Playing with Murder Mobile Application

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Project Abstract

The Playing with Murder Application is designed for any group of people looking to have a murder mystery party where the guests play the suspects in a mysterious crime, taking directions from the host and working together to uncover clues and solve the mystery as a group. Currently, Playing with Murder sells these murder mystery parties through their website in the form of a PDF. The downside to this is the wasteful use of paper as well as having to manage everything manually. The goal of the application is to allow PWM's customers to manage and play the game from their Android device. This application will not completely replace the PDF as we still want people to be able to play the game off of paper.

Document Revision History

Rev. 1.0 <2019-02-18>: initial version

Customer

The customers for this app can be divided into the client and the end users. Our direct client is PWM Press, LLC. PWM has considered the prospect of developing a mobile application for their content in the past, and in general have an understanding of how they would like these stories to be represented in this format. They will also regularly be available to test the product and give suggestions to make sure we are on the right track.

We also have the users who actually play the game, who will purchase the party kit from either the app or the online website. They will be the host of each round and will be able to assign the characters to the guests as well as control the flow of the game. Their guests can join the game using unique code from the hosts at different parties. PWM's games can be run on multiple occasions, either under casual environments like private dinners, holiday and birthday parties; or something more official, like an office party, fundraising events and organizational events.

Overall, the customer-based app for Playing with Murder is supposed to have a simple but clear user interface and efficient back-end design, in which case to provide the best user experience to all of our customers.

Competitive Landscape

Two competitors in the murder mystery party market that provide a comparable product to Playing with Murder are the companies Night of Mystery and My Mystery Party, which both allow the party host to download a pdf with all the instructions and player information, as well as cards with clues for the game. My Mystery Party also provides a website for each player, which can be used to reference information about their character. This feature functions similarly to our proposed application, but our application will go beyond by including information about other players as well, even updating to reflect which players are a part of the specific game being played. Our product will also update in real time as the game progresses, showing information about clues as they are discovered by other guests. It will also provide some features to make the host's time easier by allowing players to vote for who they think is the murderer, who they think is best dressed, etc. on the application instead of writing it down on a piece of paper. If time allows, our application could also provide support for uploading pictures to social media so players can share their experiences with other friends.

There also exist two app-based murder mystery party companies: Whodunnit and Mysteria. Whodunnit currently only exists for IOS, while Mysteria exists for both IOS and Android. Our application will be created for Android, and if time permits, we could also look into making an IOS version as well. The main difference between our product and these competitors is that our application is designed to be complementary to the PDF versions, while Mysteria and Whodunnit only use the application. This means that all players of the game must have a smartphone, and in the case of Whodunnit, must have an iPhone. Our application is meant to make the game easier and possibly with some fun extra features for those who have a smartphone, but it will not be a necessary part of the game. Additionally, PWM offers a much wider variety of games than either of these apps.

User Requirements

- A. **Minimum Viable Product**
  - a. Host Profile
    - i. Game content browser
      - 1. Content provided by PWM
      - 2. Content format TBD
      - 3. Content examples
        - a. Step-by-step hosting instructions
        - b. Menu, decor, and costume ideas
        - c. Game materials (clue, invitations, awards, etc)
    - ii. Player profile
      - 1. Host has access to his/her own guest profile to play along with guests
  - b. Guest Profile
    - i. Game content browser
      - 1. Content examples
        - a. Character sheet
        - b. Guest list
        - c. Background and introduction
    - ii. Access management
      - 1. The player does not see the “Act II” sheet until access is granted by host
- B. **Priority Features**
  - a. Host Profile
    - i. Organizational tools and data collection
      - 1. Basic party information
        - a. Number of guests
        - b. Party location
        - c. Party date and time
        - d. Event type
      - 2. Guest list
        - a. Guest names
        - b. Gender
        - c. Character assignments
        - d. Email and phone number entry
        - e. RSVP status
      - 3. Menu
        - a. Names of dishes being served
        - b. Course during which each dish is served
        - c. Links to recipe for dishes (when applicable)
      - 4. Decor
        - a. List of decor elements (decorations, lighting, etc)
        - b. Links to source of decor elements (when applicable)

