

Church Database Case Study

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Background

The AME Zion Church has numerous reports, yet the data required for these can be consolidated into a few tables. The current reporting system for the denomination is outdated compared to modern information technology standards. Skills I gained from this course have helped me develop solutions that may assist my organization in improving its reporting practices. My aim is to provide a modern alternative for data management within the denomination, using my local church as a model. This project is one step toward that goal.

I have created a database with several tables and views to demonstrate the potential of relational databases at my local church. Reports could encompass financial statements, activities, inventories, contact directories, event lists, and more. Each ministry is required to report every 90 days at the Quarterly Conference. The current system is underutilized for various reasons and has posed issues for many years. I aim to establish a scalable system for information collection and retrieval using the relational database tool PostgreSQL.

With this project, I hope to:

1. Assist my church in making more informed decisions based on data.
2. Foster systems thinking.
3. Build information and knowledge resources to help key stakeholders manage their responsibilities.
4. Enhance digital literacy and provide education within my community.

Project Scope

I am developing a church database from which reports can be generated through various views, eliminating the need to hard-code individual reports for every transaction, ministry, or responsible party. Although designed for my local church, the system is intended to be scalable and useful to other entities within the Connection. The project focuses on three primary areas:

1. A directory for membership and ministries.
2. Receipts for transactions.
3. Demographic information on the church.

The data needed to populate these areas could serve as the foundation for any future reports. I believe that a wealth of data points about members and ministries will be sufficient to generate all necessary reports for the denomination.

Challenges

A significant challenge is addressing resistance from individuals who are hard to convince and reluctant to embrace technological advancements (or any change for that matter). The AME Zion Church operates internationally across five continents, yet many of its members are on the lesser-developed side of the digital divide. Demonstrating the benefits of technology use is a formidable task due to prevalent apprehension. Excluding children, the average domestic member is over 62, African American, and may only have limited experience

with technology. Entrenched paradigms lead to resistance and even fear of change. At 39, I am the youngest adult member of my church, which has more members over 70 than under 50.

Low digital literacy among church administrators and leaders creates barriers to proposing new information management solutions like relational databases. Limited access to technology infrastructure and a perceived lack of necessity may stifle improvement in digital literacy. Without a compelling reason to use computers or RDBMSs outside of church activities, motivation to acquire new skills, such as database administration or even spreadsheet use, is minimal.

The primary challenge for this project is educating and training people to utilize the database and to develop a programmatic mindset.

Solutions

My degree's concentration is organizational and community informatics which taught me to focus on understanding how people use and need to use ICTs (information and communication technologies). It's crucial to consider where ICTs are accessible or where quality access is available. I found that many congregation members lack computers or home internet access. As a pastor, I am in a unique position to influence change. I promptly ensured high-speed internet access at my church and invested in several computing devices. My congregation expressed interest in learning more about smartphones, so I began offering IT assistance on general topics related to mobile device use.

Demonstrating technology use and guiding individuals to resources for self-exploration are key solutions to mitigating the effects of the digital divide. Providing pathways to quality access, such as recommending public libraries, is also vital. All libraries I've visited within my community are within comfortable distance and they offer training/classes or have librarians enthusiastic about assisting with technology needs.

I personally trained and supplied my administrative assistant with tools to create and maintain flat-file databases for this project. As she becomes more comfortable with tables and relationships, I plan to impart my knowledge of relational databases. Proficiency in spreadsheets is a great foundation for data management skills.

Benefits

Centralizing information in a database is crucial for maintaining accurate and up-to-date records. Although relational databases require training, I have found them to be an efficient and engaging way to store and retrieve information. A unified approach to information needs across departments, ministries, and officials streamlines transactions, information processing, and necessary communications.

Accessibility is a critical benefit. Online information access with secure login credentials empowers stakeholders to manage information flow effectively, enhancing search capabilities and data aggregation.

Reducing data gathering and maintenance redundancies is a significant advantage of adopting this system. Once information is entered, it remains readily accessible, eliminating the

