HOME AUTOMATION SYSTEM WEB PROJECT FINAL REPORT

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GitHub: https://github.com/hkose1/home-automation-system

UI Design Principles:

Clarity: Allow users to navigate easily via shortcuts. (Login and Sign-Up pages' shortcuts.)
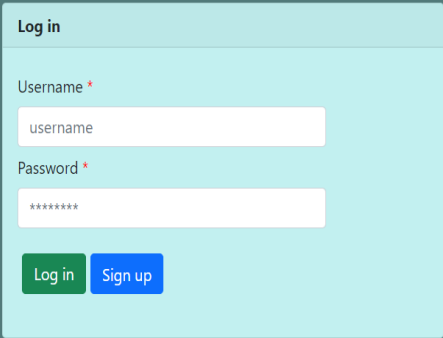
Familiarity: Consistent page design.

Flexibility: Responsive design. Shortcuts for speeding up interactions.

Login page:

User can login using the username and password.

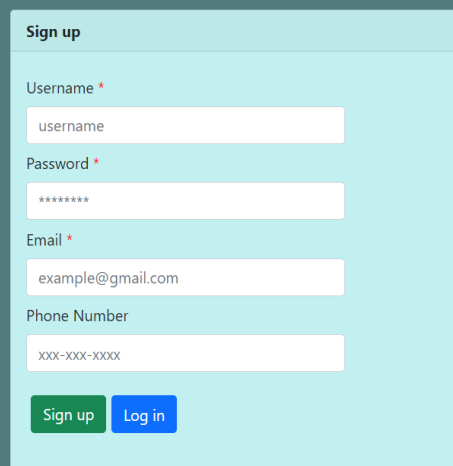In the login page s/he can switch between login/signup page easily.

Signup page:

If a user wants to sign up s/he must provide at least username, password, and email.

Phone number is optional.

In the sign-up page s/he can switch between login/signup page easily.

Home page:

On the left-hand side there are parts of the house and user can choose one of the rooms to see more details and manage devices for that room.

Additionally, it gives information about the room like its temperature and humidity.

As we can see when a device is off user can't control the device attributes.
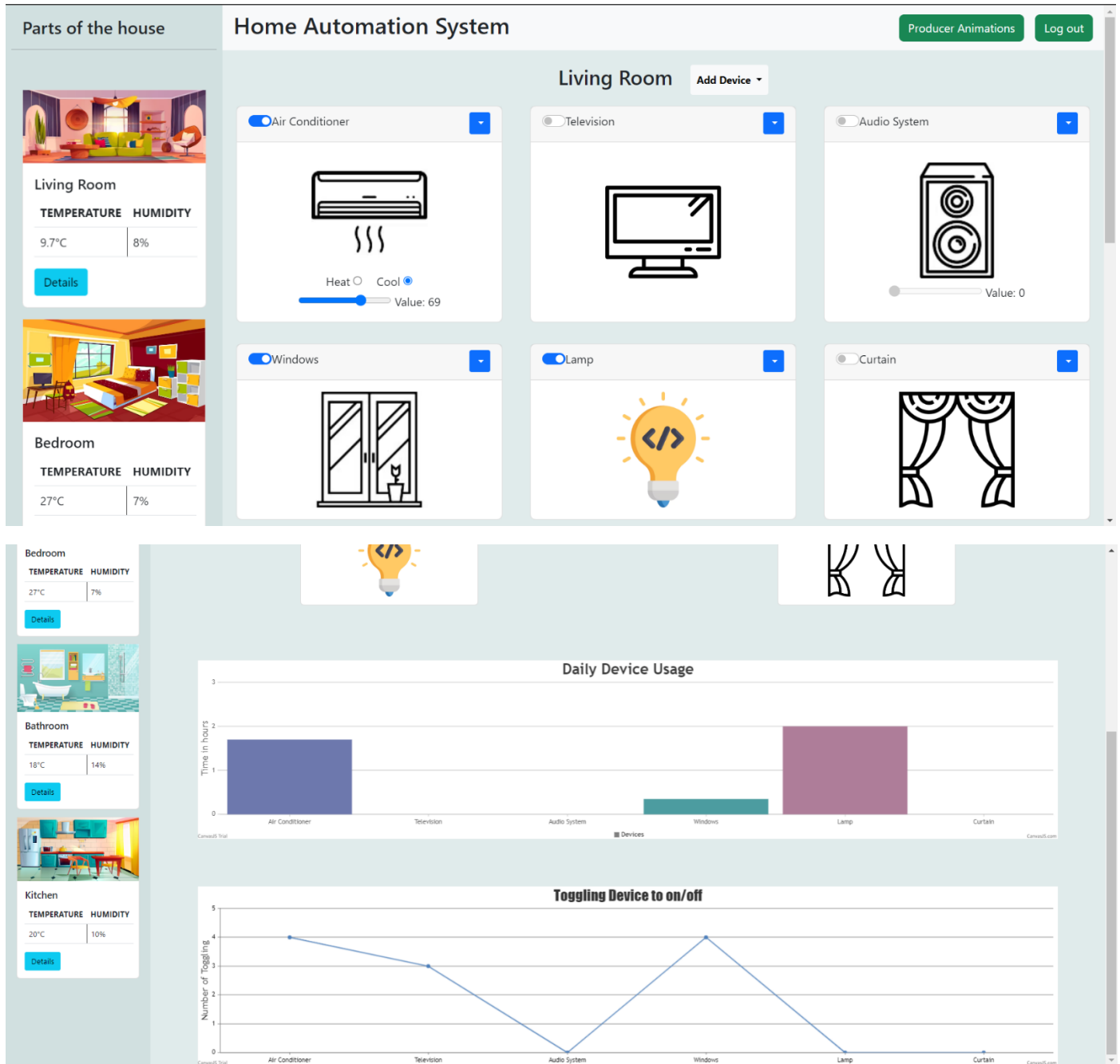
Added the heat and cool mode to the air conditioner device.

