1. Introduction

The Home Wizard 9000 is an app which controls the locks, lights and thermostat of the house. These devices are linked with the app and they can be switched on or off depending on the user's wish. This app shows the history of the devices after they are being used. Users can create profiles in order to control the devices automatically for differsent time.

2. Method

H1.Visibility of system status - What's going on?

H2.Match between system and real world - Are terms and metaphors speaking the user's language? Are they familiar?

H3.User control and freedom - Is it clear how to navigate? Are there clearly marked exits? Can we change our minds?

H4.Consistency and standards - Does it follow platform conventions? Is the design consistent throughout the app?

H5.Help users recognize, diagnose, recover from errors - Is there clear feedback on what happened and what to do next?

H6.Error prevention - Is the design trying to prevent errors?

H7.Recognition rather than recall - Does the design minimize the user's memory load? Are objects, actions, options, and instructions visible?

H8.Flexibility and efficiency of use - Are there accelerators for frequent users? Can it be customized, personalized?

H9.Aesthetic and minimalist design - Is everything you see relevant? Are the visual layout principles followed (contrast, repetition, alignment and proximity)?

H10.Help and documentation - Are tips, help, FAQ provided?

Nielsen's scale

0 = I don't agree that this is a usability problem at all

1 = Cosmetic problem only - need not be fixed unless extra time is available on the project

2= Minor usability problem - fixing this should be given low priority

3 = Major usability problem - important to fix, so should be given high priority

4= Usability catastrophe - imperative to fix this before product can be released

3. Findings

3.1   [H4-Consistency and Standards] [Severity 3]

Problem

The bulb icon was toggled to turn on the kitchen bulb in the lights section under devices screen. But when you navigate to the history page of the kitchen bulb, the bulb icon remains switched off. This seems to be confusion because we already switched on the bulb in the previous page.

Reasoning behind the severity rating

This is a major problem which needs to be implemented in the back end of the system. It is important for not to cause confusions when the functionalities are working. If this problem is not fixed, the user can get easily confused when analyzing history of many devices (bulbs) at the same time.

Fix

You can either remove the bulb icon from that page or indicate the user that the light is currently ON or OFF by text displayed in that page.

3.2   [H3-User control and freedom][Severity 4]

Problem

After selecting side arrow belonging to kitchen bulb, we could see the history of the kitchen bulb. In this page we could select the gear-like icon which takes you to the profiles page. The back button located in the top left corner should take the user to the previous page where the history of the bulb was shown. But in this case if we select that back button, we are been directed to a different page called side door, which is not the page that we came from.

Reasoning behind the severity rating

This is a major design flaw which needs to be fixed with high priority. The reason is that once the user navigates to a different page he or she might get lost and does not know what the system is trying to do. This is not a flaw which can be ignored because it is a problem with the navigation of different screens of the app.

Fix

The back end of the system should be checked to fix the logical flow from different screens. When the back button in the profiles page of automate section is clicked, the button should take back the user to the kitchen bulb page.

3.3   [H6-Error Prevention][Severity 2]

Problem

Once you navigate to the side door Automate page, you can see create section where you can ideally create the profile to control the side door automatically. After you perform the time setup in that page you wish to go back to the previous pages to check whether bulbs are ON or the doors locked. Now you click on the back button without clicking on the save button. At this instance the app does not prompt the user with a message asking whether to save the profile or not. Hence the app does not prevent errors at this point.

Reasoning behind the severity rating

This becomes a minor flaw in the design of the app as long as the data selected by the user get automatically saved in the system. But it is important for the developers to pay attention to this flaw because data can be lost easily.

Fix

If the user does not save the profile, a message prompting the user to save the profile should appear in that page. Another way is that the system should notify the user that the profile created has been automatically saved.

3.4 [H3-User control and freedom][Severity 3]

Problem

When you click on the thermostat in the devices screen just after clicking on the login button, you are directed to a dialog box with "Add New device" and "Logout" options. Here we could notice that there is a flaw in the logical design of the app. Actually, the user needs to see the thermostat devices available in the house but not the message box showing different options to select.

Reasoning behind the severity rating

This is a major defect which needs to be re-implemented in the back end of the system. It is important for not to cause confusion when the functionalities. If this problem is not fixed, the user can be lost while using the app and can change the other settings of the app which can cause a catastrophe.

Fix

You could fix this problem by checking the back end of the system. When you click on the thermostat the dialog box showing "Add New device" and "Logout" options should not appear. The app should show the thermostat device of the house.

3.5 [H5-Help users recognize, diagnose, recover from errors][Severity 4]

Problem

If the user click on the back button of the automate page after visiting the thermostat device page, he gets directed to a different page called side door page. This is not the page which is supposed to appear after the click. Ideally, it should take the user to the thermostat page. In this case there are no error messages prompted.

Reasoning behind the severity rating

This is a major problem which leads the user to wrong page and should be prioritized when re-implementing the system. Ideally the back button should perform the correct functionality by

taking the user to the proper page where he previously visited. Since this is not properly performed the user can get annoyed to figure out the page he came from (visited page). Hence it is required to fix that problem.

Fix

This problem can be fixed by properly fixing the links to different pages in the app. If this is hard to implement, the app can ask the user on which page to navigate back by providing a list of pages.

