Use Case # [1: Add User]

GENERAL CHARACTERISTICS

Author	Yibing Zhang
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to register a new person to the system.
Preconditions	User has Mobile application installed and registered.
Success Post Condition	The user is successfully registered for
Failed Post Condition	The user is not registered for

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The administrator goes to the administrator page and navigates to the "add a new person" menu
2	The administrator system asks the administrator to fill in the information and then click register.
3	The administrator system sends the information to the server.
4	The server add a new user its database.
5	The user is now registered.

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

1. Server attempt to find and fix issues
    1a. Server is offline
       1. App informs the user that no server is detected
       2. User restarts the server
       3. App reconnects to the server

    1b. Server crash
        1. Server auto restart
           1a. Server fails to auto restart
               1. Mobile app informs the user after 1 minute of no response from the server
            2. User manually restarts server

2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:

1. Mobile app searches for issue

    1a. Mobile app has no network connection

        1. App attempts to connect to wifi to restore connection

            1a. App fails to connect to wifi

                1. The information is stored on the app and queue to send when connection is restored

                2. The app informs the user that it has no network connection.

    2a. Mobile application crashes

        1. Mobile app sends information about the cause of the crash

        2. App attempts to auto restart

            2a. Fails to auto restart

                1. User manually restarts the app

2. App sends information to the server

3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

4a. The user cannot be registered

        1. The input password doesn't match twice

        2. The user is already existing

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Speaker connections restricted to users
	2. Server communications require authentication
	3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	7a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	7b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Not often. It only occurs when there comes a new roommate that wants share this system

OTHER ISSUES

Issue Num	**Issue**
n	1. How will we verify this one is the person that is harmless?
	2. How do we deal with someone who knows the admin password but is someone we don't know?

Use Case # [2: Changing a user's password]

GENERAL CHARACTERISTICS

Author	Jordan Persson
Last Update:	9/23/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to change their user password
Preconditions	User has Mobile application installed and registered.
Success Post Condition	The password has successfully been reset
Failed Post Condition	The password was not reset.

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The user navigates to the profile settings page on the mobile application and clicks "Change Password"
2	The mobile app displays the change password screen and asks the user for their old password, the new password, and to re-enter the new password.
3	The user inputs this information and clicks submit.
4	The mobile app sends the old password and new password to the server.
5	The server confirms that the password matches and sets the new user password.
6	The server sends a confirmation success to the mobile app.
7	The mobile app informs the user that the password has been updated.

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

    1. Server attempt to find and fix issues
      1a. Server is offline
        1. App informs the user that no server is detected
        2. User restarts the server
        3. App reconnects to the server

1b. Server crash
    1. Server auto restart
      1a. Server fails to auto restart
        1. Mobile app informs the user after 1 minute of no response from the server
        2. User manually restarts server
  2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:
   1. Mobile app searches for issue
    1a. Mobile app has no network connection
      1. App attempts to connect to wifi to restore connection
        1a. App fails to connect to wifi
          1. The information is stored on the app and queue to send when connection is restored
          2. The app informs the user that it has no network connection.
      2. App sends information to the server
   2. Mobile application crashes
    1a. Mobile app fails to auto restart
      1. Mobile app sends information about the cause of the crash
      2. User manually restarts the app
      3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

1a. The user is not logged in to the mobile app.
   1. The user selects the forgot password option
   2. The mobile app asks for the user's email associated with the accout.
   3. The user inputs the email.
    3a. The user forgot the email.
      1. The user clicks forgot email.
      2. The mobile asks for the phone number or username associated with the account.
        2a. The user doesn't know this information.
          1. The user must create a new account.
      3. The user inputs the information and clicks submit.
   4. The mobile app sends the information to the server.
    5. The server confirms the information and sends a reset password link to the email for the account.
      5a. Account not found.
        1. The server will tell the mobile app that the information was not associated with a known account.
        2. The mobile app will inform the user that the account was not found.
        3. The user can repeat step 1a.
   6. The user follows that link and resets their password.

3a. The new password and conformation entry do not match
    1. The mobile app informs the user that the passwords do not match.

      2. The user must reenter the passwords and click submit.

3b. The password doesn't met security standards

      1. The mobile app checks the password against its security standards and tells the user what criteria the password is missing.