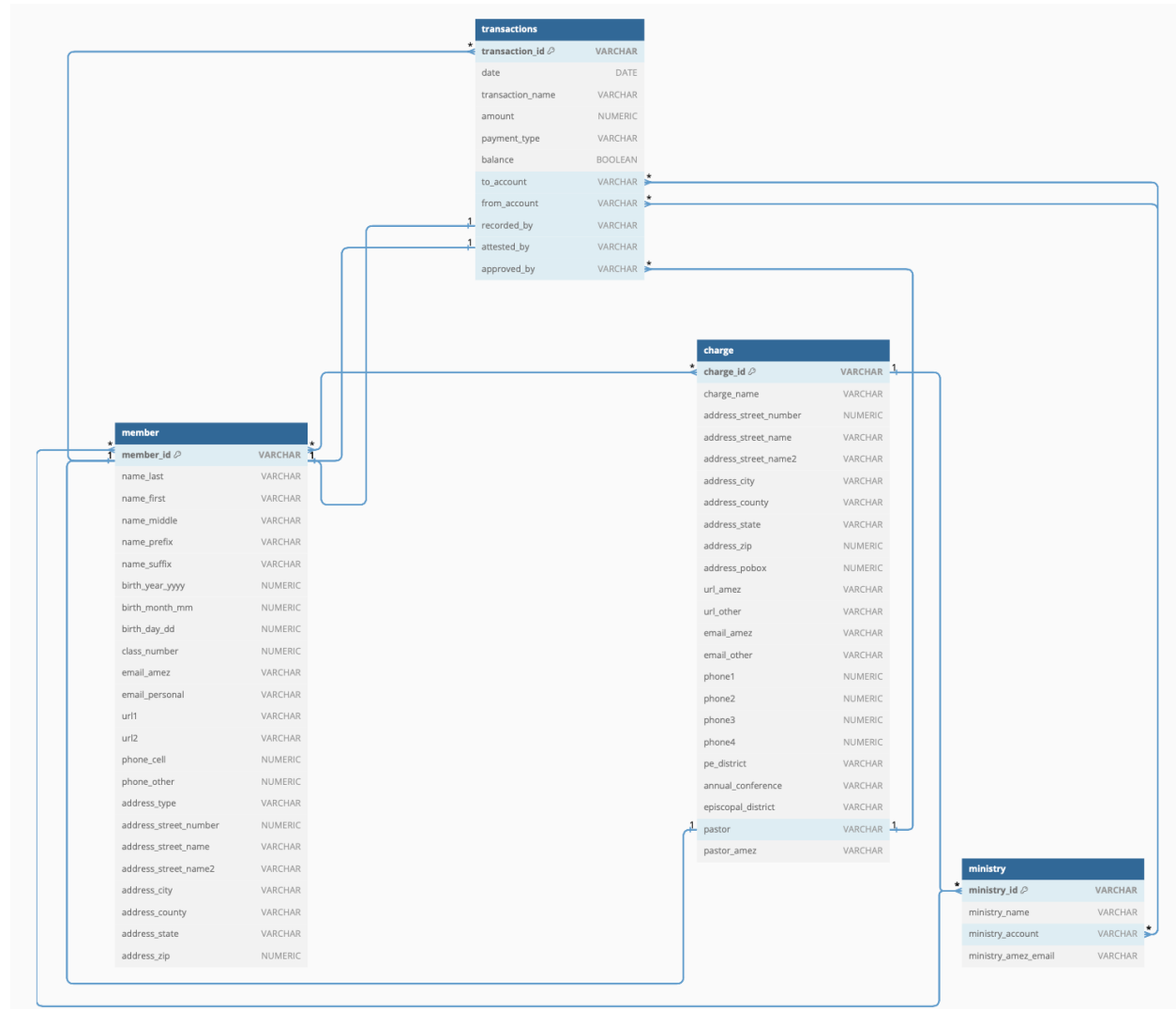
need for repetitive form completion. Ministers and officers often re-submit the same information, which rarely changes. Current system updates might take days, relying on multiple approvals and actions that can lead to lost, illegible, or inadmissible forms. This cumbersome process is discouraging and can be eliminated by modern relational database solutions.

Regular reporting is a staple for my denomination. All ministries across the Connection must submit quarterly reports, covering finance, demographics, inventory, and more. Currently, these reports are mainly delivered in person, almost as if the internet were nonexistent. The denomination likely processes around 24,000 reports annually, often bogged down by hierarchical structures which impede delivering and retrieving useful information. As a connectional church, we need a connectional information service. Relational databases provide a solution.

Appendices

A. Entity Relation Diagram

This diagram shows the database's schema, and how the entities are related to each other. There are four tables in the church database.



B. SQL Queries and Views

Member Table

This is the member table, limiting the result showing one member. This is not normalized, but still works for demonstration purposes. Here we collect common contact information.

```
church=# select * from member limit 1;
-[ RECORD 1 ]-----+
member_id      | pastor
name_last      | Pyant
name_first     | Michael
name_middle    | Duane
name_prefix    | Rev.
name_suffix    | , AFA, BS
birth_year_YYYY | 1985
birth_month_MM | 9
birth_day_DD   | 3
class_number   | 2
email_amez     | pyant@amez.church
email_personal | self@michaelpyant.com
url1           | http://www.michaelpyant.com
url2           | http://www.linkedin.com/pyant
phone_cell     | 7049549860
phone_other    |
address_type   | Office
address_street_number | 515
address_street_name | Jordan Place
address_street_name2 | Suite 418
address_city   | Charlotte
address_county |
address_state  | NC
address_zip    | 28205
```

Member Directory View

Below is a view, or a sub-set of information from the member table (limiting again to 1 record). Views are not new tables but functions exactly like one where queries can be made. While building a member directory, it might not be necessary to have every detail about the member. In this case, there is only the name, email and phone number. Notice the name is concatenated from the information in the above table.

```
church=# select * from member_directory limit 1;
-[ RECORD 1 ]-----+
name | Pyant, Michael
email | pyant@amez.church
phone | 7049549860
```


Church Table (Methodists also refer to a church as a 'charge')