Now the temperature of the house will be change according to the air conditioner's mode and value. It will animate the increasing or decreasing the temperature value.
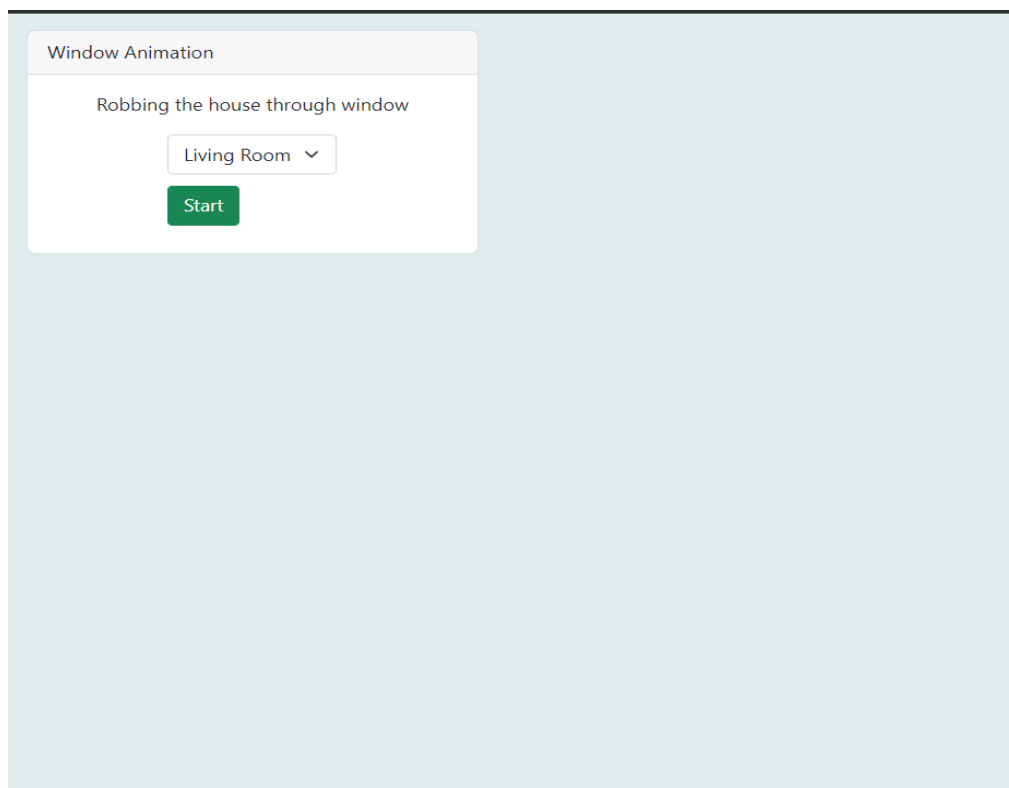
Added two charts.

