# Abnahmetest

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**Hinweis:** Dieses Dokument versteht sich als Guideline und dient der Strukturierung des Abnahmetestberichts. Bitte halten Sie die in diesem Bericht zusammengefassten Beobachtungen, Kritiken, und Verbesserungsvorschläge in einer verständlichen und konstruktiven Art und Weise fest. Das Entwicklungsteam muss zu Ihrem Bericht schriftlich Stellung nehmen und gegebenenfalls Änderungen am System vornehmen. Wenn notwendig, untermauern Sie Ihren Bericht durch Screenshots.

## 1. Zusammenfassung

*Beschreiben Sie Ihr Vorgehen beim Abnahmetest (z.B. in Bezug auf die Übernahme des Systems und des Testdrehbuchs vom Entwicklerteam, Anzahl der Testfälle, Testdaten).*

*Fassen Sie das Ergebnis Ihres Systemtests inhaltlich zusammen und gehen Sie dabei auf Stärken und Schwächen des Systems ein.*

We tested the application by running the included dockerfile. This worked very well and fast and made the testing process quite easy to begin.

The test-data had to be generated during runtime by pressing a button on the website. This took about a minute. We would have preferred a pre-generated set of test-values, which could be toggled on or off, this however is only a minor inconvenience.

The Arduino, Raspberry Pi and backend software is very well and thaughtfully implemented once its running. Only the process of getting it to run can be slightly tricky as descriped in section 3 and 5. When there were uncertainties, the developer team member were very helpful in providing assistance.

The "Testdrehbuch" was nice to work with overall, as most cases were very detailed and led us through the process well. Although we noticed that there were quite a few formatting errors and unfinished sentences, which led to confusion as well as some Actions which were missing a step.

## 2. Funktionalität

*Prüfen Sie zumindest folgende Aspekte:*

– *Sind alle versprochenen Funktionen (vgl. Konzept) implementiert?*
– *Funktioniert der Datenaustausch mit anderen Systemen?*

On the dashboard you can toggle between a monthly, weekly, and daily view. When clicking on the magnifying glass, a graph shows up, which shows the measurements for the given period. Daily and weekly periods are displayed correctly, when choosing monthly, however, the graph still only shows data for a week.

Filtering for users under User Management works mostly well. Filtering by the fields where you have to type in works perfectly fine, but the fields with dropdown menus (Roles and Status) won't update the displayed list until one enters something into another field. They also won't change their selected filter when choosing something for the first time, you always must select it twice.

The list still gets filtered correctly afterwards, for example changing Roles to "Employee" still shows the user "elvis" who has the "Admin" role but once you start typing "elvis" into the Username field he won't show up as expected.

The Arduino works as expected noise, light and humidity limit exceedings where tested and worked as expected. The accompanying README for the Arduino provided information on color codes and was very useful. Only randomly on rare occations the Arduino did unexpected things like suddenly not connect or suddenly disconnect without reason, however this might also be because of the hardware of the tester.

What happened a little bit more often, is that on starting the Pi, the Arduino doesn't get connected. We think this might be because after startup the Pi only tries to connect to devices once. It might be worth trying to attempt a connection a little bit more often.

## 3. Performanz, Fehlertoleranz und Stabilität

_Prüfen Sie zumindest folgende Aspekte:_

– _Ist das Antwortverhalten des Systems akzeptabel?_
– _Reagiert das System in angemessener Weise auf Fehlerzustände (z.B.: Neustart des Minirechners, kurzfristiger Ausfall der Kommunikation zwischen Minirechner und zentralem Backend, etc.)?_
– _Ist das System auch bei unkorrekten oder leeren Eingaben stabil?_
– _Ist sichergestellt, dass gelöschte/inaktive Benutzeraccounts keine Auswirkungen auf vergangene Berichtszeiträume haben?_

The application was responsive and intuitive to work with. There were however a few negative points we noticed.

When creating absences for Users, you could click "Save" multiple times, while the dialog closes, resulting in the absence being saved separately multiple times.