5. Voting & Awards
   a. Track player votes
   b. Calculate vote totals
   c. Select award winners

ii. Scavenger Hunt Management
   1. Track clues that have been discovered by players
   2. Clue information

b. Guest Profile
   i. Organizational tools
      1. Clue information
      2. Voting tools
      3. View award winners
   ii. Scavenger Hunt Scanner
      1. QR code

C. Secondary Features

a. Host Profile
   i. Invitation System
      1. Send party and character info to guests
      2. Automatically track RSVP status
   ii. Guest Profile
      1. Photo capture and social media integration
         a. In-game camera function
            i. Take player headshots
            ii. Take party photos
         b. Share photos with other guests
         c. Post photos to social media via app

Use Cases

Name	Create Account
Actors	All users
Triggers	“Sign up” button clicked
Events	Users click “sign up” button Users enter their information into fields Users click “Submit” button
Exit conditions	Request submit or cancel registration
Post conditions	Users are directed to their user page or error message if empty
Acceptance test	Users can try to log in again to make sure the account is successfully created.

Name	Log In As Host
Actors	All users
Triggers	“Log in as host” clicked
Events	Users enter userID Users enter password Users click “Log in”
Exit conditions	“Back” button clicked or “Log in” button clicked
Post conditions	Users are directed to the host dashboard
Acceptance test	Users can check if the purchase history and account info are correct.

Name	Access Party As Guest
Actors	All users
Triggers	“Log in as guest” button clicked
Events	Users enter access code provided by the host

	Users log in as guests
Exit conditions	“Back” button clicked or “Log in” button clicked
Post conditions	Users are directed to the guest dashboard
Acceptance test	Users can check if the account information is correct

Name	Access Party As Host
Actors	Host
Triggers	Host click on “Host login” button
Events	Host click on “Host login” Host is directed to the host user page “Guest Invitation” button is displayed “Party Organization” button is displayed (if there is any party)
Exit conditions	Cancel login
Post conditions	Host is directed to the next page where he will be able to invite the guests
Acceptance test	Check if account info is correct

Name	Invite guests to party
Actors	Host
Triggers	Host click on “Guest Invitation” button
Events	Host enter guests’ emails or phone numbers Host click on “Send Invitation Code” button
Exit conditions	Host click on “Send Invitation Code” button or “exit”
Post conditions	Host is directed to the confirmed guest list page
Acceptance test	Guests either accept the invitation and enter the code or reply “No” to reject, host checks if the correct number of guests is on the list

Name	Host opens content for guests
Actors	Guest
Triggers	Clicks “Join Party” button
Events	Guests enter the invitation code Guests click “Join Party” button Guests are directed to the waiting page while host is editing guest list and assigning characters
Exit conditions	“Back” button clicked or “Join Party” clicked
Post conditions	“Waiting for host to assign character” message displayed
Acceptance test	Check if host receive confirmation of guest

Name	Remove Guest from Party
Actors	Host
Triggers	Host clicks “Remove Guest” button
Events	1. If a. Guest is playing a vital character, the character will need to be reassigned to another guest. Then remove the guest. i. Reassign the role by completing a Change Guest Character request b. Guest is not playing a vital character, remove the guest. 2. Host clicks the “Confirm Removal” button 3. Remove the guest from the party and revoke their access
Exit conditions	Host clicks “Cancel” or Guest is removed from the party
Post conditions	Guest is notified that they have been removed from the party
Acceptance test	The host can no longer see the guest in the party and the guest does not have access

Name	Change Guest Character
Actors	Host

Triggers	Host clicks “Change Character” button or a character reassignment is needed
Events	1. If a. Guest is playing a vital character, the character will need to be reassigned to another guest. Change character. i. Reassign the role by completing another Change Guest Character request b. Guest is not playing a vital character, change character. 2. Prompt host with a list of available characters that they may choose for the guest 3. Host selects character and clicks “Reassign” 4. Change guest access to reflect new character
Exit conditions	The host clicks “Cancel” or clicks “Reassign”
Post conditions	The guest is notified that their character has been changed
Acceptance test	The host can see that the guest has their new character and the guest can only see information for their new character

