

42U / FileMaker Programming Challenge

Instructions

Your task is to use the requirements and specifications in this document as the basis for creating a fully functioning FileMaker app. The purpose is for you to have an opportunity to hone your FileMaker development skills using real-world requirements. There is no “correct” answer or solution; be creative and enjoy the process!

Some additional instructions:

- Create an ER Diagram of your solution
- Add whatever additional tables and fields you think would be useful to accomplish the tasks
- Document any assumptions you make about requirements
- Make up a critical mass of sample data so that reports can be run for any date range in 2017.

The Center Requirements

The Center is a multifunction community center focused on population specific programming for LGBTQ folks in the Anytown region. The organization began as a small grass-roots effort and grew organically, and continues to grow; The Center intends to offer more services in-house in the coming year(s), and may become hindered by technological issues with this growth.

Their business case appropriate for the 42U programming challenge centers around their Programs and their CyberCenter, both of which track attendees via sign-in sheets, as well as tallies of referrals made at these events or at the front desk. Moving the sign-ins and tallies into FileMaker should yield easier reporting and metrics, plus easier ability to do data entry on mobile devices at outreach events or community fairs etc. as well as at check-in desks inside The Center itself.

Program Events and Hall Bookings - Currently the attendee sign-ins for the various types of events hosted by The Center are done on paper at the front desk. Reporting is painful. They'd love to eventually add on a quick survey as people depart the space. Sign-ins/exits are done at one site in their building, perhaps soon to be 2 sites. iPads would be perfect for collecting these sign-ins and surveys. iPads would also expand functionality so that outreach events, done in the field, could also have sign-in attendee information collection.

Tally Sheets: The desk staff keeps counts of how many people requested X services on a given day: HIV services, condoms, several population-specific resources. No identifying of requester, just a count. Tallies of signed-in attendees who request services are also kept. An overall sum of these referral tallies is used to see the overall referral picture.

CyberCenter - Capacity in the CyberCenter is limited, so they have to sign-in and sign-out all users, maintaining a waiting list when the computers are full. They capture first name and last initial on paper

at front desk, with time in and time out. With this method they can't track quantity of unique users, and it's hard to calculate total hours of usage. Again, iPads would be ideal for this.

5-10 staff users of data entry screens. Some will be offered to users directly via tablets, others might be used by staff on a computer or a tablet/phone.

Reports & Metrics: 2 users, at desk computers; unlikely to use mobile.

High-Level Requirements and Scope

- FileMaker Server
- FileMaker Pro
- FileMaker Go
- FileMaker tables to hold:
 - Program
 - ProgramEvent
 - Attendee Sign-In
 - Daily Tally
 - CyberCenter Sign-In
 - Program Monthly Narrative
- Data entry primarily via FM Pro for:
 - Program
 - ProgramEvent
 - Daily Tally
 - Program Monthly Narrative
- Data entry primarily via FM Go for:
 - Attendee Sign-In
 - CyberCenter Sign-In
- Reports / charting
- PDF output of reports

Program

A Program record represents a particular branch of The Center's work, which may consist of a collection of different activities, including referrals to relevant third-parties or external resources, meetings, trainings, outreach trips, events, etc. A program will have a member of The Center's staff as its manager.

- ID
- Program Name
- Manager
- Training Types (used to provide a choicelist when a Training-type Event is made for this Program)

NOTE: We will have Program records for these programs at minimum:

- HIV Services
- Qvolution
- Identi-T
- ACT III
- AMP
- Elle
- L Group
- Centerpiece
- Other (for the miscellaneous trainings and such that don't fall under a particular program)

Program Monthly Narrative

Each program has a short bit of narrative text included in the monthly Dashboard Report; the Program Monthly Narrative record allows the program's manager to create this text ahead of time for use in the report.

- ID
- Program ID
- Month & Year
- Narrative Text

Program Event - Meeting type

A Program may host periodic meetings, organize outreach events, or host trainings relevant to their topics of interest. ProgramEvents carry a set of referral fields, which are used for tallying referrals made to attendees of an event that can't be attributed to a specific Attendee Sign-in. A referral is simply

- ID
- Program ID
- Event Name
- Event Type = "Meeting", "Outreach", "Training"
- Training Events only: Training Type (Sex Ed in Qvolution Program, HIV A in HIV Services Program, etc.; relevant type values per Program stored in TrainingTypes field on the Program record)
- Training Events only: Internal/External flag
- Date
- Facilitator (optional)
- Topic (optional)
- Referral_HIVServices
- Referral_Qvolution_Non-SexEd
- Referral_Qvolution_SexEd
- Referral_Identi-T
- Referral_ACTIII
- Referral_AMP
- Referral_Elle

Hall Booking (in main hall)

A Program may host an event, or third-parties may rent out the event hall for their own event. A Hall Booking record represents the booking of the hall for a particular time by a particular party. Hall Bookings carry a set of referral fields, which are used for tallying referrals made to people at the event that can't be attributed to a specific Attendee Sign-In.