Created absences also didn't refresh automatically, they needed a few minutes to show up in the database.

Deleting a user with absences stored in the database results in an error in the maven project. Neither the user nor the absences are being deleted.

These errors are not stored in the audit log, which states that the user has been deleted.

When deleting a user without absences however, the data is correctly deleted and there is no residual data causing problems.

Incorrect entries for User creation and editing usually resulted in an error message as expected, but when pressing the "enter" key, the dialog flashes once, some fields are cleared and there is no error message displayed.

At one point the system crashed due to the following error, while testing the transfer of data from the Pi to the backend:

```
        org.springframework.mail.MailAuthenticationException: Authentication failed;
nested exception is javax.mail.AuthenticationFailedException: 534-5.7.14
<https://accounts.google.com/signin/continue?sarp=1&scc=1&plt=AKgnsbs
```

Another time it crashed somewhere inbetween logging in as spiderman and clicking on "Sensors" and starting the PI (it however could not be replicated):
```
org.apache.catalina.connector.ClientAbortException: java.io.IOException: Broken
pipe
```

A disconnect of internet connection (both Pi and backend) is handled very well, with helpful info from the Pi and no loss of data as the received sensor data is stored on the Pi and sent after the internet connection has been reestablished.

After a restart of the Pi, first the Arduino needs to be resetted (pressing reset button) and then the Pi program needs to be started again. This works generally fine, however if the unnoticed restart happens (short power failure in the room) it might be useful if the Pi can rerun the software alone after restart.
For these two cases, an email notification could not be found.

A loss of connection with the Arduino requires a restart of the Pi program, maybe do a regular search for Arduinos if no Arduino is connected.

## 4. Datenschutz

*Prüfen Sie zumindest folgende Aspekte:*

– *Sind Zugriffsrechte korrekt umgesetzt?*
– *Ist sichergestellt, dass spezifische Auswertungen und Auswertungszeiträume nur den dafür vorgesehenen Benutzergruppen zur Verfügung stehen?*

We noticed that users can only ever see two rooms, regardless of how many should be visible to them. The Administrator for example is not able to view the statistics for any of the rooms he is not part of. Otherwise access restrictions have been followed quite well, users are only able to see rooms and departments they should be able to see, and absences of other users are not visible.

Statistics for a room are not displayed when this room is an office containing less than 5 people, when editing a room to go above this threshold, adding enough users and generating new test data, there is still no data visible on the dashboard. We don't know whether this case is simply not included in the test data generation or if there is a problem with the implementation.

Also, according to the testing manual, the facility manager should be able to edit users, when logging in as "spiderman" (who is a facility manager according to the manual), there is no option to edit.

## 5. Usability

*Prüfen Sie, inwieweit das Gesamtkonzept des Systems den Bedürfnissen der adressierten Zielgruppe gerecht wird.*

The UI is easy to use and intuitive on desktop. The menu is well structured and finding everything is straightforward. The only thing that should be changed is the placement of the button to add new users. It's very easy to miss because it's at the end of the user list and should that one be too long to fit the screen, you must scroll down to find it. Having the ability to find users by virtually any metric is very nice though.

The tables can be filtered and sorted so finding the data is very comfortable.

Absences can be easy added and removed from a calendar. To use a calendar is a very nice feature, because you see all your absences at one clearly structured place.

The Line Charts in the Dashboard are well designed and understandable, however the symbol to open can be overlooked and is a little bit misleading.

The application doesn't work on mobile devices. Menus and tables don't work responsive.

The setup explanation (Raspberry Pi) was good for testing purposes, since our team was familiar with the setup process. However, for external users (the real facility manager on the field) the process might be a little bit too sparsly explained. Additionally, it was necessary to enter the IP-address of the backend directly in the Pi code and then compile. An installation script with the IP adress as input parameter would streamline the process.

# 6. Testdrehbuch

*Bewerten Sie das vom Entwicklungsteam zur Verfügung gestellte Testdrehbuch (=Liste der Testfälle) in Hinblick auf Testüberdeckung und Wiederverwendbarkeit.*

## Test Coverage

In the test script most use-cases are covered.

