

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.)

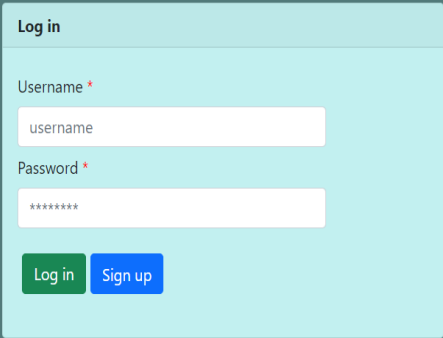
Familiarity: Consistent page design.

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.



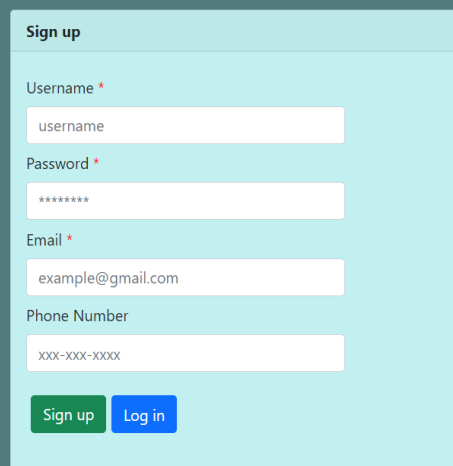
The image shows a login form titled "Log in" centered on a dark teal background. The form is a light blue rectangle. It contains two input fields: "Username" with a red asterisk and a placeholder "username", and "Password" with a red asterisk and a placeholder "*****". Below the fields are two buttons: a green "Log in" button and a blue "Sign up" button.

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.



The image shows a sign-up form on a dark teal background. The form is a light blue rectangle with a title 'Sign up' at the top left. It contains four input fields: 'Username' with a red asterisk, 'Password' with a red asterisk, 'Email' with a red asterisk, and 'Phone Number'. The 'Username' field contains the text 'username', the 'Password' field contains '*****', and the 'Email' field contains 'example@gmail.com'. The 'Phone Number' field contains 'xxx-xxx-xxxx'. At the bottom of the form are two buttons: a green 'Sign up' button and a blue 'Log in' button.

Sign up

Username *

username

Password *

Email *

example@gmail.com

Phone Number

xxx-xxx-xxxx

Sign up Log in

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.

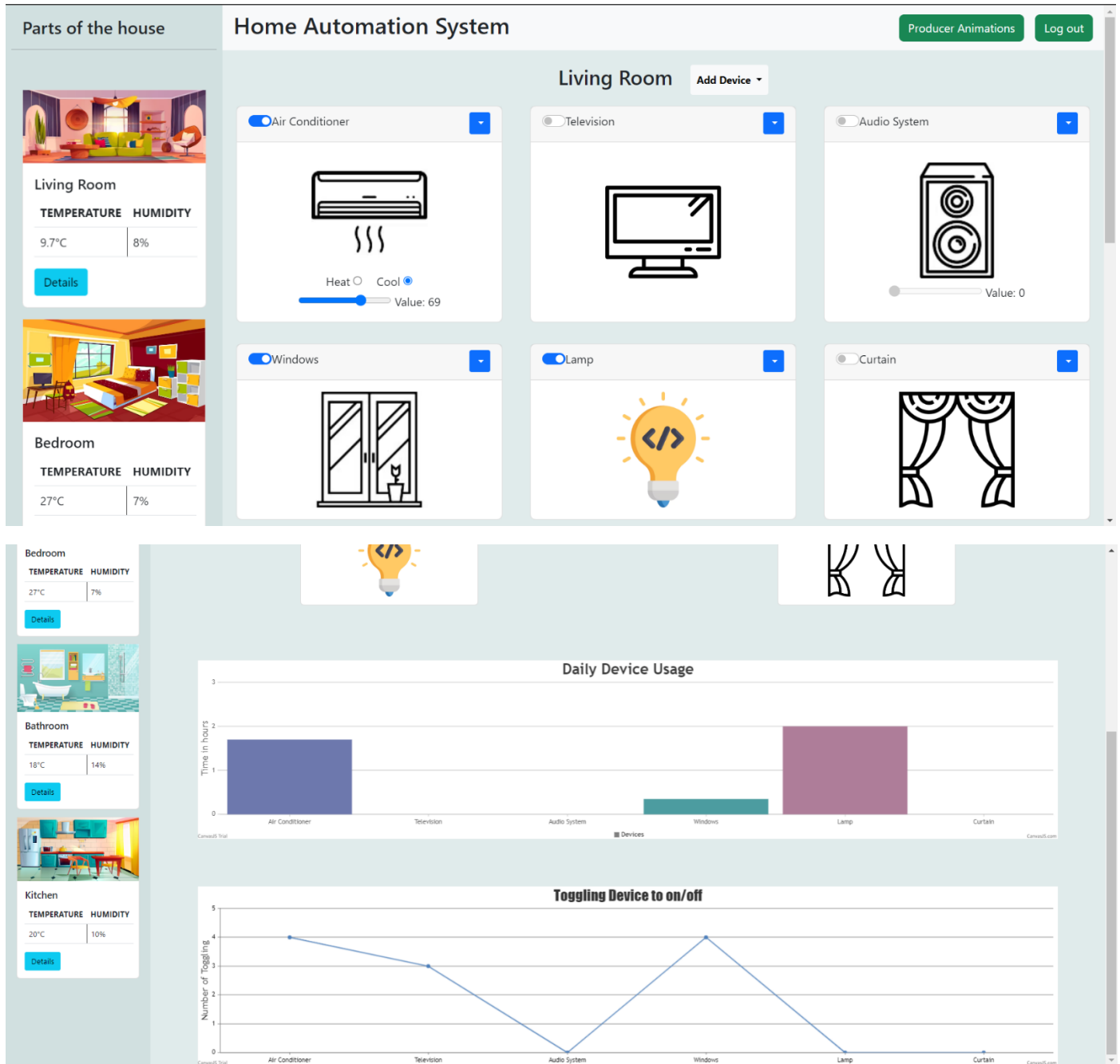
Added the heat and cool mode to the air conditioner device.