- ID
- Booking Name
- Program ID (optional)
- Date
- Facilitator (optional)
- Topic (optional)
- Community Group Booked
- Expected Guests
- Donated Amount
- Rental Fee Due
- Referral_HIVServices
- Referral_Qvolution_Non-SexEd
- Referral_Qvolution_SexEd
- Referral_Identi-T
- Referral_ACTIII
- Referral_AMP
- Referral_Elle

***BONUS:** Integrate Hall Bookings into a sample Google Calendar where FileMaker writes to the calendar when a booking is made, using the Google Calendar API: <https://developers.google.com/google-apps/calendar/concepts/sharing>

Attendee Sign-In

When people come to a particular event, The Center will ask them to sign in on a form that captures some demographic information about them. A Sign-In does not necessarily capture enough information to uniquely identify a person, and regardless, the demographic data collected helps The Center understand its users and their needs. Also, if a Staffer at an event refers a person to a resource and can tie that to the person's Sign-In, they'll record that resource referral tally on the Sign-In itself (rather than as a unattributed tally on the ProgramEvent record itself); doing so helps The Center understand some demographics of who is being referred to what, which is not possible with the main DailyTally feature.

- ID
- ProgramEvent ID or HallBookingID
- DOB
- Gender Identity
- Ethnicity/Race
- Sexual Orientation
- First Visit? (Y/N)
- Email
- Phone

- Zip Code
- Military Active/Veteran? (Y/N)
- Name
- Age (computed and stored using DOB and related ProgramEvent's Date)
- Referral_HIVServices
- Referral_Qvolution_Non-SexEd
- Referral_Qvolution_SexEd
- Referral_Identi-T
- Referral_ACTIII
- Referral_AMP
- Referral_Elle

***BONUS:** Create a Tableau (via web connector) map that plots all Attendees by zipcode and embed the map in a Web Viewer in the custom app.

Daily Tally

When the front desk staff refers someone to a particular resource, they record that in a tally of how many of each referral were made per day. This is a simple daily tally sheet for tracking referrals that did not take place as part of an Event or as part of an Attendee Sign-in.

- ID
- Date
- Referral_HIVServices
- Referral_Qvolution_Non-SexEd
- Referral_Qvolution_SexEd
- Referral_Identi-T
- Referral_ACTIII
- Referral_AMP
- Referral_Elle

***BONUS:** Create a Web Viewer chart that shows the daily tallies BY DAY with a user-specified date range.

CyberCenter Sign-In

When people come to use the CyberCenter at The Center's facility, they are asked to sign in with an enter time and an exit time. The capacity of the CyberCenter is limited, and this helps The Center manage waiting list and understand durations and patterns of use.

- ID
- Name
- Date
- Enter Time
- Exit Time

- Gender Identity (use same choicelist as on Attendee Sign-in, so reports can be done consistently)

The Center - Report Outputs / Dashboard

Dashboard Report collects a variety of monthly counts and figures for Merlin, the Director of Operations. Currently he manually compiles a spreadsheet that has various sections providing the data he wants. This comprehensive report gets emailed as PDF and printed hard copy. Copies are sent to boss and to Board each month; hard copies are kept in a binder for self-reference. This monthly report to the Board is still needed, but having a version of the report with a more flexible date range will support more ad-hoc use that supports the organization in ways not currently possible.

Program Participation - Totals

- Allow user to select date range for report.
- Find all Sign-Ins within date range.
- Number of Participants Per Program: Count of Sign-Ins related to each Program within date range, plus grand total.
- Number of New Participants Per Program: Count of Sign-Ins related to each Program within date range where First Visit? = Y, plus grand total.

Referrals Made to Community Resources Per Program - Totals

Referrals: Based on tallies taken at front desk per day, and include also tallies from Sign-Ins and from ProgramEvents, from specified date range. There is a tally field for each Program on DailyTally to count referrals made for that Program. Front Desk is the subtotal of all the tallies from DailyTally records only (i.e., excluding any from Sign-Ins or ProgramEvents).

- Allow user to select date range for report.
- Number of Referrals Per Program: Count of all tallies belonging to that Program within date range, whether from DailyTally or a Sign-In within the date range or a ProgramEvent within the date range.
- Number of Referrals Front Desk: Count of all tallies from DailyTally records within date range. Exclude tallies from Sign-Ins and ProgramEvents.
- Grand total of Referrals within date range.