Name	Guest RSVP
Actors	Guests
Triggers	Guest receives a text message or email notifying them they have been invited to a party
Events	1. If a. Guest plans on attending party i. Guest clicks “I can attend” button ii. Host’s party roster is populated with guest b. Guest is not able to attend party i. Guest clicks “I cannot attend” button
Exit conditions	The guest selects either the can or cannot attend button
Post conditions	The host and guest will receive a notification and welcome message or the host will receive a notification of absence
Acceptance test	The host can see the guest on the roster based off of how they replied to the email

Name	Register ‘murder’ event
Actors	Host
Triggers	The Host selects ‘Begin Act Two’ on the party page
Events	Party instance on server is updated with new state information. For every guest, their page will update with the new details on next refresh.
Exit conditions	Instance update successfully completes
Post conditions	All guests have Act Two information viewable on their character pages
Acceptance test	Host selects ‘Begin Act Two’ on the party page; confirm that Act Two information has been updated for all guests.

Name	Register Clue Found as Host
Actors	Host
Triggers	Host selects clue found
Events	All guests can view clue information
Exit conditions	Host presses back button
Post conditions	Return to main host screen
Acceptance test	The new clue is now under found clues, and can be clicked and viewed again

Name	Register Clue Found as Guest
Actors	Guests
Triggers	Guest sends message to host that clue is found (possibly QR reader in future)
Events	All guests can view clue information
Exit conditions	Guest presses back button
Post conditions	Return to main guest screen

Acceptance test	The new clue is now under found clues, and can be clicked and viewed again

Name	Open Voting for Party
Actors	Host
Triggers	Last clue is found, triggering Act III. Then, when the host decides the discussion is completed, they press the “begin voting” button.
Events	Guests will vote on the various categories, which will automatically update the results screen on the host’s screen. The host can also manually enter votes from guests who did not use the app.
Exit conditions	All guests have voted.
Post conditions	Show results of each category on all phones.
Acceptance test	The host and all guests can see the results of all votes.

Name	Vote As Guest
Actors	Guest User
Triggers	A guest submits their votes
Events	The vote in each category is sent to the server and tallied
Exit conditions	The votes are recorded by the server
Post conditions	The guest is returned to their party page
Acceptance test	Votes are accurately recorded by the server

Name	Close Voting For Party
Actors	Host User
Triggers	Host activates ‘close voting’ function
Events	Vote As Guest function is disabled

	Votes are tallied, and guests are notified who won votes and who the murderer was.
Exit conditions	Votes are finished being tallied
Post conditions	Generate Party Recap function is activated
Acceptance test	Guests are no longer able to vote after voting is closed Correct notifications are pushed to guests

Name	Generate Party Recap
Actors	Host User, Guest Users
Triggers	The Close Voting function completes
Events	The party outcome is compiled into a web page The page is published to a unique public URL A notification with the URL is sent to both host and guests
Exit conditions	The page is posted and notification sent to users
Post conditions	None
Acceptance test	Web page is accessible and contains all party information Guest Users receive notification with valid URL

Name	Enter Menu Items as Host
Actors	Host
Triggers	On the party page, the host selects to update a menu item for any listed course. The host enters a dish name and selects ‘accept’
Events	Party instance is updated with new dish name under the appropriate course. For all guests, this information appears on their character page at next state update.
Exit conditions	Instance on server is successfully updated with new meal information.
Post conditions	Meal information is updated in party instance
Acceptance test	Host opens a current party, and selects to change the meal for all courses. Confirm that changes to meals happen on all user devices

Name	Upload Picture as Guest
Actors	Guest
Triggers	Guest selects to upload a picture on their character page. Guest takes a picture, and selects ‘Upload’
Events	Picture is uploaded to server and connected to the game instance. For all guests, the picture is available on their character pages on the next state update.
Exit conditions	Picture is successfully uploaded to server
Post conditions	Picture is available on the server under the appropriate party instance, and all guests can view the picture on their character pages.
Acceptance test	Guest selects to upload a picture from their character page. Confirm that the picture appears for all other guests.