The church has a table similar to the member table. It has contact information and other demographics necessary for identification. It has one constraint; the pastor field is reserved for one particular member where their status of pastor is identified in the member id.

```
psql (16.1, server 16.2 (Postgres.app))
Type "help" for help.

church=# \x
Expanded display is on.
church=# select * from charge;
-[ RECORD 1 ]-----+-----
charge_id          | res1892amez
charge_name        | The Resurrection
address_street_number | 908
address_street_name | West Louisiana Avenue
address_street_name2 |
address_city       | Bessemer City
address_county     | Gaston
address_state      | North Carolina
address_zip        | 28016
address_pobox      |
url_amez           | http://www.amez.church/worship_guides/2024april14.pdf
url_other          |
email_amez         | rt@amez.church
email_other        |
phone1             | 7049549860
phone2             |
phone3             |
phone4             |
pe_district        | Lincolnton
annual_conference  | Western North Carolina
episcopal_district | Piedmont
pastor             | Michael Pyant
pastor_amez        | pyant@amez.church
```

Church Directory View

When dealing with hundreds of churches it may not be necessary to include every piece of data as detailed in the table. A view can be created to show the basic info for identification in a directory of other churches.

```
church=# select * from church_profile;
-[ RECORD 1 ]-----+-----
charge_name        | The Resurrection
address            | 908 West Louisiana Avenue | Bessemer City, North Carolina, 28016
county            | Gaston
official_website   | http://www.amez.church/worship_guides/2024april14.pdf
official_email     | rt@amez.church
pastor            | Michael Pyant
pastor_email      | pyant@amez.church
```

Transaction Table and Receipt View

The transaction table has been filled with dummy data for illustration. I query all transactions in the table that have a remaining balance indicated by the balance filed value of 't' where 't' is true, and 'f' is false. There are three constraints for transactions, where recorded_by, attested_by and approved_by are dependent on the member_id (foreign keys) specified by the values given. Record 1 must be recorded by a steward, attested by another steward and approved by the pastor.

```
church=# select * from transaction where balance = 't';
-[ RECORD 1 ]-----+-----
transaction_id | 012jkl
date           | 2023-12-02
transaction_name | Gas
amount         | 24.59
payment_type   | Online Transfer
balance        | t
to_account     | checking2
from_account    | checking
recorded_by    | steward
attested_by    | steward
approved_by    | pastor
-[ RECORD 2 ]-----+-----
transaction_id | jkl01234
date           | 2023-12-03
transaction_name | Eating Out
amount         | 188.37
payment_type   | Cash
balance        | t
to_account     | savings
from_account    | checking2
recorded_by    | steward
attested_by    | quarterly conference secretary
approved_by    | pastor
-[ RECORD 3 ]-----+-----
transaction_id | 234vwx
date           | 2023-12-14
transaction_name | Books
amount         | -175.35
payment_type   | Debit Card
balance        | t
to_account     | savings
from_account    | savings
recorded_by    | steward
attested_by    | steward
approved_by    | pastor
```

A report of all receipts (view) of all transactions at or above \$100 is made from the information within the transaction table. The balance_bool value is dynamically generated when balance value is true.

```
church=# select * from receipt where amount >= 100;
-[ RECORD 1 ]-----+-----
transaction_id | 234vwx2
date           | 2023-12-24
amount         | 578.17
balance        | f
balance_bool   |
-[ RECORD 2 ]-----+-----
transaction_id | jkl01234
date           | 2023-12-03
amount         | 188.37
balance        | t
balance_bool   | balance still remaining
```

Ministry Table and Ministry Directory View

Following with the previous tables and views, the ministry sections follow suit with lots of data in the table, and a sub-set of pertinent information for a directory view.

```
church=# \x
Expanded display is off.
church=# select * from ministry;
 ministry_id | ministry_name | ministry_account | ministry_amez_email
-----|-----|-----|-----
whoms       | Women's Home and Overseas Missionary Society | ga | whoms@amez.church
hmd         | Home Missions Department | ga | homemissions@amez.church
ushers      | Usher Board | ga | ushers@amez.church
men         | Men's Boosters | ga | men@amez.church
clergy      | Clergy | ga | clergy@amez.church
stewards    | Steward Board | ga | stewardss@amez.church
trustees    | Trustee Board | ga | trustees@amez.church
classes     | Classes | ga | classes@amez.church
deaconess   | Deaconess Board | ga | deaconesses@amez.church
music       | Music Department | ga | music@amez.church
it          | Information Technology Group | ga | it@amez.church
foundation  | Foundation Society | ga | foundation_society@amez.church
mok         | Ministry of Kindness | ga | mok@amez.church
bscouts     | Boy Scouts | ga | boys@amez.church
gscouts     | Girl Scouts | ga | girls@amez.church
lay         | Lay Council | ga | laycouncil@amez.church
(16 rows)
```

```
church=# select * from ministry_directory limit 5;
 ministry_name | ministry_amez_email
-----|-----
Women's Home and Overseas Missionary Society | whoms@amez.church
Home Missions Department | homemissions@amez.church
Usher Board | ushers@amez.church
Men's Boosters | men@amez.church
Clergy | clergy@amez.church
(5 rows)
```