Tally fields and their Programs:

- Referral_HIVServices = referrals for HIVServices Program
- Referral_Qvolution_Non-SexEd + Referral_Qvolution_SexEd = referrals for Qvolution Program overall
- Referral_Identi-T = referrals for Identi-T Program
- Referral_ACTIII = referrals for ACTIII Program
- Referral_AMP = referrals for AMP Program
- Referral_Elle = referrals for Elle Program

Community Outreaches Per Program - Totals

- Allow user to select date range for report.
- Community Outreach Per Program: Count the number of Outreach-type ProgramEvent records within the date range for each Program, plus a grand total

Demographic Breakdown of Program Participation - by Gender

- Allow user to select date range for report.
- Find all Sign-Ins related to ProgramEvents, and all Sign-Ins related to Hall Bookings with a Program relationship
- Show count of Sign-Ins per Gender as reported on Sign-In, plus a grand total
- Show subtotal counts per Program within each Gender

Demographic Breakdown of Program Participation - by Orientation

- Allow user to select date range for report.
- Find all Sign-Ins related to ProgramEvents, and all Sign-Ins related to Hall Bookings with a Program relationship
- Show count of Sign-Ins per Orientation as reported on Sign-In, plus a grand total
- Show subtotal counts per Program within each Orientation

Demographic Breakdown of Program Participation - by Race/Ethnicity

- Allow user to select date range for report.
- Find all Sign-Ins related to ProgramEvents, and all Sign-Ins related to Hall Bookings with a Program relationship
- Show count of Sign-Ins per Race/Ethnicity as reported on Sign-In, plus a grand total
- Show subtotal counts per Program within each Race/Ethnicity

Demographic Breakdown of Program Participation - by Age

- Allow user to select date range for report.
- Find all Sign-Ins related to ProgramEvents, and all Sign-Ins related to Hall Bookings with a Program relationship
- Show count of Sign-Ins per Age category as reported on Sign-In, plus a grand total
 - Age categories are: 13-18, 19-29, 30-39, 40-49, 50-59, 60-69, 70 and up, Unknown.
- Show subtotal counts per Program within each Gender

Trainings

- Allow user to select date range for report.
- Number of Trainings: Counts Training-type ProgramEvent records for each Program (SEE EXCEPTIONS BELOW) within the date range, plus grand total.
 - HIV Services Program subdivides:
 - HIV A (awareness) is a Training Type under the HIV Services Program. Count these separately and display under the heading "HIV A".

- show the remainder of non-HIV A Trainings in a second heading "HIV Services". In other words, this group should EXCLUDE the HIV A figures.
- Qvolution Program subdivides:
 - Sex Ed is a Training Type (associated to a state grant) under the Qvolution Program. Count these separately and display under the heading "Sex Ed".
 - show the remainder of non-SexEd Trainings in a second heading "Qvolution". In other words, this group should EXCLUDE the Sex Ed figures.
- Number of People: Counts Sign-Ins within the date range belonging to Training-type ProgramEvents within each Program (SEE EXCEPTIONS BELOW), plus grand total.
 - HIV Services Program subdivides:
 - HIV A (awareness) is a Training Type under the HIV Services Program. Count these separately and display under the heading "HIV A".
 - show the remainder of non-HIV A Trainings in a second heading "HIV Services". In other words, this group should EXCLUDE the HIV A figures.
 - Qvolution Program subdivides:
 - Sex Ed is a Training Type (associated to a state grant) under the Qvolution Program. Count these separately and display under the heading "Sex Ed".
 - show the remainder of non-SexEd Trainings in a second heading "Qvolution". In other words, this group should EXCLUDE the Sex Ed figures.

The Center - User Stories

Event Sign-Ins

Center Visitor Signs In To Program Event (Office or Field) - Training, Meeting, Outreach types

- Staffer logs in to system as Attendee account
- Staffer navigates to the Program Event record
- Center Visitor arrives at front desk or field location
- Staffer asks Visitor to sign in - ideally via iPad, sometimes via laptop (field use will be exclusively iPad)
 - design layout for iPad optimization
 - Assumes wi-fi or cellular connectivity
- Visitor fills out Sign-In form, or staffer fills out for the visitor
 - DOB - required
 - Gender Identity - pick list; required
 - choices: Female, Male, Trans (mtf, ftm), Genderqueer & Non-Conforming, Unknown, Other
 - Ethnicity/Race - pick list; required
 - choices: Latin@/Hispanic, Black/African-American, White/Caucasian, Asian, Native American, Multi-racial, Unknown, Other
 - Sexual Orientation - pick list; required
 - choices: Lesbian, Gay, Bisexual, Straight, Questioning, Unknown, Other
 - First Visit to The Center? - Y/N; required
 - Zip Code - required

- Email
- Phone
- Name
- Military Active/Veteran? - Y/N
- Visitor saves
- System returns to Program Event record to await next Visitor