      2. The user inputs a new password and submits.

5a. The old password doesn't match what is on the server

      1. The server tells the mobile app that the passwords didn't match

      2. The mobile app tells the user that an invalid password was used.

      3. The users inputs new password and submits.

5b. The new password and the old password were the same

      1. The server tells the mobile app that the new and old passwords were the same.

      2. The mobile app tells the user that the new password cannot match the old one.

      3. The user puts in a new password and submits.

SPECIAL REQUIREMENTS

Req Num	Requirement
n	4. Server communications require authentication
	5. Multiple failed reset attempts will cause the server to send a warning email to the email associated with the account.

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	*a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi *b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Often. It would occur as often as the user changes rooms

OTHER ISSUES

Issue Num	Issue
n	3. How many failed attempts should we allow before locking out an account?
	4. How will we encrypt the passwords?

Use Case # [3: Calibrate room boundaries]

GENERAL CHARACTERISTICS

Author	Yibing Zhang
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to calibrate room boundaries to support multiple users have the music and lights on at the same time
Preconditions	User has Mobile application installed and registered. One room is already occupied by someone else
Success Post Condition	Another user walking into a new room that is occupied by another user would not take control of the speaker and light (first come, first serve)
Failed Post Condition	Permission conflict occurs and the later guys takes control of everything

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The user walks into another room that is occupied by another user
2	The mobile app sends a message to the server telling it what room it has entered.
3	The server receives the information and check if the room is occupied by someone else. It sends that speaker's information back to the mobile application.
4	The mobile app receives the speaker information and doesn't connect to the speaker in this room.
5	The previous user still has access to the speaker in his room

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

       1. Server attempt to find and fix issues

         1a. Server is offline

           1. App informs the user that no server is detected

           2. User restarts the server

           3. App reconnects to the server

         1b. Server crash

           1. Server auto restart

             1a. Server fails to auto restart

               1. Mobile app informs the user after 1 minute of no response from the server

2. User manually restarts server
    2. Server requests information from the mobile application and resumes normal functionality
*b At any time the mobile application fails:
    1. Mobile app searches for issue
      1a. Mobile app has no network connection
        1. App attempts to connect to wifi to restore connection
          1a. App fails to connect to wifi
            1. The information is stored on the app and queue to send when connection is restored
            2. The app informs the user that it has no network connection.
      2a. Mobile application crashes
        1. Mobile app sends information about the cause of the crash
        2. App attempts to auto restart
          2a. Fails to auto restart
            1. User manually restarts the app
    2. App sends information to the server
    3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back
4. The user cannot connect to the speaker that is occupied by another user
    1. The user must ensure that the speaker is not occupied
    2. The user will have no connection with any speaker since he walks into a room that is occupied by anther user (he lost connection once he leaves his own room)

SPECIAL REQUIREMENTS

Req Num	Requirement
n	6. Speaker connections restricted to users
	7. Server communications require authentication
	8. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	7a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	7b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Not often. It only occurs when the speaker is broken or the user gets a new speaker

OTHER ISSUES

Issue Num	Issue
n	5. How will we deal with case once the user lost all connections when he walks into an occupied room? Should we let the mobile app keeps looking for the nearest speaker or we force it to stop?
	6. How will the occupied room's information be stored?

Use Case # [4: Disable/ remove speaker]

GENERAL CHARACTERISTICS

Author	Yibing Zhang
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to remove or disable a speaker
Preconditions	User has Mobile application installed and registered. Music source is in the system.
Success Post Condition	The speaker is successfully removed
Failed Post Condition	The speaker remains in the system

MAIN SUCCESS SCENARIO (or basic flow)

Step	**Action -** description in words of each step in success scenario
1	The user uses the mobile application and navigates to the "remove a device" menu
2	The mobile app displays the options of devices to remove
3	The user selects the speaker option.
4	The mobile app instructs the user to navigate the speaker and then click remove.
5	The mobile app sends the information to the server.
6	The server removes the speaker from its database.
7	The speaker is now removed.

