

THE CASE OF THE MISSING BODY

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Small, family-owned businesses frequently hesitate to automate their internal record keeping, especially if the staff is mature, with limited experience using software applications. While they may use software to prepare their annual tax return, this is usually done under the attention of an accountant. The small business staff typically exhibits less confidence in the use of software without the guidance of a professional. The underlying incident in this case is based on an actual occurrence and illustrates the utility of a carefully designed database application, tailored to fit the needs of a small businesses, along with the necessary training to instill confidence in its use.

INTRODUCTION

What was now known as Florence Funeral Home began business in the town of Florence, SC in 1920. Founded by a returning World War One veteran, the company originally operated as a combination funeral home and furniture store but closed the furniture side of the business in 1942. Throughout the 1950s and 1960s the company experienced moderate but steady growth. Starting in the 1970s the entire Florence city and county region of the state began a period of economic expansion, the rate of which increased steadily until running into the economic downturn of 2008. However, even during the recession years Florence Funeral continued to enjoy growth, albeit modest, and in July 2012 they moved into a newly built facility on the west side of Florence.

THE CASE

In early December of each year, Florence Funeral Home traditionally held a memorial service to remember each of the deceased they have served during the year. This event was held in the funeral home chapel and has always been well attended by the families and friends of the deceased. Typically, a slide show highlighting a few scenes from the life of each of the deceased was shown, with appropriate music playing in the background. In December 2012 preparations for the annual memorial service proceeded as usual and the service that year seemed no different from any of the previous services. It was held on a Wednesday evening, the weather was mild, and the chapel was filled to about eighty percent of its capacity. At the conclusion of the service, funeral home personnel stood by to wish

the attendees good night and to thank them for coming. As the guests were filing out a woman, clearly agitated, accosted the personnel and began berating them in plain view of all present. After a couple of minutes a manager approached the group and soon learned what the problem was. The woman's name was Mrs. Robert Allison and her husband had passed away in June 2012. Florence Funeral had conducted the funeral service and burial on June 30, however, Mr. Allison had not been included in the memorial slide show. Mrs. Allison had invited family members from out of town to accompany her to the memorial service and was obviously embarrassed and upset. This had never happened in any prior service and the manager and personnel were very apologetic. The manager promised to investigate their failing and said he would contact Mrs. Allison with the results.

THE INVESTIGATION

When Mrs. Allison first contacted Florence Funeral Home following the death of her husband, the usual forms used by the company were completed with the assistance of a funeral director. The forms themselves are printed on the inside and outside covers of a standard-size office file folder. Additional documentation such as life insurance and death certificate are placed inside the folder.

During the course of the manager's investigation several dates soon stood out. First, Mr. Allison passed away on Monday, June 25 and was buried on Saturday, June 30. Upon checking, the manager learned that Mrs. Allison had visited the funeral home and completed the necessary paperwork on Wednesday, June 27. On Monday, July 2, Florence Funeral Home officially moved into their new chapel and offices. All the funeral arrangements for Mr. Allison had been conducted during the company's final week of operations in their old location. Needless to say, this was a hectic week.

In the course of the move, Mr. Allison's folder had been misplaced. It was located during the progress of the investigation but the damage had already been done. Mrs. Allison was active in community affairs, had many contacts in the community, and was in a position to place a black mark on the company's reputation if she chose to. The company's initial concern was to sooth customer relations, then, to ensure that no more client documentation would be lost or misplaced.

SEEKING A SOLUTION

While Florence Funeral was well established in the community, several new competitors had sprung up in the past couple of years. One of these, a new crematorium, had recently opened for business not more than three miles from Florence Funeral's new location. Because of this activity, Florence Funeral's management was especially keen on protecting the company's local reputation. To this end an outside consulting firm was retained.

Mecklenburg Associates was a small consulting firm specializing in data analysis and database design. An initial meeting was scheduled between Mecklenburg Associates and Florence Funeral management to consider the services provided by the funeral home, the client information they needed to maintain, and in what ways Mecklenburg Associates could assist them. Present at this meeting were two student interns from the local university.

During the discussions, the unfortunate incident caused by misplaced customer data was described. It was noted that, up to this point in time, the previously mentioned file folders with the customer information forms printed directly on the folders themselves was the only method Florence Funeral had used to preserve such information. Funeral home personnel provided Mecklenburg Associates with several copies of the file folders.

The standard customer information contained on the inside/outside, front/back covers of a folder (See Exhibit 1). When the meeting adjourned the consultants and their interns returned to the office with this documentation.