User Interface Requirements

Due to the primary goal of the application being to limit the amount of paper PWM customers have to use, we will mainly be focusing on making the game playable from a mobile device. As such, the application will have two pieces: the host and the guest. As the host, the user needs to be able to access much more than the guest. They need to be able to send an invitation from the application to a large group of people. We will do this through a page that allows them to input email addresses or phone numbers to send their invitation. The host also needs to manage the attendees and their characters. This can be accomplished via an interface where they can drop members as well as switch the attendees' character. Finally, they will need to run the party when it comes time. This will be done by highlighting the step-by-step process needed. Some of the things necessary when running the party would be releasing information to the guest's phones. An example of this would be when they reach the next act and find out which character was murdered. The host will be able to select a button which displays a dialog box ensuring they are ready for the next step. There may be other pieces we will be able to add, but this is the minimum required functionality for the host side of the application.

As the guest, there is not much they will need to do with their device besides reading their character sheet. There will be some times where slight interaction between the host and the guest will be required, such as a guest finding a clue and the information being released to the party. That being said, the guest's interface will be limited to mainly displaying their character sheet and having buttons that will take them to a more detailed page about information relevant to them.

Security Requirements

There are several security and privacy concerns which we will need to consider as a mobile application which potentially handles personal data. Firstly, we should ensure that we request only those system permissions which are required for our functionality. This will limit accidental breaches of privacy and the scope of potential unintended behavior. Secondly, since we will be handling authentication via user accounts we will need to ensure that account names and passwords are processed and transferred in a secure manner. We will also need to sanitize all inputs into our system to ensure they do not eventually produce unintended effects and ensure that our stored data, both locally and within the server-side database, is accessible to only the correct, properly authenticated users. Since we have a server in our architecture, any server-side services will be potentially vulnerable to denial of service attacks.

System Requirements

Hardware :

- Memory requirement: 256 MB of total RAM
- Storage requirement: 50 MB of internal storage
- CPU requirement: ARMv7 CPU with NEON support or Atom CPU
- Camera requirement: 400 Megapixel Camera

Software:

- Android 5.0 or later
- OpenGL ES 2.0 or later

Website:

- Modern browser (Chrome, Opera, Firefox, IE, Edge, Safari)

Others:

- Internet connection

Since most modern apps require Android 5.0 or later, that will be the target environment for our project. Camera is required to fulfill the QR code scanning function. We plan to integrate the Unity engine so there is a requirement for the CPU and the OpenGL API.

Specification

Listed here are a series of UML diagrams detailing the flow of this application's primary features.

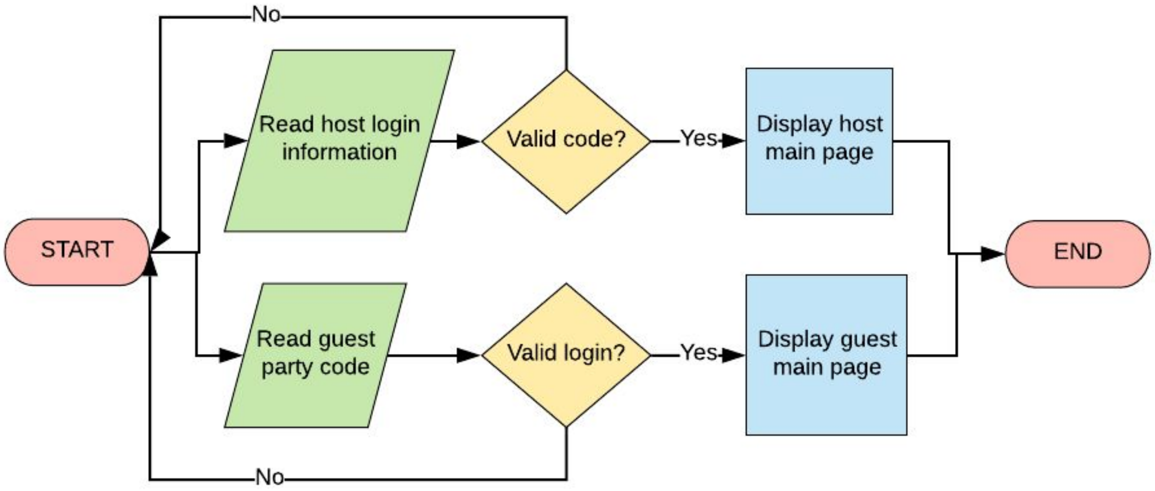

Figure 1: Login - the initial action that the user takes after opening the app to access content. Hosts will be able to log in using their already existing PWM credentials, giving them access to the host main page where they will be able to further manage the party. Guest will be distributed an access code with their invitation, which they can use here to access their character page.