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

       1. Server attempt to find and fix issues

          1a. Server is offline

             1. App informs the user that no server is detected

             2. User restarts the server

             3. App reconnects to the server

          1b. Server crash

             1. Server auto restart

                1a. Server fails to auto restart

                   1. Mobile app informs the user after 1 minute of no response from the server

                2. User manually restarts server

    2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:

    1. Mobile app searches for issue

      1a. Mobile app has no network connection

         1. App attempts to connect to wifi to restore connection

           1a. App fails to connect to wifi

             1. The information is stored on the app and queue to send when connection is restored

             2. The app informs the user that it has no network connection.

      2a. Mobile application crashes

         1. Mobile app sends information about the cause of the crash

         2. App attempts to auto restart

           2a. Fails to auto restart

             1. User manually restarts the app

    2. App sends information to the server

    3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

4a. The user cannot find the speaker

      1. The user must ensure that the speaker is in the system

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Speaker connections restricted to users
	2. Server communications require authentication
	3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	7a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	7b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Not often. It only occurs when the speaker is broken or the user gets a new speaker

OTHER ISSUES

Issue Num	Issue
n	1. How will device be located? 2. What will we do once we remove a device? Should we have an alternative or reset the room boundaries? 3. What if we remove a device that is currently used by another user?

Use Case # [5: Manually lights on and off via Amazon Dash buttons]

GENERAL CHARACTERISTICS

Author	John Clarke
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to manually turn on and off lights in a given room via specific Amazon Dash buttons
Preconditions	User has Mobile application installed and registered. User has at least one Amazon Dash button and one connected light source that the button is mapped to.
Success Post Condition	After pushing the Amazon Dash button, the light is now off it was on prior to pressing the button or the light is now on if it was previously off.
Failed Post Condition	The light source has the same state as it did prior to pressing the Amazon Dash button

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The User has entered a room equipped with an Amazon Dash button and a controllable light source
2	The User presses the Amazon Dash button.
3	The light source is now on if it was off prior to pressing the Amazon Dash button or is now off it was on prior to pressing the Amazon Dash button

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

    1. Server attempt to find and fix issues

      1a. Server is offline

        1. App informs the user that no server is detected

        2. User restarts the server

        3. App reconnects to the server

      1b. Server crash

        1. Server auto restart

          1a. Server fails to auto restart

            1. Mobile app informs the user after 1 minute of no response from the server

2. User manually restarts server
2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:
1. Mobile app searches for issue
  1a. Mobile app has no network connection
    1. App attempts to connect to wifi to restore connection
    1a. App fails to connect to wifi
      1. The information is stored on the app and queue to send when connection is restored
      2. The app informs the user that it has no network connection.
  2a. Mobile application crashes
    1. Mobile app sends information about the cause of the crash
    2. App attempts to auto restart
      2a. Fails to auto restart
        1. User manually restarts the app
2. App sends information to the server
3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

3A. The controllable light source is not mapped to the desired light source
1. The User notifies the administrator of the central server
2. The administrator readjusts the mapping of the specific Amazon Dash button to the specific light source
3B. The light source does not switch states after pressing the Amazon Dash button
1. The User notifies the administrator who readjusts the mapping
3C. Amazon Dash button is not connected to the local wifi network.
1. The User uses Amazon app to connect Amazon Dash button to wifi

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Light connections restricted to users 2. Server communications require authentication 3. The Amazon Dash button is connected to the local wi-fi network 4. Each Amazon Dash Button is mapped to a specific light source by the administrator of the central server

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	2a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	2b. Keyboard is required to restart server as admin passwords would be needed
	3a. The Amazon Dash button must be connected to the local wifi network.
	3b. The Amazon Dash button must be modified to respond to systems not provided and serviced by Amazon.

FREQUENCY OF OCCURRENCE: Common but not necessarily often

OTHER ISSUES

Issue Num	Issue
1.	How is the Amazon Dash button modified to respond to systems other than that provided by Amazon?

Use Case # [6: Turning off the light as you leave a room]

GENERAL CHARACTERISTICS

Author	Jordan Persson
Last Update:	9/23/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants for their lights to turn off as they leave a room.
Preconditions	User has Mobile application installed and registered.
Success Post Condition	The light registered for the room the user just left has turned off.
Failed Post Condition	The light registered for the room the user just left remains on.

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The user walks out of a room.
2	The mobile app sends a message to the server telling it what room it has just left.
3	The server receives the information and finds the light/lights registered for that room.
4	The server sends a signal to those lights to turn off.
5	The lights are now off in the old room.

