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# DATABASE DESIGN

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# **Database Design for Mere Mortals<sup>®</sup>**

3. Identify new subjects or characteristics within the information and add them to the appropriate list.
4. Review the reports and discuss any concerns you have about them with the participants. After your concerns are resolved, this process is complete.

### **Reviewing Future Information Requirements**

Future information requirements are the next subject of discussion. Your objective here is to determine what information management foresees itself needing in the future. After you've identified these requirements, you can ensure that data structures are in place to support this information as the need for it arises.

As you begin the discussion, have the participants consider how the organization is currently evolving. Then ask them how this evolution will affect the information they require to make sound decisions and how it will influence the way they guide or direct the organization. Remember that their answers are going to be based on speculation, as was the case with the similar questions you asked users; there's no way for management to predict its future needs accurately until the organization actually begins to evolve. (It's always a good idea, however, to plan for the future as much as possible.) Keep the Subject-Identification Technique and Characteristic-Identification Technique in mind to identify new subjects and characteristics within the participants' responses and then add the new items (if any) to the appropriate lists.

Next, make sketches of any new reports the participants might have in mind. Identify new subjects and characteristics within each report and add them to the appropriate lists. Assemble these new reports in a clearly marked folder and add it to your collection of samples.

You're ready to move on to the last subject when you've accounted for as many of management's future information requirements as possible.

## Reviewing Overall Information Requirements

The last topic of discussion concerns the organization's *overall* information requirements. In management's opinion, what generic class of information does the organization need? Your objective here is to discover whether there is data that the organization needs to maintain that has not been previously discussed in either the user interviews or the management interviews. If you determine that there is such data, you must account for it in the database structure.

Take all the reports that you've gathered throughout the analysis and interview processes and review them with the participants once more. Ask the participants to consider the information the reports provide and how they might use that information. (Note that they'll have to make assumptions about how they might use the information from the new reports.) Next, ask participants to determine whether there is information that would be useful or valuable to the organization, but that is not currently being received by *anyone* within the organization. If they determine that there is, indeed, some new information that the organization could use, go through the normal process of identifying that information and the subjects and characteristics represented within it. Sketch samples of new reports for the information, as appropriate, and add the samples to your existing collection of new reports.

For example, assume that one of the participants has identified a need for demographic information; she believes that it would help the organization identify a more specific target market for its product. None of the existing reports furnishes this information, so you identify exactly what she needs by working with her to create a sketch of a report that will present this information. (She might actually sketch more than one report, but this is neither a problem nor a cause for concern.) You then use the appropriate techniques to identify and note the subjects and characteristics represented within the report and add it to your existing collection of new reports. Later in the design process, you'll define the data structures necessary to support the new information.

Repeat this procedure until the participants can no longer identify any further information that the organization might find useful or valuable. After you're reasonably confident that you've accounted for all the organization's information requirements, suspend the interview process and begin the process of compiling the Preliminary Field List.

It's important for you to understand that you may have to revisit this process, even though you and the participants may believe that you've accounted for all the information the organization could possibly use. You'll commonly identify new information as the database design process unfolds.

## **Compiling a Complete List of Fields**

### **The Preliminary Field List**

Now that you have completed your analysis of the current database and the interviews with users and management, you can create a *Preliminary Field List*. This list represents the organization's fundamental data requirements and constitutes the core set of fields that you'll define in the database. You create the Preliminary Field List using a two-step process.

#### **Step 1: Review and Refine the List of Characteristics**

The first step involves reviewing and refining the list of characteristics you compiled throughout the analysis and interview process. As you learned in Chapter 3, a *field* represents a characteristic of a particular subject; therefore, each item on your list of characteristics will become a field. Before you transform those characteristics into fields, however, you first need to review the list to identify and remove duplicate characteristics.



During the interviews, you identified various characteristics within each participant's responses and compiled them into a list as the interview progressed. There were probably times when you mistakenly added the same characteristic to the list more than once, or unknowingly referred to the *same* characteristic by two or more different names. As a result, your list of characteristics requires some refinement.

### ***Refining Items with the Same Name***

Begin refining your list of characteristics by looking for items with the same name. When you find one or more occurrences of a particular name, determine whether they all represent the same characteristic. Cross out all but one occurrence of the name from the list if they do represent the same characteristic; otherwise, determine what each instance of the name represents. You'll often find that a duplicate name represents the *same type* of characteristic as its original counterpart but should be associated with a different subject than its counterpart. In this case, you rename the duplicate to reflect how it relates to the appropriate subject.

Assume, for example, that the item "Name" appears three times on your list of characteristics. Your first inclination will probably be to cross out two of the occurrences because your current objective is to eliminate duplicate characteristics. However, you should determine whether each instance of "Name" represents a distinct characteristic before you remove it. You can easily make this determination by examining your interview notes; this will help you remember when and why you added the item to the list.

After careful examination, you discover that the first occurrence of "Name" represents a characteristic of the subject "Clients," the second, a characteristic of the subject "Employees," and the third, a characteristic of the subject "Contacts." You resolve this duplication by *renaming* each occurrence of "Name" (using the subject as a prefix) to reflect its

true meaning. Now you'll have three new characteristics called "Client Name," "Employee Name," and "Contact Name."

Items similar to "Name" commonly appear on a list of characteristics, and you must address them in the same manner. You'll commonly see one or more occurrences of items such as "Address," "City," "State," "ZIP Code," "Phone Number," and "Email Address," and you can refer to them collectively as *generic items*. The point here is that you must rename each instance of a generic item to reflect its true relationship to a particular subject, thus ensuring that you have as accurate a field list as possible.

### ***Refining Items Representing the Same Characteristic***

Now look for items that represent the *same* characteristic and cross out all but one. The idea here is that a given characteristic should appear only once in the list of characteristics. For example, assume that "Product #," "Product No.," and "Product Number" appear on your list of characteristics. It's evident that these items all represent the same characteristic and you need only one of them on your list. Choose the one that conveys the intended meaning clearly, completely, and unambiguously and cross out the remaining items from the list of characteristics. (In this case, the best choice is "Product Number" because it fulfills the previous criteria.)

### ***Ensuring Items Represent Characteristics***

Finally, make sure that each item on your list represents a *characteristic*. It's easy to place items accidentally on the list that represent subjects. You can test each item by asking yourself questions such as these:

Can this word be used to describe something?

Does this word represent a component, detail, or piece of something in particular?

Does this word represent a *collection* of things?

Does this word represent something that can be broken down into smaller pieces?

Depending on the item you're working with, some questions are easier to answer than others. When you find that an item represents a subject rather than a characteristic, remove it from the list of characteristics and add it to the list of subjects. Be sure to identify the new subject's characteristics and add them to the existing list of characteristics.

For example, say "Item" appears on your list of characteristics and you're not quite sure whether it represents a characteristic or a subject. Use the preceding questions to help you make a determination.

Can "Item" be used to describe something?

Does "Item" represent a component, detail, or piece of something in particular?

You could make a case that "Item" helps to describe a sale inasmuch as it identifies what a customer purchased. On the other hand, you could also say that "Item" isn't a characteristic because it doesn't represent a *singular* aspect of a sale. "Date Sold," for example, represents a singular characteristic of a sale. Leaving the quandary surrounding these questions unresolved, you go on to the next question:

Does "Item" represent a collection of things?

You can answer this question easily by looking at the plural form of the word, which in this case is "Items." If "Items" can be referred to as a collection, it *is* a subject. It's beginning to become clear that "Item" does represent a collection of some sort, and you can make a final determination by asking yourself the last question:

Does "Items" represent something that can be broken down into smaller pieces?