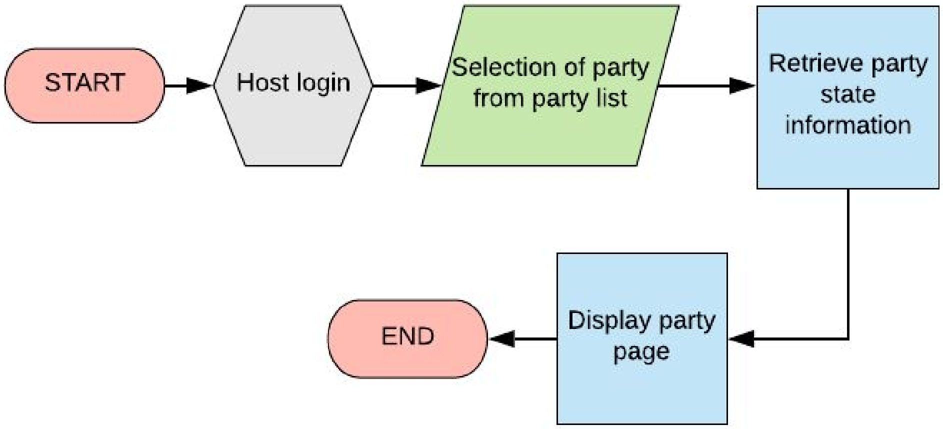
START
Host login
Selection of party from party list
Retrieve party state information
Display party page
END

Figure 2: Open Party - After logging into their account, hosts will be able to select which party they would like to manage from a list of parties on the host main page.

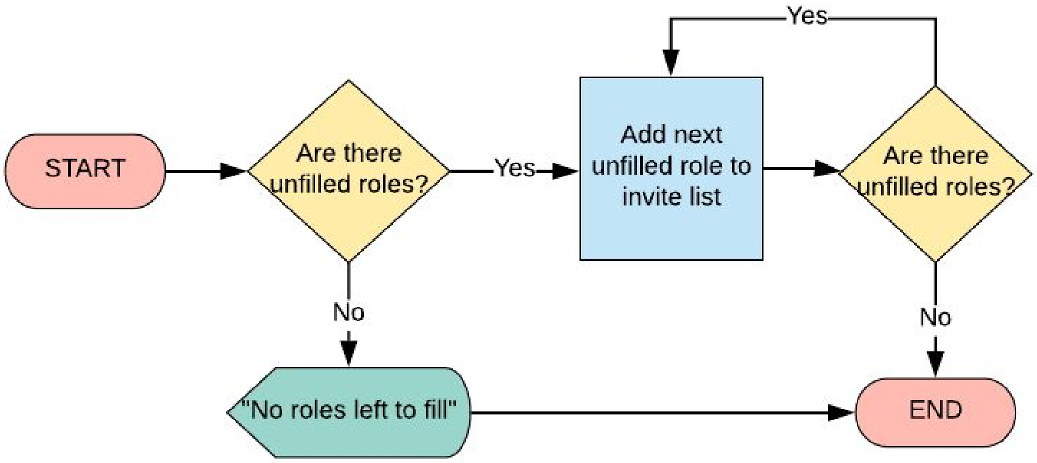
START
Are there unfilled roles?
Yes
Add next unfilled role to invite list
Are there unfilled roles?
Yes
No
No
"No roles left to fill"
END

Figure 3a: (PROCESS) Display invitation list - When sending invites, hosts are limited by the number of written roles available to distribute. The invitation form will populate with unfilled roles until there are no more remaining.