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

    1. Server attempt to find and fix issues

       1a. Server is offline

         1. App informs the user that no server is detected

         2. User restarts the server

         3. App reconnects to the server

       1b. Server crash

         1. Server auto restart

           1a. Server fails to auto restart

             1. Mobile app informs the user after 1 minute of no response from the server

2. User manually restarts server
5. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:
1. Mobile app searches for issue
1a. Mobile app has no network connection
1. App attempts to connect to wifi to restore connection
1a. App fails to connect to wifi
1. The information is stored on the app and queue to send when connection is restored
2. The app informs the user that it has no network connection.
2a. Mobile application crashes
1. Mobile app sends information about the cause of the crash
2. App attempts to auto restart
2a. Fails to auto restart
1. User manually restarts the app
2. App sends information to the server
3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

3a. No light is found for that room
1. The system makes a note of the missing light and sends it to the mobile app
2. The Mobile app stores this information in order to offer suggestions to the user at a later time.
4a. Lights fail to turn off
1. Server tries to find error
1a. Light is not connected to the server
1. The server notes the communication error and sends it to the mobile app
2. The mobile app informs the user that the lights are not connected to the server
3. The user connects the light to the system
1b. Light is connected but fails to turn off
1. The server informs the mobile app of the error
2. The mobile app tells the user that the light isn't functioning
2. The user disconnects and reconnects the light to the system
2. The light is recalibrated and attempts to turn off again.
2a. The light still won't work with the system
1. The system tell the mobile app the lights may be faulty.
2. The mobile app tells the user that the lights may need to be replaced
3. User replaces the lights, disconnects the old lights and connects the new ones to the system

SPECIAL REQUIREMENTS

Req Num | **Requirement**

n
1. Light connections restricted to users
2. Server communications require authentication
3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num | **Variation**

n
2a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
2b. Keyboard is required to restart server as admin passwords would be needed
4a. Lights must be connected to the server or have a switch connected to the server

FREQUENCY OF OCCURRENCE: Often. It would occur as often as the user changes rooms

OTHER ISSUES

Issue Num | **Issue**

n
1. How will be approach device authentication?
2. How will the light's information be stored?
3. Should there be dead times to prevent accidentally turning on the lights when they wouldn't be needed?

Use Case # [7: Turning on light bulb by entering a room]

GENERAL CHARACTERISTICS

Author	John Clarke
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants a light source in room to be turned on upon entering the room
Preconditions	User has Mobile application installed and registered. Light source in room to be entered is not currently on
Success Post Condition	The light source is turned on upon entering the room.
Failed Post Condition	The light source in room that user has entered is not turned on.

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The user walks into a new room that has no connected light source currently on
2	The mobile app sends a message to the server telling it what room it has entered.
3	The server receives the information and determines which light source to turn on.
4	The server turns on the specific light source for that room.

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

        1. Server attempt to find and fix issues

          1a. Server is offline

            1. App informs the user that no server is detected

            2. User restarts the server

            3. App reconnects to the server

          1b. Server crash

            1. Server auto restart

              1a. Server fails to auto restart

                1. Mobile app informs the user after 1 minute of no response from the server

              2. User manually restarts server

        2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:
    1. Mobile app searches for issue
      1a. Mobile app has no network connection
        1. App attempts to connect to wifi to restore connection
          1a. App fails to connect to wifi
            1. The information is stored on the app and queue to send when connection is restored
            2. The app informs the user that it has no network connection.
      2a. Mobile application crashes
        1. Mobile app sends information about the cause of the crash
        2. App attempts to auto restart
          2a. Fails to auto restart
            1. User manually restarts the app
    2. App sends information to the server
    3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

1A. Light source is manually turned on through app before entering room
    1. Server determines that light source is already on by app manual override
    2. No changes are made to light source's status
1B. Light source is manually turned on through Amazon Dash button
    1. Server determines that light source was manually turned on by Amazon Dash button override
    2. No changes are made to light source's status
1C. Multiple light sources are to be turned on when user enters room
    1. User enters a specific room that contains multiple light sources
    2. Upon entering, the app communicates with the central server
    3. Server determines which light sources are in the room
    4. Server turns on all light sources that are contained in the room

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Light connections restricted to users 2. Server communications require authentication 3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	2a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	2b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Often. It would occur as often as the user changes rooms

OTHER ISSUES

Issue Num	Issue
1.	If light is turned on by one process, should it be turned off by the same process?
2.	Are Users limited to only one connected light source per room?
3.	If Users can have multiple light sources per room, can only one light source be turned on by entering the room?

