**DBAS 1001**

**Introduction to Database Management**

**Assignment # 3**

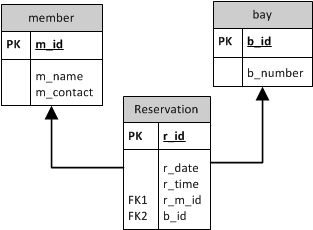
**Definitions:**

**A Database Design Methodology** – A way to determine from client information what entities, relationships, attributes, constraints, and datatypes are necessary to accommodate the data storage and information retrieval needs of a business scenario. One such methodology would involve carrying out the following steps:

1. Answer the question “What do you need to keep track of?”;
2. Determine what the main entities are;
3. Determine what relationships exist between the entities;
4. Determine what attributes each of the entities require;
5. Identify the Primary Key (PK) and Foreign Key (FK) fields; and
6. Determine the best datatypes for the attributes.

The steps are meant to be executed sequentially. After completion of step 6, always return to step 1 and ask the question again; your client may need a data model capable of supporting more than one business function. The new entities that you come up with may link with the entities you have already designed for the first issue. Completion of any step could involve the creation of an object from a previous step – in that case, go back to the previous step and proceed sequentially from there. The end result of the design methodology is creation of an ERD.

**Data Dictionary –** A SAAD tool whose function is to elaborate on the minute details of every object in a system. The Data Dictionary is typically depicted as a table, with columns that, for a database system, could include Object Name, Object Type, Datatype (if applicable), Methods (or Constraints), and Notes. Using the Percy’s Automotive ERD as an example,



The corresponding Data Dictionary could look like this:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Object Name | Object Type | Datatype | Methods | Notes |
| member | table | N/A | PK | The scenario dictates a need to track member information. Members must be uniquely identified. |
| m\_id | field | INTEGER | PK | Required to uniquely identify members. |
| m\_name | field | VARCHAR(20) |  | The client requires tracking of members’ names. The length spec for the field is 20 to accommodate typical names. |
| m\_contact | field | VARCHAR(30) |  | The client requires contact information for each member. Length Spec 30 will accommodate a typical address. |
| bay | table | N/A | PK | The scenario requires tracking information about the service bays. |
| b\_id | field | INTEGER | PK | Required to uniquely identify bays |
| b\_number | field | CHAR(1) |  | The name of the service bay. CHAR(1) as the values will be the strings 1 and 2. |
| reservation | table | N/A | PK, FK | The scenario requires tracking of a member’s reservation of a service bay. Reservations must be unique and must refer to an existing member and an existing service bay. |
| r\_id | field | INTEGER | PK | Required to uniquely identify reservations. |
| r\_date | field | DATE |  | The date of the reservation must be recorded. Date information provided will include day (DD), month (MM), and year(YYYY) |
| r\_time | field | DATE |  | The time of the reservation must be recorded. Date information will include hours and minutes (HH:MM) |
| r\_m\_id | field | INTEGER | FK | A field is required to uniquely identify which member(m\_id) is connect to this reservation(r\_id). INTEGER datatype to match member(m\_id). |
| r\_b\_id | field | INTEGER | FK | A field is required to uniquely identify which bay(b\_id) is connected to this reservation(r\_id). INTEGER datatype to match bay(b\_id). |

**SAAD tools required for Database Design and Maintenance –** The Data Dictionary combined with the ERD provide all of the information necessary for developers to:

1. Create databases;
2. Populate databases;
3. Retrieve information from databases; and
4. Maintain databases.

**Your Work:**

Supply an ERD and Data Dictionary that together will provide all of the information necessary for creation of a database capable of storing all the data needed for each of the three scenarios provided below.

Ensure that your work is presented in hard copy in the normal memo format. Have an Existing System section where you give me, or refer me to, all the information you have to work with in order to make an ERD and Data Dictionary that meet the specifications above. Give an explicit Statement of Requirement. Give me an Analysis section that, in a logically flowing sequence, describes and justifies all of the choices you made as you constructed the ERD. In the recommendation section, give me or refer me to the ERD and the Data Dictionary for each scenario. **NOTE THAT IF I SEE SOMETHING IN YOUR ERD SOLUTION THAT CAUSES ME TO ASK A QUESTION, I WILL EXPECT TO FIND THE ANSWER IN YOUR DATA DICTIONARY.** The marking rubric for this assignment is at the end of this document.