Back at the office the consultants and interns sat down to study their options. Several questions were considered at the outset:

1. Clearly the first question was how could Florence Funeral better store customer data in order to avoid repeating the situation with Mrs. Allison. Do they need a database or simply a better file system? A better file system might suffice if limited growth was foreseen.
2. What growth do they foresee in their business? Will they open additional locations in the future? Would they consider developing a website to interact with customers? In either of these cases the consultants would recommend a database approach.
3. Would they prefer to manage any proposed system internally or leave that in the hands of an outside consultant or IT shop? In the first case money and time must be allocated for the purchase of system hardware and employee training. Additional personnel may also need to be hired. Future software and system updates must also be anticipated. In the latter case, the cost of the contracted services with a consultant would be the main expense.

After posing these matters to funeral home personnel during a conference call, the consultants learned that Florence Funeral had no plans to open additional physical locations but were definitely interested in developing a website for their business. Furthermore, the management did not feel confident enough to maintain an enhanced file-based system or a database system themselves and, as a small

business, preferred not to incur the cost of specialized hardware and training. Their decision was to leave this in the hands of an outside consultant. Within the week, a contract with Mecklenburg Associates was drawn up.

DEVELOPING A SOLUTION

With a contract in hand, Mecklenburg Associates began the development of a database system for Florence Funeral Home. In tandem with the database design process, a web interface would also be developed. The two projects would be handled by separate teams and merged later in the process.

One of the student interns was assigned to each design team and tasked with an initial rough draft of a system design. The intern assigned to the web team returned to that department to begin her work.

The student assigned to the database design team decided to follow a top-down approach to design. He first examined the documentation provided by the funeral home to ascertain the entities described by the data. Following this, he contacted the funeral home to learn the details of a typical funeral service. In this way, he was able to familiarize himself with the context in which the data was used and the relationships between the entities involved. Following a critique by his company mentor, some changes were recommended. The revised design with the selected entities, their attributes and the relationships between them is represented in the ER diagram (See Exhibit 2.).

In tandem to the development of an ER model, while attributes were being assigned to the entities, he maintained a collection of metadata regarding these attributes. With the ER diagram in hand, the intern returned to the funeral home to determine if it was an accurately represented their data needs. Assured that it did, he then mapped the diagram to a set of schemas and insured they represented third normal form. He then wrote SQL scripts to create the database tables. In completing the scripts, the metadata collected provided the information needed to assign data types, sizes, and primary and foreign keys. (See Exhibit 3.)

With the design phase of the project complete, the implementation process could now begin. This would require collaboration with funeral home personnel to transfer their existing data into the new database. On the intern's side, he would need to write additional SQL scripts to load the data into the tables. Following this, he would be responsible for providing the necessary training to funeral home personnel in the use of their new database.

EXHIBIT 1:

Folder Information (next four pages)

- Florence Funeral Home 

Call# _____
Date of Death _____ Date of Service _____
Residence _____ County _____
Zip _____ In City Limit (Y/N) _____
Place of Death _____ County _____
_____ (Hospital or Nursing Facility)
Sex ____ Color ____ Divorced ____ Married ____ Never Married ____ Widowed ____
Race ____

Husband of (Maiden Name) _____
Wife of _____
Date of Birth _____ Birthplace _____
_____ (City, State, or Foreign Country)
Age (last birthday) _____ SS# _____
Deceased in U.S. Armed Forces __?__ / _____
_____ (Yes or No/Branch)
Occupation _____ Kind of Business _____
Deceased Education _____
Grammar High School College
Church Membership _____
Clubs-Organizations _____
Father's Name _____ Mother's Maiden Name _____

Informant _____ and Address _____

Telephone (____) _____
Headquarters for Family _____
Telephone (____) _____

Surviving Relatives

Father _____ Mother _____

Husband _____ Wife _____

Sons _____

Daughters _____

Brothers _____

Sisters _____

Grandchildren _____

Service Worksheet

Service for: _____

Number of Death Certificates: _____

Death Certificate Ordered: _____

Florist Charge Casket Spray: _____

Place of Service: _____

Day of Service: _____ Time of Service: _____

Interment: _____

Place in Church: _____ Open-Close: _____

Visitation: _____

Memorials: _____

Officiating Clergy: _____

Assistant: _____

Piano: _____ Organ: _____

Solo: _____

Pall Bearers

Honorary Pall Bearers

Casket Model _____ Date Ordered _____

Vault Model _____ Date Ordered _____

Newspaper	Fax Number	Date Received
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Morning News _____		_____
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The State _____		_____
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News & Courier _____		_____
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Other: _____		_____
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Jewelry _____	Remove (Yes/No) _____
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Pins _____	Remove (Yes/No) _____
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Glasses _____	Remove (Yes/No) _____
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Notes _____