Use Case # [8: Disable/ remove speaker]

GENERAL CHARACTERISTICS

Author	Yibing Zhang
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to remove or disable a speaker
Preconditions	User has Mobile application installed and registered. Music source is in the system.
Success Post Condition	The speaker is successfully removed
Failed Post Condition	The speaker remains in the system

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The user uses the mobile application and navigates to the "remove a device" menu
2	The mobile app displays the options of devices to remove
3	The user selects the speaker option.
3	The mobile app instructs the user to navigate the speaker and then click remove.
4	The mobile app sends the information to the server.
5	The server removes the speaker from its database.
6	The speaker is now removed.

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

          1. Server attempt to find and fix issues

        1a. Server is offline

          1. App informs the user that no server is detected

          2. User restarts the server

          3. App reconnects to the server

        1b. Server crash

          1. Server auto restart

            1a. Server fails to auto restart

              1. Mobile app informs the user after 1 minute of no response from the server

          2. User manually restarts server

2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:

 1. Mobile app searches for issue

  1a. Mobile app has no network connection

   1. App attempts to connect to wifi to restore connection

    1a. App fails to connect to wifi

     1. The information is stored on the app and queue to send when connection is restored

     2. The app informs the user that it has no network connection.

  2a. Mobile application crashes

   1. Mobile app sends information about the cause of the crash

   2. App attempts to auto restart

    2a. Fails to auto restart

     1. User manually restarts the app

 2. App sends information to the server

 3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

5a. The user cannot find the speaker

 1. The user must ensure that the speaker is in the system

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Speaker connections restricted to users
	2. Server communications require authentication
	3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	7a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	7b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Not often. It only occurs when the speaker is broken or the user gets a new speaker

OTHER ISSUES

Issue Num | **Issue**

n
1. How will device be located?
2. What will we do once we remove a device? Should we have an alternative or reset the room boundaries?
3. What if we remove a device that is currently used by another user?

Use Case # [9: Remove user]

GENERAL CHARACTERISTICS

Author	Yibing Zhang
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to remove or disable a speaker
Preconditions	User has Mobile application installed and registered. User is in the system.
Success Post Condition	The user is successfully removed
Failed Post Condition	The user remains in the system

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The administrator goes to the administrator page and navigates to the "remove a user" menu
2	The page displays the options of users to remove
2	The page instructs the administrator to navigate the user and then click remove.
4	The administrator system sends the information to the server.
5	The server removes the user from its database.
6	The user is now removed.

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

        1. Server attempt to find and fix issues

           1a. Server is offline

              1. App informs the user that no server is detected

              2. User restarts the server

              3. App reconnects to the server

           1b. Server crash

              1. Server auto restart

                  1a. Server fails to auto restart

1. Mobile app informs the user after 1 minute of no response from the server
2. User manually restarts server
2. Server requests information from the mobile application and resumes normal functionality
*b At any time the mobile application fails:
1. Mobile app searches for issue
1a. Mobile app has no network connection
1. App attempts to connect to wifi to restore connection
1a. App fails to connect to wifi
1. The information is stored on the app and queue to send when connection is restored
2. The app informs the user that it has no network connection.
2a. Mobile application crashes
1. Mobile app sends information about the cause of the crash
2. App attempts to auto restart
2a. Fails to auto restart
1. User manually restarts the app
2. App sends information to the server
3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back
5a. The user cannot be removed
1. The user must ensure that he is in the system
2. administrator cannot be removed

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Speaker connections restricted to users
	2. Server communications require authentication
	3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	7a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	7b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Not often. It only occurs when the person doesn't live in this house

OTHER ISSUES

Issue Num	Issue
n	1. How will administrator be authenticated (if the password leaks out)? 2. How do we deal with the case administrator will be removed?

Use Case # [10: Turning off speaker by leaving a room]

GENERAL CHARACTERISTICS

Author	John Clarke
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants for their music to follow them as they change rooms by connecting to different speakers depending on location.
Preconditions	User has Mobile application installed and registered.
	User is in a room that has a speaker currently playing music
	User has another speaker in separate room
Success Post Condition	Speaker in room that User is leaving is no longer playing music
Failed Post Condition	The speaker in room that User has left is still playing music.