However, not all cases for raspberry and arduino are covered.

The failure of system is not part of the cases. This would be the case if the raspberry losses connection.

Also, if the data of the raspberry is sent to the database and if the data after sending is displayed as expected is not covered.

## Test Explaination

The test are logical structures and well explained. The initial situation is clear and straightforward.

It is also worth noting that the provided test-data in the "Testdrehbuch" was inconsistent with the application regarding the naming of user-roles. The user "hulk" for example has the role "Department Manager" in the document but is shown as "MANAGER" on the website.

## Reusability

The cases are defined as if the project will be expanded you can reuse them without lengthy adjustments.

# 7. Weitere Auffälligkeiten

*Führen Sie hier weitere Auffälligkeiten an bzw. geben Sie konkrete Verbesserungsvorschläge.*

The UI is designed very nicely and intuitively. We liked the simple and easy design, and the icons are well chosen. There are however some small details which could be improved on in our opinion.

## User Management

The button for creating a new user is at the very bottom of the page, this makes it hard to find and necessitates scrolling to the bottom of the page when adding a new user.

It would improve the experience if dialogs could be submitted by pressing the enter key.

## E-Mail Notifications

We had some trouble with the E-Mail notifications for the value reports. We tried to change the time when the daily notifications get sent to a later time in the SchedulerTaskConfig.java file to receive them at the times we were testing but they never got sent out.

The E-Mail server itself is working though, when creating a new user with one of our E-Mail addresses we receive a confirmation E-Mail without trouble.

## Dashboard

The statistics on the dashboard show two rooms, the first room does not have a description and you must click on the magnifying glass to see which name it has, it would be nice if there was a small headline explaining the room name and why it is shown.

You can select the frequency for the statistics, but it is never displayed anywhere. The graphs change but the user has no reminder at which period he is currently looking at. It would be nice if the period selector replaced the "Frequency" text with the currently selected option or if there was a clue in the statistics.

The statistics field use the same font, colour, and text size for every entry. It would be nice if either the measurements or their headlines were separated from the data so that it is easier for the user to differentiate. Using small icons or colours for the categories would also improve the user's ability to quickly recognize which value is which (Water droplet for humidity, Thermostat for Temperature, etc.)

## 8. Tabellarische Aufstellung festgestellter Mängel

*Ergänzen Sie hier eine kurze tabellarische Aufstellung aller festgestellten Mängel (inkl. Klassifizierung).*

| Use Case | Issue Description | Classification |
|---|---|---|
| Register Absence | One day can have more than one absence. Clicking the save button repeatedly while it disappears creates many absences. | Mild derivation |
| Register for email - notifications | We changed the frequency to daily and set the time to send the notification to 19:00 but we didn't get a notification. | Large derivation |
| View climate data of public room | After logging in the user is not directed to the dashboard. He sees the Primefaces message upon login.<br><br>We were unable to submit a room to look at climate data of a specific public room. The UI elements for this use case appear to be missing.<br><br>Switching the view from weekly to monthly has no effect on the graphs. In both cases the graph shows the values of the last week. | Large derivation |
| View climate data of own office | Dashboard is not set as start page; you must click on dashboard first. The user is greeted with Primefaces message upon login.<br><br>Switching between monthly and weekly view has no effect, they show the same graph (in both cases the interval of the graph is the last week) | Mild derivation |
| View climate data of all departments | Logged in as Administrator, clicking on "Dashboard" only reveals two the aggregated view of the admin's office and the public room of his department, but we are not provided with a global view. The UI elements to navigate to the global view appear to be missing | Large derivation |
| View climate data of all rooms of department | Logged in as Facility Manager (spiderman), you cannot select the department when clicking on | Large derivation |

| | “Dashboard”. Also, we only see two rooms again, not the entire department. The UI elements for selecting the department appear to be missing. | |
|---|---|---|
| User management as facility manager | Facility managers are unable to access to user management section. | Cosmetic or mild derivation |