EXHIBIT 2: Entity-Relation Diagram

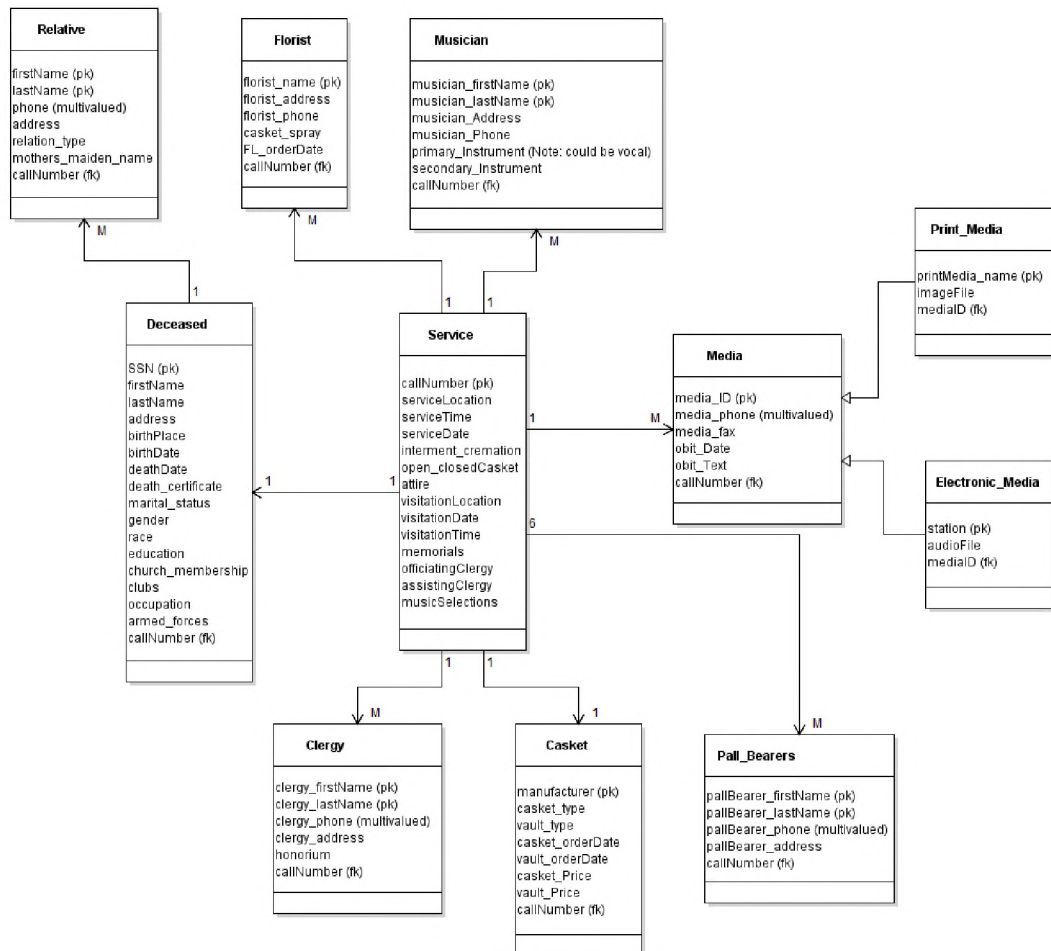


EXHIBIT 3

RELATION SCHEMAS (Note: *pk* – primary key, *fk* – foreign key)

CREATE TABLE SERVICE

(CALL_NUMBER VARCHAR(10),
SERVICE_LOCATION VARCHAR(50) NOT NULL,
SERVICE_TIME VARCHAR(10) NOT NULL,
SERVICE_DATE DATE NOT NULL,
INTERMENT_CREMATION CHAR(1),
OPEN_CLOSED CHAR(1),
ATTIRE VARCHAR(150),
VISITATION_LOCATION VARCHAR(50) NOT NULL,
VISITATION_DATE DATE NOT NULL,
VISITATION_TIME VARCHAR(10) NOT NULL,
MEMORIALS VARCHAR(150),
OFFICIATING_CLERGY VARCHAR(30),
ASSISTING_CLERGY VARCHAR(30),
MUSIC_SELECTIONS VARCHAR(150),
PRIMARY KEY (CALL_NUMBER));

CREATE TABLE DECEASED

(SSN_NUM INTEGER,
DECEASED_LAST VARCHAR(20) NOT NULL,
DECEASED_FIRST VARCHAR(20) NOT NULL,
DECEASED_ADDRESS VARCHAR(50) NOT NULL,
EDUCATION VARCHAR(150),
CHURCH_MEMBERSHIP VARCHAR(150),
CLUB_MEMBERSHIP VARCHAR(150),
ARMED_FORCES VARCHAR(150),
BIRTHPLACE VARCHAR(50),
BIRTHDATE DATE,
DEATHDATE DATE,
MARITAL_STATUS CHAR(1),
GENDER CHAR(1),
RACE CHAR(1),
DEATH_CERTIFICATE VARCHAR(10),
PRIMARY KEY (SSN_NUM),
CALL_NUMBER VARCHAR(10),
FOREIGN KEY (CALL_NUMBER) REFERENCES SERVICE);