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The User is in a room with a speaker that is currently playing music
2	The User leaves room that has speaker currently playing music
3	The mobile app connects to a speaker in the new room that is closer to the User than the previous speaker
4	Speaker in previous room stops playing music

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

        1. Server attempt to find and fix issues

           1a. Server is offline

               1. App informs the user that no server is detected

               2. User restarts the server

               3. App reconnects to the server

1b. Server crash
    1. Server auto restart
        1a. Server fails to auto restart
            1. Mobile app informs the user after 1 minute of no response from the server
        2. User manually restarts server
    2. Server requests information from the mobile application and resumes normal functionality
*b At any time the mobile application fails:
    1. Mobile app searches for issue
        1a. Mobile app has no network connection
            1. App attempts to connect to wifi to restore connection
                1a. App fails to connect to wifi
                    1. The information is stored on the app and queue to send when connection is restored
                    2. The app informs the user that it has no network connection.
        2a. Mobile application crashes
            1. Mobile app sends information about the cause of the crash
            2. App attempts to auto restart
                2a. Fails to auto restart
                    1. User manually restarts the app
    2. App sends information to the server
    3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back
3a. No speaker is found for that room, speaker to play to is already in use, speaker is turned off
    1. The system tells the mobile app that no new speaker is available
    2. The mobile app remains connected to the old speaker

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Speaker connections restricted to users
	2. Server communications require authentication
	3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	2a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi 2b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Often. It would occur as often as the user changes rooms

OTHER ISSUES

Issue Num	Issue
n	1. How will device be authentication? 2. How will the speaker's information be stored?

Use Case # [11: Turning on speaker by leaving a room]

GENERAL CHARACTERISTICS

Author	Jordan Persson
Last Update:	9/23/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants for their music to follow them as they change rooms by connecting to different speakers depending on location.
Preconditions	User has Mobile application installed and registered. User is playing music
Success Post Condition	Any previously connected speakers are disconnected. The new closest speaker is connected and music continues to play through it.
Failed Post Condition	The closest speaker is not connected to the phone and not playing their music.

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	The user walks into a new room
2	The mobile app sends a message to the server telling it what room it has entered.
3	The server receives the information and finds the speaker registered for that room. It sends that speaker's information back to the mobile application.
4	The mobile app receives the speaker information and locates new speaker through bluetooth and connects to it.
5	New speaker is now playing music

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

    1. Server attempt to find and fix issues

      1a. Server is offline

        1. App informs the user that no server is detected

        2. User restarts the server

        3. App reconnects to the server

      1b. Server crash

        1. Server auto restart

          1a. Server fails to auto restart

            1. Mobile app informs the user after 1 minute of no response from the server

        2. User manually restarts server

    2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:

    1. Mobile app searches for issue

      1a. Mobile app has no network connection

        1. App attempts to connect to wifi to restore connection

        1a. App fails to connect to wifi

          1. The information is stored on the app and queue to send when connection is restored

          2. The app informs the user that it has no network connection.

      2a. Mobile application crashes

        1. Mobile app sends information about the cause of the crash

        2. App attempts to auto restart

         2a. Fails to auto restart

          1. User manually restarts the app

    2. App sends information to the server

    3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

3a. No speaker is found for that room

    1. The system tells the mobile app that no new speaker is available

    2. The mobile app remains connected to the old speaker

4a. Speaker is already connected to another bluetooth device

    1. The mobile app informs user that the speaker is currently in use

    2. User disconnects other device from the speaker

    3. mobile app connects to speaker

      3a. fails to connect to speaker

        1. reconnects to old speaker

4b. Speaker is offline

    1. The mobile app informs the user that the speaker is offline

    2. User powers on the speaker

    3. Mobile app connects to speaker

      3a.fails to connect to speaker

        1. reconnects to old speaker

SPECIAL REQUIREMENTS

Req Num | **Requirement**

n
1. Speaker connections restricted to users
2. Server communications require authentication
3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num | **Variation**

n
2a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
2b. Keyboard is required to restart server as admin passwords would be needed

FREQUENCY OF OCCURRENCE: Often. It would occur as often as the user changes rooms

OTHER ISSUES

Issue Num | **Issue**

n
1. How will be approach device authentication?
2. How will the speaker's information be stored?
3. Should there be dead times to prevent accidental connect late at night?