**The Soapscum Windows Scenario:**

Soapscum Window Washing wants to keep track of its employees and the projects to which they are assigned. They need to keep track of some basic employee contact information, such as name, email, and phone. They use job classifications to group employees and determine salary. A classification has a code, description, and salary. Each employee is assigned a single classification, and there can be multiple employees within the company that are assigned to a classification. Soapscum would also like to track all of the projects to which an employee is assigned. For each project, there is an id number, a start date, an end date, and a cost. Each project can have multiple employees assigned to it, and an employee can be assigned to multiple projects.

**The Lame Events Scenario:**

Lame Events puts on athletic events for local athletes. They would like to have a database, including things like the sponsor for an event and where it is located, to keep track of these events. For each event, they need a description, date and cost. Separate costs are negotiated for each event. They would also like to have a list of potential sponsors that includes each sponsor’s contact information such as the name, phone, and address. Each event will have a single sponsor, but a particular sponsor may sponsor more than one event over time. They also need a master list of locations such as running tracks and stadiums that can be used for events. For each location, they need to know the ID, contact person, and phone. A particular event will use only one location, but a location may be used for multiple events.

**The Cindy’s Parties Scenario:**

The owner of Cindy’s Parties wants a database to keep track of information related to the parties that she sets up. She wants to keep a list of all the clients who do business with her. She wants to track the name, address and phone of each client. For each party, Cindy needs to know the date and cost of the party. Cindy has a list of potential locations for parties that she can recommend to her clients. She would like the database to store the name, address, cost, phone, and the name of the manager at each of the locations she uses. When a party is set up, she needs to know which location was used for that party, because a party occurs at only one location. In addition to arranging the location for the party, Cindy sets up the entertainment for the client. She wants to maintain a list of bands and DJs that are used for the various parties. For each band or DJ, she needs a name, address, phone and the fee that they charge to do a party. Each party will use only one band or DJ. Cindy has a group of employees who work at the parties. She needs to know which employees worked at which parties, including the number of hours the employee put in at the party. A given employee can work at many parties, and each party typically needs more than one employee to staff it. Cindy needs to know each employee’s Social Insurance Number, name, address, phone, and hourly pay rate.

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ASSIGNMENT THREE MARKING RUBRIC

|  |  |  |  |
| --- | --- | --- | --- |
| **MARKING POINTS** | **0** | **1** | **2** |
| Memo Format | Not used | incomplete | Complete |
| Professionalism | Illegible spelling; poor paragraph structure; poor grammar: affecting user acceptance of the finished work | Errors exist that do not affect user acceptance of finished work | Finished work has a level of professionalism acceptable to standards as negotiated with the client or his/her representative |
| Existing system details | Not present | incomplete | As applicable, enough details regarding existing system to form conclusions regarding requirements |
| Requirements | Not stated | Incomplete or inaccurate | Sufficient and clear requirements regarding outputs needed by client, including stage of development required i.e. design, prototype, implementation, testing |
| **Marking Points** | **0** | **1..7** | **8** |
| Analysis for Lame Events | Not present | Incomplete or inaccurate | Evidence of a logically thought through design process **matching developed solution** for Lame Events |
| Analysis for Soapscum | Not present | Incomplete or inaccurate | Evidence of a logically thought through design process **matching developed solution** for Soapscum |
| Analysis for Cindy’s Parties | Not present | Incomplete or inaccurate | Evidence of a logically thought through design process **matching developed solution** for Cindy’s Parties |
| Recommendation | Not present | -1 point for each logic error and -5 points for not matching analysis | **Solutions** satisfy all stated requirements, and **match analysis** |
| **Totals** | **0** | **1..39** | **40** |