One of them is holding the statistics of devices usage time.

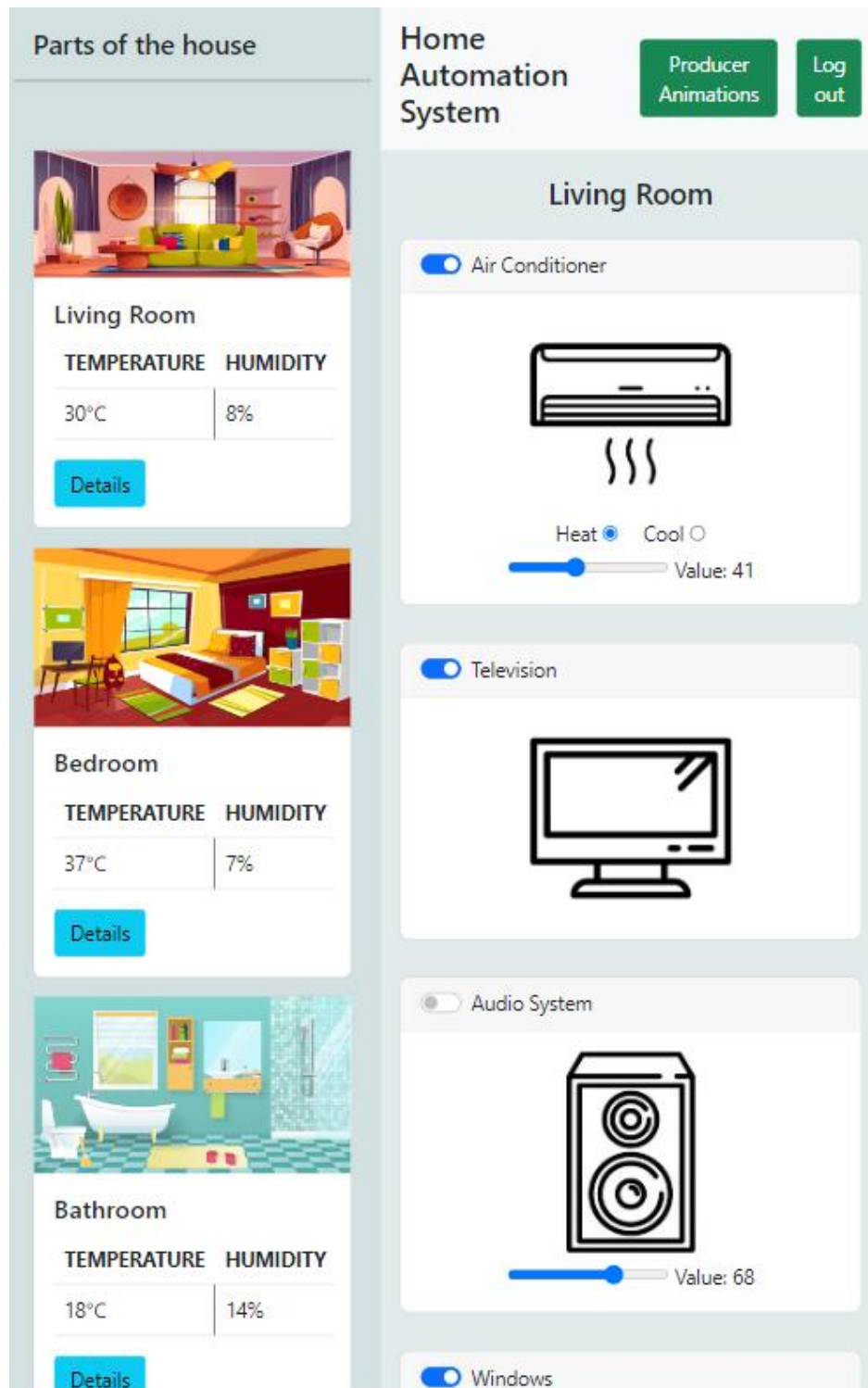The other on is holding that how many times a device is toggled to on/off.