CREATE TABLE PALL BEARERS

(BEARER_LAST VARCHAR(20) NOT NULL,
BEARER_FIRST VARCHAR(20) NOT NULL,
BEARER_ADDRESS VARCHAR(50),

BEARER_PHONE CHAR(10) NOT NULL,
PRIMARY KEY (BEARER_FIRST, BEARER_LAST),
CALL_NUMBER VARCHAR(10),
FOREIGN KEY (CALL_NUMBER) REFERENCES SERVICE);

CREATE TABLE MUSICIAN

(MUSICIAN_LAST VARCHAR(20) NOT NULL,
MUSICIAN_FIRST VARCHAR(20) NOT NULL,
MUSICIAN_ADDRESS VARCHAR(50), MUSICIAN_PHONE CHAR(10) NOT
NULL,
PRIMARY_INSTRUMENT VARCHAR(20) NOT NULL,
SECONDARY_INSTRUMENT VARCHAR(20),
PRIMARY KEY (MUSICIAN_FIRST, MUSICIAN_LAST),
CALL_NUMBER VARCHAR(10),
FOREIGN KEY (CALL_NUMBER) REFERENCES SERVICE);

CREATE TABLE CASKET

(MANUFACTURER VARCHAR(10),
CASKET_TYPE VARCHAR(20),
VAULT_TYPE VARCHAR(20),
CASKET_ORDER_DATE DATE,
VAULT_ORDER_DATE DATE,
CASKET_PRICE DECIMAL(7,2),
VAULT_PRICE DECIMAL(7,2),
PRIMARY KEY (MANUFACTURER),
CALL_NUMBER VARCHAR(10),
FOREIGN KEY (CALL_NUMBER) REFERENCES SERVICE);

CREATE TABLE MEDIA

(MEDIA_ID INTEGER,
MEDIA_PHONE CHAR(10) NOT NULL,
MEDIA_FAX CHAR(10),
OBIT_DATE DATE,
OBIT_TEXT VARCHAR(500),
PRIMARY KEY (MEDIA_ID),
CALL_NUMBER VARCHAR(10),
FOREIGN KEY (CALL_NUMBER) REFERENCES SERVICE);

CREATE TABLE PRINT_MEDIA

(PRINT_NAME VARCHAR(30),
IMAGE BLOB,
PRIMARY KEY (PRINT_NAME),
MEDIA_ID INTEGER,
FOREIGN KEY (MEDIA_ID) REFERENCES MEDIA);

CREATE TABLE ELECTRONIC_MEDIA

(STATION VARCHAR(4),
AUDIO BLOB,
PRIMARY KEY (STATION),
MEDIA_ID INTEGER,
FOREIGN KEY (MEDIA_ID) REFERENCES MEDIA);

CREATE TABLE FLORIST

(FLORIST_NAME VARCHAR(20),
FLORIST_ADDRESS VARCHAR(50),
FLORIST_PHONE CHAR(10) NOT NULL,
CASKET_SPRAY VARCHAR(150),
FLORIST_ORDER_DATE DATE,
PRIMARY KEY (FLORIST_NAME),
CALL_NUMBER VARCHAR(10),
FOREIGN KEY (CALL_NUMBER) REFERENCES SERVICE);

CREATE TABLE CLERGY

(CLERGY_LAST VARCHAR(20) NOT NULL,
CLERGY_FIRST VARCHAR(20) NOT NULL,
CLERGY_ADDRESS VARCHAR(50),
CLERGY_PHONE CHAR(10) NOT NULL,
HONORIUM DECIMAL(5,2),
PRIMARY KEY (CLERGY_FIRST, CLERGY_LAST),
CALL_NUMBER VARCHAR(10),
FOREIGN KEY (CALL_NUMBER) REFERENCES SERVICE);

CREATE TABLE RELATIVE

(RELATIVE_LAST VARCHAR(20) NOT NULL,
RELATIVE_FIRST VARCHAR(20) NOT NULL,
RELATIVE_ADDRESS VARCHAR(50),
RELATIVE_PHONE CHAR(10) NOT NULL,
RELATIVE_TYPE VARCHAR(20),
MOTHER_MAIDEN_NAME VARCHAR(20),
PRIMARY KEY (RELATIVE_FIRST, RELATIVE_LAST),
DECEASED_SSN INTEGER,
FOREIGN KEY (DECEASED_SSN) REFERENCES DECEASED);