Use Case # [12: turn light on/off and control brightness]

GENERAL CHARACTERISTICS

Author	John Clarke
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Server; Mobile Application
Stakeholders and Interests	Mobile App User: Wants to modify the brightness of the light source of current room
Preconditions	User has Mobile application installed and registered. User has app installed and a controllable light source
Success Post Condition	The User can turn on or off a light and vary the brightness.
Failed Post Condition	The light source does not turn on if app has light setting at level greater than zero or light is still on when app has light setting at zero or brightness does not visibly changed when app changes brightness setting

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	User has app open
2	User goes to light setting for specific light source
3	User manipulates the light intensity setting
4	Light is off if light intensity setting is at zero or light is on if light setting is greater than zero or intensity of light source has changed relative to the change in the light source intensity setting

EXTENSIONS or Alternate Flows

Step	Branching Action
n..m	*a At any time the server fails:

       1. Server attempt to find and fix issues

         1a. Server is offline

           1. App informs the user that no server is detected

           2. User restarts the server

           3. App reconnects to the server

         1b. Server crash

           1. Server auto restart

             1a. Server fails to auto restart

               1. Mobile app informs the user after 1 minute of no response from the server

             2. User manually restarts server

      2. Server requests information from the mobile application and resumes normal functionality

*b At any time the mobile application fails:
    1. Mobile app searches for issue
      1a. Mobile app has no network connection
        1. App attempts to connect to wifi to restore connection
          1a. App fails to connect to wifi
            1. The information is stored on the app and queue to send when connection is restored
            2. The app informs the user that it has no network connection.
      2a. Mobile application crashes
        1. Mobile app sends information about the cause of the crash
        2. App attempts to auto restart
          2a. Fails to auto restart
            1. User manually restarts the app
    2. App sends information to the server
    3. Mobile app sends its information to the server and reestablishes connections based on what the server sends back

2A. Desired light source is not listed on app
    1. Administrator adds light source to list of controllable light sources
4A. Brightness does not change when intensity setting is manipulated
    1. User checks that light is capable of adjusting brightness
    2. Administrator removes and re-adds light source to list

SPECIAL REQUIREMENTS

Req Num	Requirement
n	1. Light connections restricted to users
	2. Server communications require authentication
	3. Server communication allowed outside of the local network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	2a. Communications are done over a wireless network so server would need internet and mobile device would need mobile data or be connected to wifi
	2b. Keyboard is required to restart server as admin passwords would be needed

5A. Light source must be capable of adjusting brightness

FREQUENCY OF OCCURRENCE: Common but not necessarily often

OTHER ISSUES

Issue Num	Issue
1.	Do all connected lights have to be able have their brightness adjusted? What type of light source allows this?
2.	If some light sources aren't required to be able to adjust their light source, how are they treated separately from the adjustable light sources by the server?

Use Case # [13: Add Dash Button]

GENERAL CHARACTERISTICS

Author	Michael Friend
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Mobile Application, Automation System, Amazon Dash Button
Stakeholders and Interests	Mobile App User: wants to add a dash button
Preconditions	System is set up and the target light is added to the system (UseCase Add Light), User is authenticated
Success Post Condition	Dash button has been sucessfully added to the system to control target light
Failed Post Condition	Dash button is not added and user is notified of the error that occurred.

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	User begins Dash Button set up in Amazon app, stopping at the "Choose a product step"
2	User enters Dash Button setup mode on Hokie Home app.
3	User presses Amazon Dash button, to set it up with Hokie Home System.
4	System discovers Dash button and user is taken to the light selector screen
5	User selects the light to pair with the Dash button and the system pairs it with the dash button

EXTENSIONS or Alternate Flows

Step   **Branching Action**

2a   App cannot connect to server
1. Display message to user informing them of error. Suggest phone is not connected to home network or server isn't on.
2. Leave Dash setup screen in app

2b   System has no registered lights
1. Tell user to setup at least one light before setting up any buttons.

4a   Server does not discover Dash button after X seconds
1. Exit dash setup mode and tell user the button was not found, suggesting a retry and possible sources of error.

5a   User doesn't select light and app closes (home pressed, app crash, etc.)
   1. Save button without paring with a light.