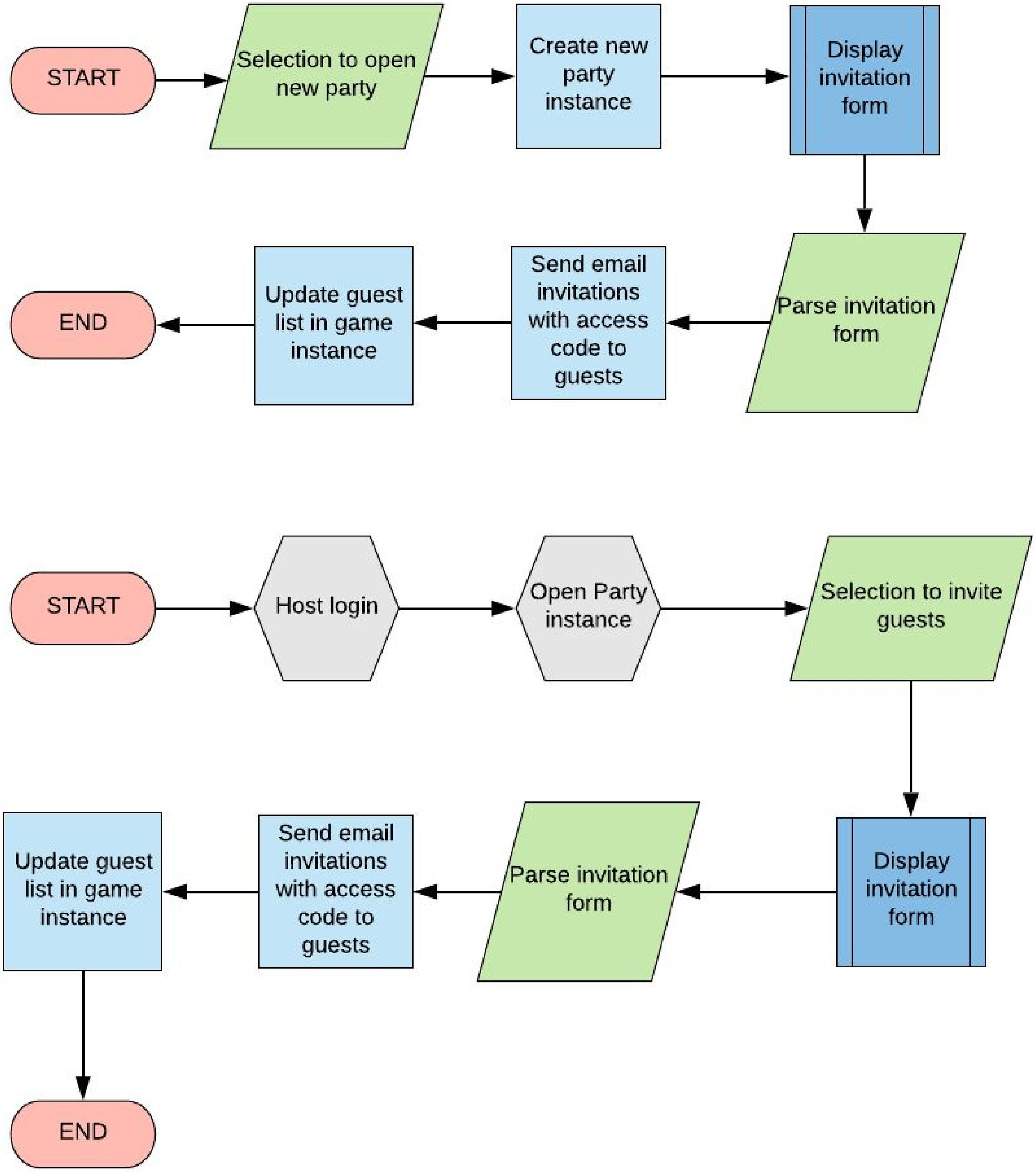
START
Selection to open new party
Create new party instance
Display invitation form
Parse invitation form
Send email invitations with access code to guests
Update guest list in game instance
END
START
Host login
Open Party instance
Selection to invite guests
Display invitation form
Parse invitation form
Send email invitations with access code to guests
Update guest list in game instance
END

Figure 3b: Inviting guests - After beginning a new party hosts will have the choice of inviting guests via website as depicted in the top workflow, or via the mobile application as depicted in the bottom workflow.

