convenient and accessible database. We felt that this topic is the best to efficiently organize data within a database. We knew that there were many primary sources that could be used to provide accurate data for our database since there was no previously constructed CSV file with this information. We also thought this topic would be beneficial as it has real world applications to benefit the College Park community.

Database Description

Logical Design:



When designing our database our approach was to make it efficient and informative. We chose tables based on what we thought would help users make informed decisions about picking restaurants. We started out with identifying information about each restaurant (restaurant name, address, and menu item). Then we moved onto contact information so users would be able to find the restaurants on their own (website, phone number, and email). Finally we included other information we thought was essential to helping users make informed decisions about where to eat (price indicator, hours of operation, and cuisine). The goal of all of this information was to make the experience as straightforward and informational as possible for users of our database.

Physical Database:

Our database consists of 9 tables: restaurant, menu_item, price_indicator, website, restaurant_contact, hours_of_operation, address, cuisine, days. The restaurant table, our main table, provides general data about each restaurant such as the menu items, the price category, website, contact information, hours of operation, address, and the restaurant's cuisine.

The menu_item, website, restaurant_contact, and address tables have a one to one relationship with the restaurant table. The cuisine and price_indicator tables have a one to many relationship with a specific cuisine or price_indicator having many restaurants. The hours_of_operation table has a one to many relationship with the restaurant table, with one restaurant having many hours of operations and a one to many relationship with the days table, with there being with a day being able to have multiple hours of operations.

Sample Data:

The information we needed for this database was not already available in a CSV file. We compiled the sample data ourselves from various restaurant websites, and filled in any missing restaurant information from Google Maps. One of the issues we ran into was that some restaurant websites did not contain all the information we needed. Because of this, we had to change the restaurants we were planning on including a few times, and search for other restaurants' websites that included the data we needed. Ultimately, we were able to find 15 restaurants with all different cuisines that we felt best represented the College Park area, and had websites that included the necessary information for us to create our CSV file.

Views/Queries:

View Name	Req. A	Req. B	Req. C	Req. D	Req. E
price_avg	X		X		
least_most_expensive		X	X		
saturday_closing_time	X	X			X
open_everyday	X			X	
under_5_items	X	X			

Query 1: Creates a view that calculates and displays the average of all menu item prices for each restaurant.

Query 2: Creates a view that displays the price of the least expensive menu item and the most expensive menu item for each restaurant.

Query 3: Creates a view that displays the closing hours on Saturday for all restaurants.

Query 4: Creates a view that displays the opening and closing hours for days that each restaurant is open.

Query 5: Creates a view that displays all menu items that are priced $5.00 and below, and the corresponding restaurant that sells it.

Changes from Original Design:

Our initial idea was to have 7 tables which would represent each restaurant we selected to include in our database. The remaining tables would help supplement additional information about the restaurant such as menu items, price, and hours of operation. As our ideas evolved, we realized that our design would not be able to convey the information we had intended. We were provided with feedback on our design which would help us restructure the design to supplement our ideas.

We consolidated our 7 restaurant tables into 1 table. We then separated the restaurant details to have its own table to showcase the information pertaining to the restaurant's address, contact, menu, price and hours of operation. The reason we made this change is because our initial idea would cause problems in the normalization stage of creating the ERD. As we had many details now in our database on each restaurant, we decided to include an additional table to store the websites as well.

There were also specific changes that we had to make within each table. For example, the relationship between restaurant and menu_item table needed to be altered so the restaurant_id would be the foreign key in the menu_item table to establish a one-to-many relationship. Our initial approach when defining our tables was to be sure that no columns accepted NULL values, but as we progressed we discovered that not every restaurant had all the details we defined. So we changed some attributes to accept NULL values as well. We also needed to change one of our column names from “day” to “name_of_day” as we realized day is a built-in SQL function which provoked an error in our queries. The changes we made restructured our database to match our initial intent and scope for this project.

Database Ethics Considerations:

Our database is made up of a small selection of restaurants which causes the issue of limitation of inclusiveness and creation of bias regarding the restaurants that are chosen. An impact that we had on our project was bias during the restaurant selection process. When we were picking restaurants, some of the restaurants that were chosen were based on cuisines that we were familiar with. As our database contains 15 different cuisines, we had to be selective on which ones were chosen to represent each cuisine. Due to this, there is a possibility that a certain cuisine a user might be searching for is not included in our database.

One of our main goals when designing the database was to include a wide price range of restaurants to account for every financial situation. Due to the limited area zoned in College Park, we had trouble with this. One of the main issues we ran into when it came to listing a price indicator was that many of the restaurants in College Park fall into a low or middle price range. This made it unrealistic for us to include an even number of restaurants from each price range. Since we took data from restaurant websites, it is important to give proper credit to the resources we used by citing them. The way users utilize our database is not fully under our control, but we did attempt to create the database with respectful intent towards all parties involved. We collected all of our data from public sources and because we did not use any private resources for our database, this does not infringe on any private data.

Rather than using secondary sources to obtain contact information for the restaurant contact table, we obtained it directly from the restaurant’s website or Google Maps, where information must be verified by the restaurant's owner. This was done to ensure that our data is valid. We collected data strictly for the usability of the database and not for any advertisement targeting purposes.

Lessons Learned:

One notable lesson we have learned from completing this project was the importance of staying on track with the scope of the idea. During the time between the project proposal and the progress report, we had to rearrange how we set up our tables after receiving feedback from our mentor. We realized how our original idea required better translation through a database, and had to remind ourselves what our objectives were for the project. While it was a challenge for us to re-do most of our tables, this trial-and-error became another lesson learned and appreciated. This lesson was especially heard during the import data phase of our project. We faced difficulty importing one of our tables, menu_item, due to an encoding error but ultimately this was resolved. Once we had all the sample data in SQL, it then revealed weak points in our data structure such as our original column, "day," needing to be renamed to "name_of_day," in the days table since "day" would not register in our queries. We had to reorganize the relationships of the tables and their attributes. Overall, these lessons helped us tailor and create our idea into a more efficient and higher quality database for our target audience. We effectively learned how to operate in SQL and how to work as a team to produce a comprehensible and interesting project.

Potential Future Work:

There is lots of room for expansion in our database. We could potentially include all restaurants in College Park and include more queries to compare and contrast the different restaurants. This would give users a variety of options when using the database, such as the opportunity to discover lesser known restaurants in College Park, or look for all restaurants in College Park that are open past a certain time. We could contact restaurants that do not have the necessary contact information online to ask them about their restaurant and give them the option to be included in the database as well. In terms of expansion, we could make a "drinks" table since we only mentioned meals in our database currently. If partnered with something bigger, such a student-led project at UMD, or a mobile application to be put on the App Store and Google Play Store, this database could help develop another information system. Our database could help a mobile application map out restaurants in College Park, as well as assist in providing their characteristics such as hours of operation and contact information. Since we also provide the address for each restaurant, this would also assist apps in providing a trustworthy delivery feature within their product.

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