Bachelor's Thesis Experiment Questionnaire

Topic of bachelor thesis: *From Cloud to Open-Source: Evaluating Home Assistant's Potential for a Privacy-Safe and Sustainable Alternative to Cloud-Based Smart Home Systems*

Available at: https://github.com/dir-rafa/Bachelor-thesis-Home-Assistant

Participant Information and Consent

Introduction

Thank you for participating in this experiment. The goal of this study is to evaluate the user experience involved in assembling a Raspberry Pi and installing Home Assistant on it.

Purpose

The information gathered from this questionnaire will help in understanding the challenges and ease associated with the assembly and installation process of a Raspberry Pi and Home Assistant for users with varying levels of IT skills and smart home technology experience.

Confidentiality

Your responses will be saved anonymously, and no additional personal information will be gathered about you apart from your submitted answers. The data collected will be used for academic purposes and published on a GitHub repository under the Creative Commons Attribution 4.0 International Public License. By participating, you agree that your anonymized responses may be included in this public repository.

Instructions

You may write your answers in either English or German. If you choose German, your responses will be translated into English.

The questionnaire is divided into two sections: one to be completed before the experiment and one after. In between these sections you will carry out a hands-on experiment. Your participation is voluntary, and you may withdraw at any time.

Contact Information

If you have any questions or concerns about this study, please feel free to ask your instructor or write to h12118008@s.wu.ac.at.

Thank you for your time and participation!

Please enter today's date (DD.MM.YYYY):

07.08.2024

Before Experiment

IT Skills:

How would you describe your IT skills?

☐ Beginner ☐ Intermediate ☒ Advanced ☐ Expert

Please describe any specific IT skills or experience you have (e.g., programming, hardware assembly, networking):

Programming C++; Assembly; SPS; some Python
IT ET Student

Smart Home Technology Experience:

What is your previous experience with smart home technology?

☐ None ☒ Beginner ☐ Intermediate ☐ Advanced

If you have previous experience, please specify your previously used smart home platforms and types of smart home devices you have used or installed (e.g., smart lights, smart thermostats, smart speakers):

Shelly, Google Home, Samsung Smart Things, smart lights, smart thermostats and smart outlets

Raspberry Pi Experience:

Have you ever used or assembled a Raspberry Pi before?

☒ Yes ☐ No

If yes, please describe your experience with Raspberry Pi (e.g., projects, usage):

School projects
Simple programming & ID projects

Instructions

Please fill out the above questions before proceeding to the hands-on part of this experiment.

You have been provided with all necessary materials at your workstation. If you need any additional resources, please consult your instructor at any time. On your table, you will find:

- Raspberry Pi 4 Model B & Case
- Micro-SD Card
- SD Card Reader
- USB-C Power Cable
- Ethernet Cable
- 4 Screws

Installation Instructions

1. **Assemble the Raspberry Pi:**
   - Insert the Raspberry Pi into the case with the USB ports facing the corresponding cutout.
   - Secure the Raspberry Pi to the case using the 4 screws in the respective holes of the board.
   - Close the lid of the case.
2. **Prepare the Installation:**
   - Connect the SD Card Reader to your provided system and insert the micro-SD card into the labelled slot.
   - On the screen in front of you, navigate to the Home Assistant homepage.
   - Go to **Documentation** → **Installation** → **DIY with Raspberry Pi** → **View tutorial** and follow the instructions on this page. The necessary software is already installed on your system and can be found on your desktop.
3. **Install Home Assistant:**
   - Follow the tutorial to install the software on the micro-SD card.
   - After you are finished, insert the micro-SD card into the Raspberry Pi with the label facing downwards. The slot is located at the bottom of the Pi's front side.
   - Connect the Ethernet cable to the network port of the PI.
   - Connect the USB-C cable to power the device.
4. **Wait and Onboarding:**
   - Wait approximately 5 minutes for the Raspberry Pi to initialize.
   - Follow the Onboarding instructions at the bottom of the previously used documentation page.

Adding a Device to Home Assistant

5. **Configure the Integration:**
   - Navigate to **Settings** → **Integrations** on the Home Assistant web interface.
   - Locate the discovered integration named "Samsung The Frame" from Samsung Smart TV.
   - Click **Configure** and follow the on-screen instructions to add the TV to your Home Assistant instance.
6. **Control the Device:**
   - Navigate to this device in Home Assistant.
   - Turn it off using the interface.

This concludes the hand-on part of this experiment. Please fill out the second section of the questionnaire now.

After Experiment

Assembly Process:

How would you describe your experience of the assembly process?

☒ Very Easy ☐ Easy ☐ Moderate ☐ Difficult ☐ Very Difficult

Were there any specific steps in the assembly process that you found challenging? Please describe:

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Installation Process:

How would you describe your experience of the installation process?

☒ Very Easy ☐ Easy ☐ Moderate ☐ Difficult ☐ Very Difficult

Were there any specific steps in the installation process that you found challenging? Please describe:

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Configuration Process:

How would you describe your experience of adding a device to Home Assistant?

☐ Very Easy ☒ Easy ☐ Moderate ☐ Difficult ☐ Very Difficult

Were there any specific steps in the configuration process that you found challenging? Please describe:

Finding the integration in the discovery section took some time (many integrations were found)

Overall Experience:

How would you describe your overall experience?

☐ Very Easy ☒ Easy ☐ Moderate ☐ Difficult ☐ Very Difficult

What steps did you experience to be especially easy or difficult? Please describe:

Very easy and understandable instructions

Thank you for your participation!