



ABC Church Database

LIS 7460, Database Design
Database Description
and System Documentation
Capstone Project



I. Database Description

ABC Church bookstore is a bookstore serving a church community. Currently, the data and tasks related to the bookstore is handled using paper based system, and due to this, it requires the work of many volunteers. The purpose of this database system is providing an efficient system to handle the activities of the bookstore so that it can be handled by a minimum number of volunteers. Also the database is hoped to increase accuracy of records and tasks with minimal effort.

The bookstore holds materials (books, CDs, DVD's etc.) either for sale or for lending. Materials are supplied, for a price or as donation. Payment to suppliers for delivered items may be made at once or in several payments, usually as the items are sold partially or in all.

All materials (books, CDs, DVDs ...) are registered in book table and their format is specified in format field and their purpose (either for sale or for lending) is specified in purpose field. Materials marked for lending are lent for members. Materials marked for sale are sold for a price, which is average of delivery price for the book plus 10%.

BOOK_COPY_ID in BOOK_COPY table is assigned for materials for lending to uniquely identify each copy of materials for lending. BOOK_ID is the same for all copies of the same material. That is if there are ten copies of a certain book in the book store, all ten copies have the same BOOK_ID. This is done because each copy of materials for lending needs to be identified. However, materials for sale do not need unique identification for each copy.

As this is a small book store with small number of items, it is sufficient to record only one author and one subject for each material.

Calculated values in the database are not recorded in tables, but are calculated using queries. The database uses queries to calculate quantity on hand, supplier balance values and sales price using queries.

Tables in the Database

1. Book table records all materials in the bookstore (books, magazines, CDs and DVDs) for lending and for sale purpose with their purpose specified in the purpose field. Their format is also specified in format field.
2. Book_copy_lend table is created for the purpose of recording book_copy_id for each copy of materials for lending purpose. However, books for sale do not need unique identification for each copy.
3. Borrow table records all lending transactions.
4. Member table records members who borrow materials from the bookstore.
5. Sale table records all sales transactions.
6. Sup_delivery table records all deliveries of materials from suppliers and delivery price.
7. Supplier table records all suppliers with their addresses. Sup_check_details field is created to specify how the supplier would like checks to be addressed.

Business Rules

1. A member may borrow zero, one or many book copies for lending purpose. A book copy for lending may be lent out to zero, one or many members over a period of time.
2. A book may have zero, one or many book copies. A book copy relates to one and only one book.

3. A book may be sold several times, but may not be sold at all. A sale instance must relate to one and only one book.
4. A supplier may deliver zero, one or many books. A book may be delivered by one or many suppliers (or may be a donation, hence it is not related to any supplier at all).
5. A supplier may receive zero, one or many payments. A payment instance relates to only one supplier.

I have tried to keep the user interface and data entry forms simple and easy to use as much as possible. One form has a sub form and most forms have buttons in order to accomplish related tasks from one place. Descriptive labels and titles are used as much as possible.

Limitations

Currently, the database is not designed to handle book returns to suppliers in the case the books are not sold. With some more work, it may handle this process as well. Also, the database does not automatically fill out price information in sales form. However, it provides buttons to look sales price for the specific product or to browse all prices.

II. System Documentation

ABC Church Database performs the following major functions:

1. Keep track of items for sale, items sold and items in stock.
2. Keep track of books for lending, those lent out with borrower information and books returned.
3. Keep track of value of deliveries by each supplier, payments made to suppliers and supplier balance.
4. Record all suppliers and their contact information.
5. Record all members.

The main interface of this program provides four main buttons on the left navigation pane. When you click each button on the navigation pane, they open sets of buttons to the right of the navigation pane.



1. The first button is for performing tasks and opens a set of buttons related to different tasks on the right. These buttons open forms to handle tasks related to book lending, book sales, recording members, books, deliveries and payments.

Buttons within forms

In the case of forms for filling data, descriptive labels are provided to help understand the data to be filled. Moreover, in the case when there is a need to refer to other forms to fill data like ID numbers, price ... (for example Member_id in “record book lending” form), buttons are provided that enable browsing the appropriate data to be filled as shown in the picture below.

| Record book lending | |
|---------------------|-----------------------------------|
| Borrow_ID | <input type="text" value="3"/> |
| Member_ID | <input type="text" value="1"/> |
| Book_Copy_ID | <input type="text" value="c1"/> |
| Book_ID | <input type="text" value="4"/> |
| Member_FName | <input type="text" value="Sara"/> |

Borrow_id is automatically assigned by the database

Sub forms

A sub form is provided in “Record payment or new supplier” form. A sub form is a form incorporated within another form. It shows the data that is related to the parent form. In this case the parent form shows data about a supplier, and the sub form shows list of payments made to that particular supplier.

| Browse or add supplier or payment to supplier | | | |
|-----------------------------------------------|---------------------------------------------------------|----------------|------------------------------------|
| SUP_ID | <input type="text" value="1"/> | SUP_CITY | <input type="text" value="Houst"/> |
| SUP_NAME | <input type="text" value="Houston Evangelical Church"/> | SUP_STATE | <input type="text" value="tx"/> |
| SUP_TEL | <input type="text" value="112-335-8832"/> | SUP_ZIP | <input type="text" value="76558"/> |
| SUP_STREET | <input type="text" value="123 Houston street"/> | SUP_CK_DETAILS | <input type="text" value="Houst"/> |

| Browse payments or record new payment | | |
|---------------------------------------|--------------|-------------|
| SUP_PAY_ID | SUP_PAY_DATE | SUP_PAY_AMT |
| | | |

Forms are designed so that related data can be entered in one place or with links to the necessary forms. Please enter all related and relevant data in the appropriate forms. For example, for each new delivery, it is necessary to record the following information:

- delivery information
 - supplier information (unless the supplier is already in the database)
 - book information (unless the book is already in the database),
 - and, if the book is for lending purpose, assign book_copy_id.
2. The second button on the navigation pane is for browsing data in relation to books, members, suppliers, deliveries and payments. It opens a set of buttons on the right for browsing data.
 3. The Third button on the navigation pane is for viewing reports. It opens a set of buttons for different reports to the right of the navigation pane.
 4. The fourth button is for the purpose of clearing (deleting) returned book data periodically as this data is not necessary once the books are returned.