SPECIAL REQUIREMENTS

Req Num	Requirement
1	Only authenticated users can add a button

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
1	Communication between mobile app and server is done over local network

FREQUENCY OF OCCURRENCE: Few times, almost all done at beginning of home system set up.

OTHER ISSUES

Issue Num	Issue
n	N/A

Use Case # [14: Remove Light]

GENERAL CHARACTERISTICS

Author	Michael Friend
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Mobile Application, Automation System, Connectable Light
Stakeholders and Interests	Mobile App User: wants to remove a light
Preconditions	User is authenticated
Success Post Condition	Light has been removed from the system
Failed Post Condition	Light is still in the system with previous room and button associations. Same state as precondition

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	User enters available lights screen.
2	User hits settings, then remove on the target light
3	System removes light and light leaves the list on mobile app.

EXTENSIONS or Alternate Flows

Step	Branching Action
1a	No lights display because there are no lights in the system.
	1. Settings button not available so user can do nothing on dash button screen.
3a	System unable to remove light
	1. Report error to user.

SPECIAL REQUIREMENTS

Req Num	Requirement
1	Each light button in list should have it's own options menu

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	N/A

FREQUENCY OF OCCURRENCE:Very rarely if at all

OTHER ISSUES

Issue Num	Issue
n	N/A

Use Case # [15: Add Light]

GENERAL CHARACTERISTICS

Author	Michael Friend
Last Update:	9/25/2017
Scope	Home Automation System
Level	User
Status	Incomplete Conceptualization
Primary Actor	User on Mobile App
Secondary Actors	Mobile App, Automation System, Connectable Light
Stakeholders and Interests	Mobile App User: Wants to add light to system.
Preconditions	Light is plugged in
Success Post Condition	Light has been added to system and can be controlled through the app and by proxmity detection
Failed Post Condition	Light is not added to system and returns to precondition state.

MAIN SUCCESS SCENARIO (or basic flow)

Step	**Action -** description in words of each step in success scenario
1	User plugs in light and connects it to the network (method TBD)
2	User enters light discovery mode on app.
3	System identifies not set up light and presents it to the user.
4	User selects light and gives it a name and room.
5	Server registers light and adds it to the system.

EXTENSIONS or Alternate Flows

Step	**Branching Action**
1a	Light fails to connect to network
	1. Inform user of error and prompt to try again
3a	System finds no lights
	1. Exit light discovery mode and tell user to retry
4a	User enters invalid name/room
	1. Tell user to enter valid name/room

SPECIAL REQUIREMENTS

Req Num | **Requirement**

1   Light needs simple way to connect to the network

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num | **Variation**

1   Light is controlled by Raspberry Pi

FREQUENCY OF OCCURRENCE: Few times, almost all done at beginning of home system set up.

OTHER ISSUES

Issue Num | **Issue**

1   Method of connecting light to the network will be decided in a later revision

Use Case # [16: Remove Dash Button]

GENERAL CHARACTERISTICS

Author	Michael Friend
Last Update:	9/25/2017
Scope	Home Automation System
Level	User-goal
Status	Incomplete Conceptualization
Primary Actor	Mobile Application User
Secondary Actors	Mobile Application, Automation System, Amazon Dash Button
Stakeholders and Interests	Mobile App User: wants to remove a dash button
Preconditions	User is authenticated
Success Post Condition	Dash button has been removed from the system
Failed Post Condition	Dash button is still in the system with previous light associations. Same state as precondition

MAIN SUCCESS SCENARIO (or basic flow)

Step	Action - description in words of each step in success scenario
1	User enters available buttons screen.
2	User hits settings, then remove on the target button
3	System removes button and button leaves the list on mobile app.

EXTENSIONS or Alternate Flows

Step	Branching Action
1a	No buttons display because no buttons in the system.
	1. Settings button not available so user can do nothing on dash button screen.
3a	System unable to remove dash button
	1. Report error to user.

SPECIAL REQUIREMENTS

Req Num	Requirement
1	Each dash button in list should have it's own options menu

TECHNOLOGY AND DATA VARIATIONS LIST

Var Num	Variation
n	N/A

FREQUENCY OF OCCURRENCE: Very rarely if at all

OTHER ISSUES

Issue Num	Issue
n	N/A