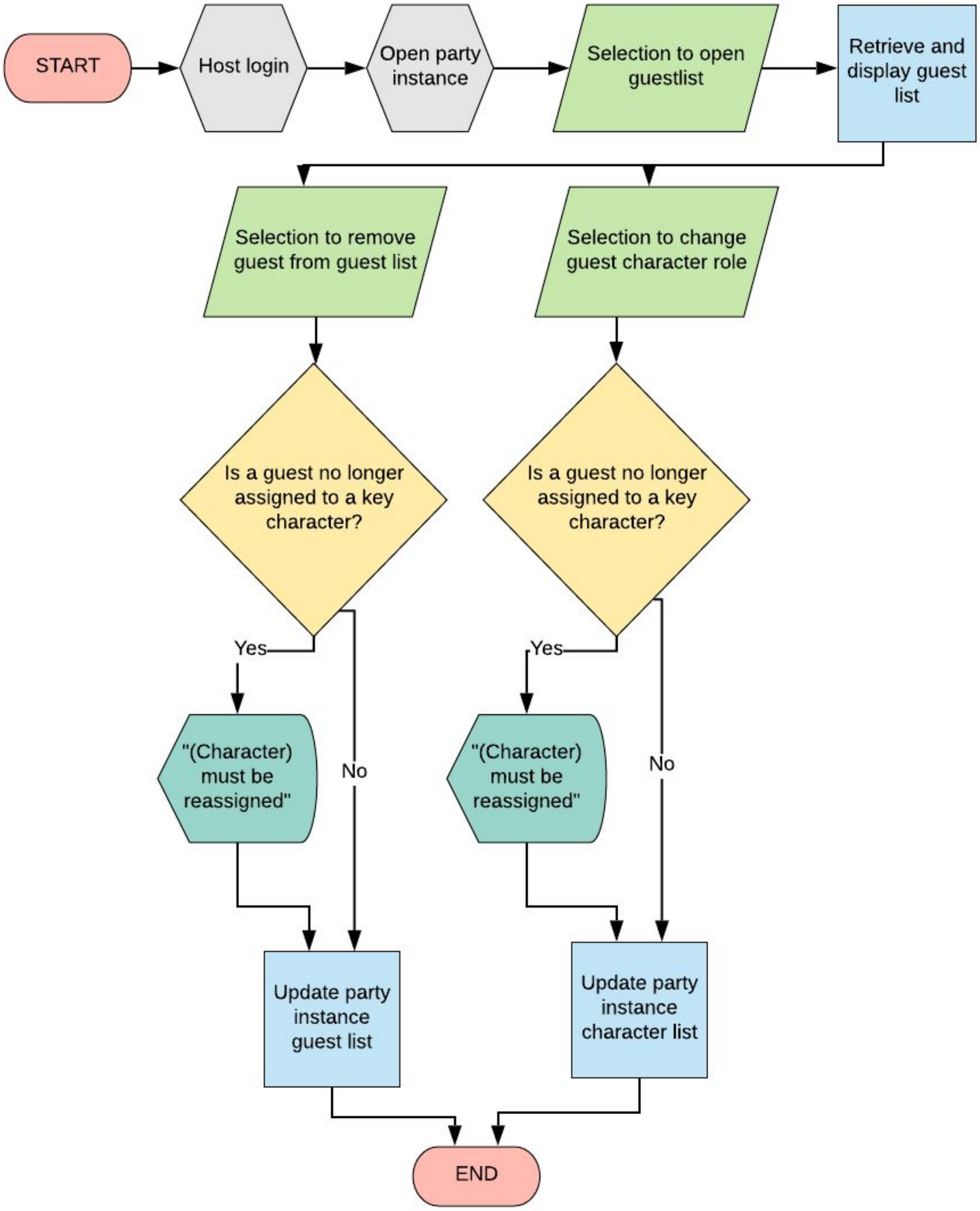
START
Host login
Open party instance
Selection to open guestlist
Retrieve and display guest list
Selection to remove guest from guest list
Selection to change guest character role
Is a guest no longer assigned to a key character?
Is a guest no longer assigned to a key character?
Yes
No
Yes
No
"(Character) must be reassigned"
"(Character) must be reassigned"
Update party instance guest list
Update party instance character list
END

Figure 4: Guest management (not invitations) - For guests that have already been invited, the host will have the option to either remove a guest or change a guest's role. In either case, the user must be alerted if any changes to the guestlist resulted in an essential character role not being filled. If this is the case, elements of the game will not make sense until the character is reassigned.