Center Visitor Signs In To Hall Booking Event (Office)

- Staffer logs in to system as Attendee account
- Staffer navigates to the Hall Booking record
- Center Visitor arrives at front desk
- Staffer asks Visitor to sign in - ideally via iPad, sometimes via laptop
 - design layout for iPad optimization
- Visitor fills out Sign-In form
 - DOB - required
 - Gender Identity - pick list; required
 - Ethnicity/Race - pick list; required
 - Sexual Orientation - pick list; required
 - First Visit to The Center? - Y/N; required
 - Zip Code - required
 - Email
 - Phone
 - Name
 - Military Active/Veteran? - Y/N
- Visitor saves
- System returns to Hall Booking record to await next Visitor

Staffer Records Referral Tally For Signed-In Visitor (Field or Office)

- Staffer navigates to the relevant Program Event or Hall Booking record, if not already there
- Staffer reviews list of Sign-Ins related to that Program Event / Hall Booking to find the one needed, if not already there
- Staffer adds one or more Referral Tally(s) to that Sign-In record
- Staffer saves

Staffer Records Referral Tally for Unknown Visitor (Field or Office)

- Staffer navigates to the relevant Program Event or Hall Booking record, if not already there
- Staffer adds one or more Referral Tally(s) to the unknown-visitor-tallies on that Program Event or Hall Booking record
 - Referral Tally fields should be similar to those on the Daily Tally feature used at front desk
- Staffer saves

Daily Tally

Staffer Records Referral Tally (Office)

- Staffer navigates to the Daily Tallies area
- If a DailyTally for the current date exists, use that; otherwise, a new DailyTally for this date must be created
- Staffer increments the appropriate Referral Tally(s) on the day's DailyTally record

CyberCenter Sign-Ins

Center Visitor Signs In to CyberCenter

- Staffer logs in to system as Attendee account
- Staffer navigates to the CyberCenter area
- Center Visitor arrives
- Staffer asks Visitor to sign in to the CyberCenter
- Visitor fills out CyberCenter Sign-In form
 - Name - required but need not be a full name
 - Date - auto enter current date; required
 - Enter Time - auto enter current time; required
 - Gender - required
- Visitor saves
- System returns to CyberCenter area to await next Visitor

Center Visitor Signs Out of CyberCenter

- Staffer logs in to system as Attendee account
- Staffer navigates to the CyberCenter area
- Center Visitor departs CyberCenter
- Staffer asks Visitor to sign out of the CyberCenter
- Visitor locates their CyberCenter sign-in in the list of today's CyberCenter Sign-Ins
 - Visitor uses the name and enter-time values to differentiate their record
- Visitor adds Exit Time to their CyberCenter Sign-In
 - Exit Time - auto enter current time; required; must be later than Enter Time
- Visitor saves
- System returns to CyberCenter area to await next Visitor

Reports

Director Of Operations / Other Role Runs Report

- see details of how various reports are derived in the Report Outputs page at [The Center - Report Outputs / Dashboard](#)
- options to print paper or PDF of report

Director Of Operations / Other Role Runs Dashboard Report for Monthly Board Use

- user must choose a month/year rather than free date range
- report runs as in the general case above, but using the month/year date range, plus the following extensions:
 - report includes the appropriate Program Monthly Narrative entries for the month/year selected
- options to print paper or PDF of report

Setup / Admin Stories

Privilege Sets:

- Attendee (people signing in) – effectively a "Guest" privilege set, since these users will not enter an account name or password
- Executive Team (Director of Operations plus a few others)
- Operations Analyst (type of staffer)
- Program Manager (type of staffer)

Create Program

- Executive Team priv-set only

Delete Program

- Executive Team priv-set only
- not allowed if there are any related:
 - Program Monthly Narratives
 - Events
 - Meetings
 - Outreaches
 - Trainings

Create Program Event

- Executive Team, Operations Analyst, and Program Manager priv-set only

Delete Program Event

- Executive Team, Operations Analyst, and Program Manager priv-set only
- not allowed if there are any related:
 - Sign-Ins

Create Hall Booking

- Executive Team, Operations Analyst, and Program Manager priv-set only

Delete Hall Booking

- Executive Team, Operations Analyst, and Program Manager priv-set only
- not allowed if there are any related:
 - Sign-Ins

Create Program Monthly Narrative

- Executive Team, Operations Analyst, and Program Manager priv-set only

Delete Program Monthly Narrative

- Executive Team, Operations Analyst, and Program Manager priv-set only

Delete Attendee Sign-In

- Executive Team, Operations Analyst, and Program Manager priv-set only

Delete DailyTally Sheet

- Executive Team, Operations Analyst, and Program Manager priv-set only

Delete CyberCenter Sign-In

- Executive Team, Operations Analyst, and Program Manager priv-set only