Home Automation System

Producer Animations | Log out

Living Room   Add Device ▾

Living Room
TEMPERATURE	HUMIDITY
9.7°C	8%

Details

Bedroom
TEMPERATURE	HUMIDITY
27°C	7%

Air Conditioner

Heat ○   Cool ◉
Value: 69

Television

Audio System

Value: 0

Windows

Lamp

Curtain

Bedroom
TEMPERATURE	HUMIDITY
27°C	7%

Details

Bathroom
TEMPERATURE	HUMIDITY
18°C	14%

Details

Kitchen
TEMPERATURE	HUMIDITY
20°C	10%

Details

Daily Device Usage

Time in hours

Devices: Air Conditioner, Television, Audio System, Windows, Lamp, Curtain

CanvasJS Trial   CanvasJS.com

Toggling Device to on/off

Number of Toggling

Air Conditioner, Television, Audio System, Windows, Lamp, Curtain

CanvasJS Trial   CanvasJS.com

Producer Animation Part:

When Window Animation enabled:

The appropriate window's background color will be change to red and back to its initial color and make a beep sound.

For mobile:

Parts of the house

Living Room
TEMPERATURE	HUMIDITY
30°C	8%

Details

Bedroom
TEMPERATURE	HUMIDITY
37°C	7%

Details

Bathroom
TEMPERATURE	HUMIDITY
18°C	14%

Details

Home Automation System

Producer Animations

Log out

Living Room

Air Conditioner

Heat ● Cool ○
Value: 41

Television

Audio System

Value: 68

Windows

Database:

An user table to hold user data.

For the system to work we must provide data for room table.

Initialy it has to have:

Id->1 for living room,

Id->2 for bedroom,

Id->3 for bathroom,

Id->4 for kitchen.

The each device in the system holds room_id as a foreign key to locate the device to correct room.
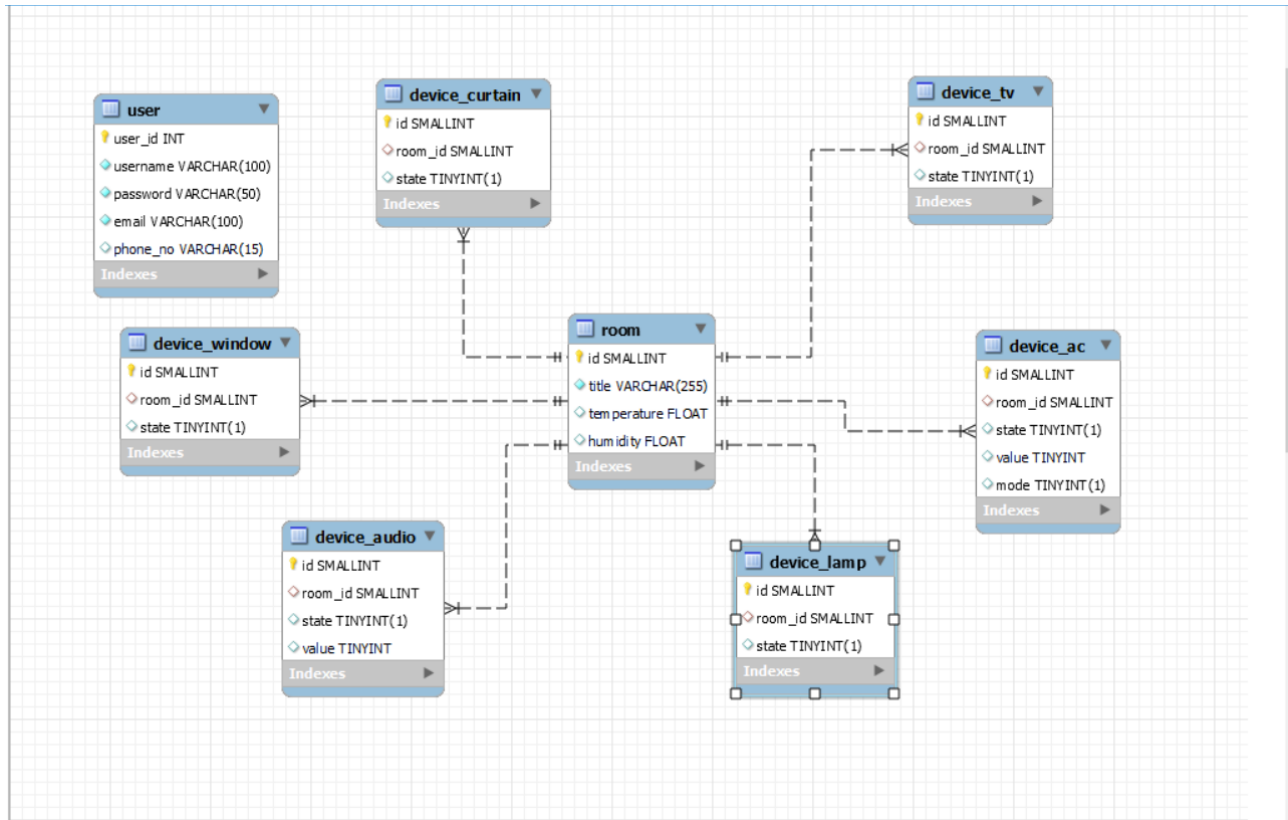
How to run the project:

1. Database connection:
   - Run the SQL script file which under the assets folder in your MySQL. You should uncomment one query at a time and then run.
   - Add manually rooms to the room table and it should have 4 rooms:
        Id->1 living room,
        Id->2 bedroom,
        Id->3 bathroom,
        Id->4 kitchen

- Change the connection arguments (username and password inside PDO constructure) to your own MySQL for those files which under the "db" folder.
- Add manually some device to see on the site.

2. Sign up:
- You must provide username, password, and email however phone number is optional.
- Your username must be unique otherwise you cannot sign up.

3. Log in:
- Enter your username and password to log in. if you don't have an account yet you can click just the sign-up button and then can create an account.

4. Home page:
- On the left-hand side there are parts of the house, and you can choose one of that rooms to see more details about that specific room also you can see temperature and humidity on the left-hand side.
- Each room has its own devices, and you can control them such as opening the lights, closing the windows etc.

5. Log out:
- You can click just log out button which locates on the top right of the screen.

GIT insights and commits:

```
12fad00 fixed some styling issues in index.php
eabe326 updated index.php;
0500afa checked for coming logout request
ce6dc26 added some images
c9d0e0f fixed some styling bugs
fee7cd7 added styling to login.php using bootstrap
08ea662 deleted css file because no need anymore i will be using bootstrap
a7cd471 added some styling on sign up page using bootstrap
01a0ef7 added a link to sign up page for those who don't have an account yet
5092de9 added a link log in page for those who don't have an account yet
52d3bbb checked for login request to handle login operation
44150b0 updated login page
9859092 added get_user func. to check whether there is a user or not with username and password
c8f4ceb not important
6dfca14 initial commit for login.php
c4d7801 fixed some bugs
3412103 modified signup req
59c6f54 added placeholder attr to input fields and show up some appropriate informations when signing up
6642e75 added add_user and is_username_used functions in db_connection
a9fd3e3 created a basic sign up form without any css and  provided with some sessions to save user data
64ade9b connected to mysql database which created for the project
0612e75 updated controller.php to handle sign up request
6ea82ec created db_connection.php for interaction with mysql db
6aeedec get, post and session functions created in utils
9899681 created utils.php
6f44863 created controller.php
9a51243 created signup.php and signup.css
dad63bb first commit- created index.php and folder structure
(END)
```

```php
$q = $db->prepare("INSERT INTO user SET username = ?, password = ?, email = ?, phone_no = ?");
$is_added = $q->execute([$username, md5($pass), $email, $phone]);
```

Firstly, prepare the query and then gives the parameter to it.

This is a good solution to avoid SQL injection.

Secondly, when saving the user's password in the database it uses the MD5 hashing function. It is not saved as plain text.

When getting the data from a user it uses the "htmlspecialchars" function and this function doesn't allow to run any code inside the given data. It takes everything as text.

This prevents attacks like given data would include some bad JavaScript code.

```php
if(isset($_POST[$post])) {
    return htmlspecialchars(trim($_POST[$post]));
}else {
```