3.6 [H2-Match between system and real world][Severity 1]

Problem

It would much more good if the temperature control for thermostat could be a rotating circle-like tool instead of a seek bar that is currently present. Usually the mechanical thermostat controllers at homes are round shaped and have indications on top of it. These can be rotated if we want to increase or decrease the temperature. It would be much more convenient if the user is provided with the round shaped controller to control the temperature in the app because it matches the system with real world.

Reasoning behind the severity rating

This is not a problem which has to be prioritized but it would be nicer if the tools in the system match with the real world tools. If there is enough time, you could re-implement this feature. But it is important that there has to be some indications saying that the user could increase or decrease the temperature of the app by seeking the seek bar back and forth.

Fix

You could change the seek bar into a rotating seek bar indicating colors just like the current design. You could also add some indications to select the frequently used temperatures.

3.7   [H2-Match between system and real world][Severity 2]

Problem

The reset password prompts the user to type "Home Wizard" in the text box if the user needs to reset the password. Ideally in real world applications, the reset password page prompts the user to input the old password and the new password. Then the user is required to confirm it twice. This is not happening at this point. If the page itself says reset password, then it required for system to perform the reset password action rather than instructing the user to do some other action.

Reasoning behind the severity rating

We can see that the user is been taken to the first page of the Home Wizard app after typing " Home Wizard" in the reset password page. Here the user is not instructed to create a new password for the system. Hence the user does not know when to create the new password for the app. It causes an ambiguity with the different steps taken.

Fix

Prompt the user to input old password and assign a new password in the reset password page.

3.8   [H10- Help and documentation][Severity 2]

Problem

When you add new device to the app to get synced, the user is instructed to press the hardware button on the device. Even though the device is independent from the app before getting synced with the app, the instruction provided in that page is not sufficient enough for the user to find hardware button in the device. The hardware button can be located anywhere depending on the device that is installed. The instruction is not specific on the location of the hardware button in the device that has to be synced with the app. Therefore this page should show some tips on the exact location of the hardware button of the device.

Reasoning behind the severity rating

The user needs specific instruction to perform the action required. If the instruction is not clear then it would cause confusion and unnecessary ambiguity. This a minor fix with the device and the application. This flaw does not affect the other part of the application.

Fix

A message box (tip) should be shown to the user stating the location of the hardware button of the device your phone is scanning. Another way to fix this problem is to allow the app to automatically scan and detect the device without the need of pressing any hardware button.

3.9　　[H4-Consistency and Standards] [Severity 3]

Problem

You would notice that there are separate screens to display the usage history of the kitchen bulb and the side door lock. However, there is no separate page to display the history of the thermostat just like it was displayed for other devices. Even though the usage history of the thermostat is displayed in the profiles section, the consistency and the standards of the page is violated.

Reasoning behind the severity ratings

This problem may cause the user to perform additional step to find the usage history of thermostat. So it is important the system provides a robust usability for first time users. Furthermore, the system should not keep the user to search the things that he is looking for.

Fix

The displaying of history content for thermostat should be redesigned and put into the same page where the thermostat is controlled. This has to be done just like the pages shown to check the usage history of kitchen bulb and side door.

Summary

Method	Problem	Fix/solution
3.1 Consistency and Standard	In the kitchen bulb usage history page, the bulb icon is not turned after you turn on from its previous page (Devices->lights).	Remove the bulb icon from the usage history page or indicate the user that the light is currently ON or OFF by text displayed in that page.
3.2 User control and freedom	Wrong screen navigation when we go back from profile	The screen should take back to the proper page where the

	screen after vising kitchen bulb usage history. The screen takes to a side door history screen. This is not the correct page. It should take the user to kitchen bulb usage screen.	user already came from.
3.3 Error Prevention	There is no message popped up to save the content of that page when the user try to go back while creating the profile to control the devices automatically	A message should pop up when the user tries to go to a different page. The message should request the user to save the content.
3.4 User control and freedom	A dialog box with options called "Add new device" and "Logout" prompts the user when you click on thermostat after navigating the app from the start	The dialog box should not appear. Thermostat devices should show up instead of the dialog box.
3.5 Help users recognize, diagnose, recover from errors	Wrong screen navigation when we go back from the profile screen after vising thermostats screen. This is not the correct page. It should take us to thermostats devices screen when back button is clicked	Back button should be navigated to thermostat devices screen. The links between pages should be properly mapped in each page.
3.6 Match between system and real world	The seek bar to control the thermostat is not a proper match with the real world circle like thermostat controller. Users are usually familiar with designs that are	Seek bar which is used to control the thermostat should be replaced with a circle like controller with proper heat indications.

	associated with real world objects	
3.7 Match between system and real world	The password reset page does not prompt the user to enter the new password. Usually a user may interpret the page as reset password where he is required to input a new password.	Since the new password is not prompted, the system should request the user to input a new password in the reset password page.
3.8 Help and documentation	No help or any tip provided to find the hardware button of the device you are scanning	Allow automatically access the device or provide help or any tip for user to find the hardware button in the device
3.9 Consistency and Standards	The format of the thermostat page has to be redesigned because it does not follow the same format or standard of the kitchen bulb or side door page. The thermostats page does not show the usage history whereas it is shown in a different page.	Need to redesign the pages with consistency and same standard.