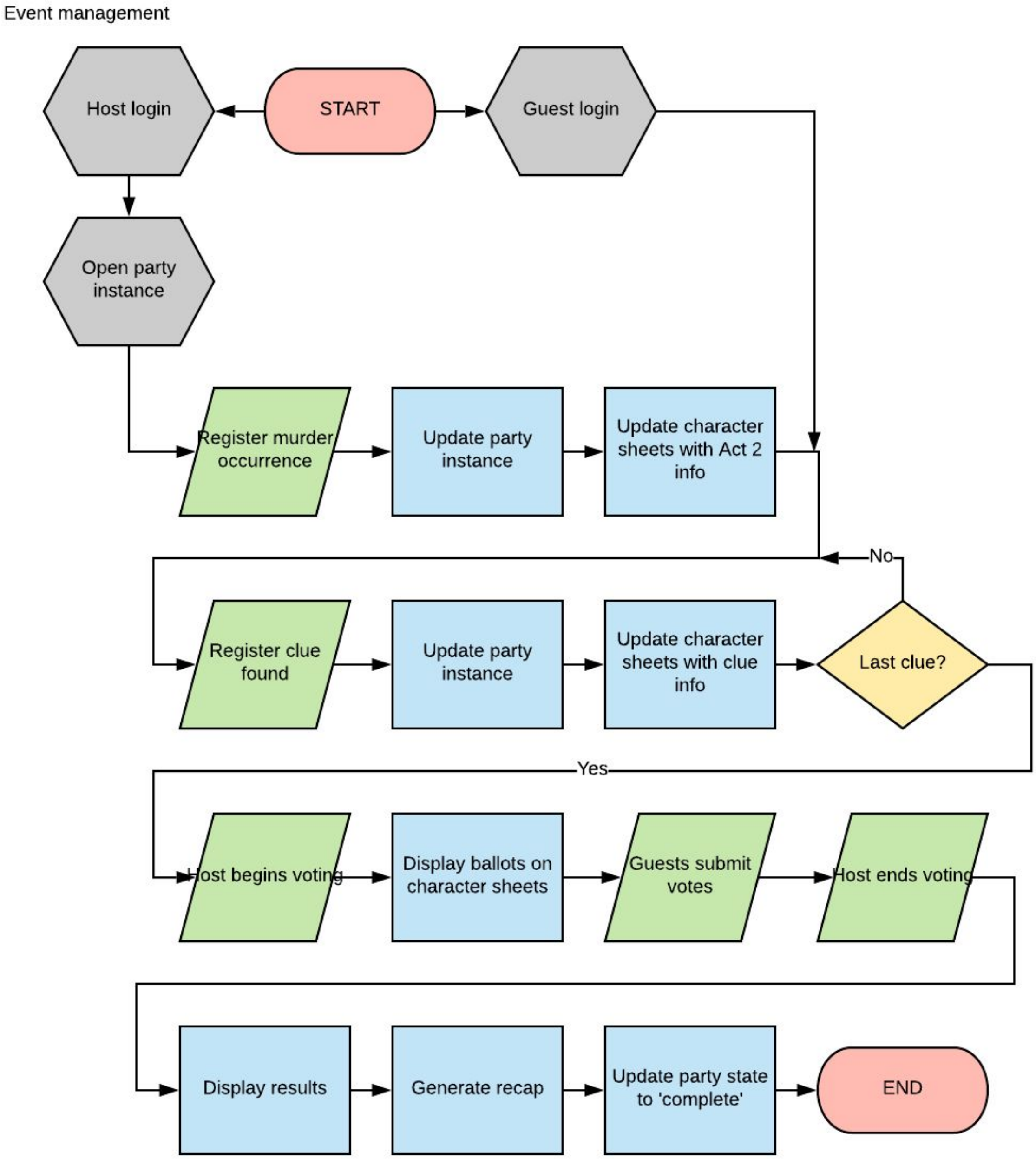

Figure 5: Event management - This diagram details the basic flow of events across any murder mystery party beginning with opening the app for either the guest or host. After each significant event, information according to the new state must be populated on each guest's device. Note that in this chart, guests are able to register clue events by scanning QR codes that have been printed on the clues.