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.

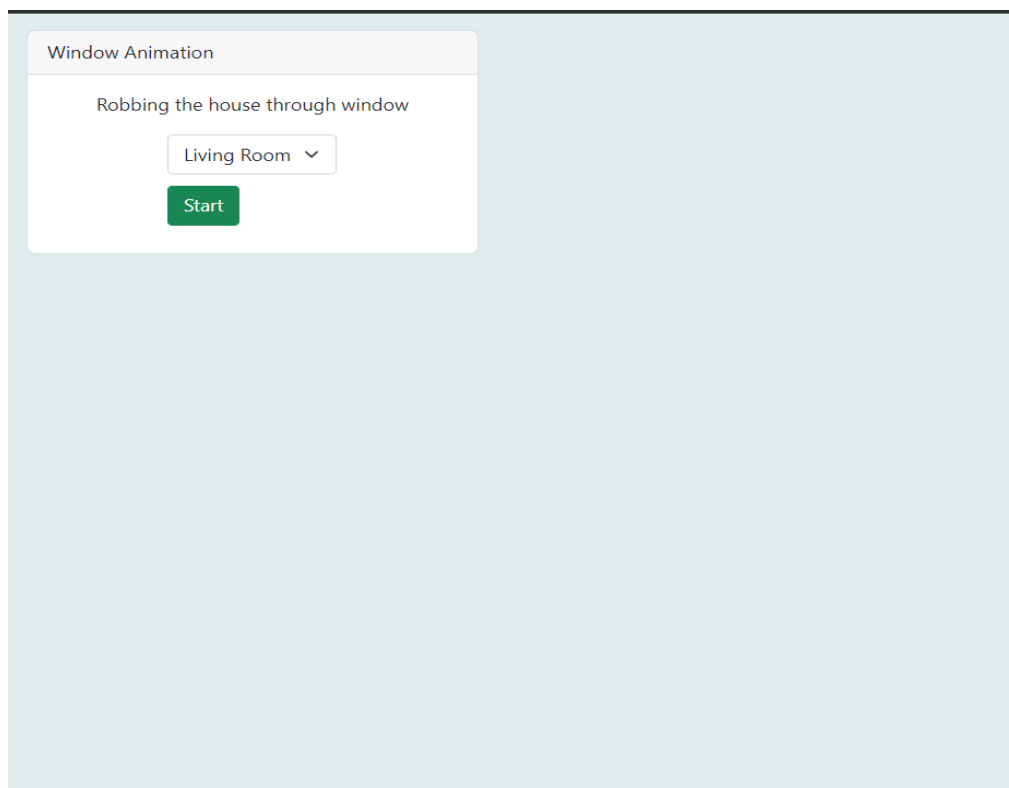
Added two charts.

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

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



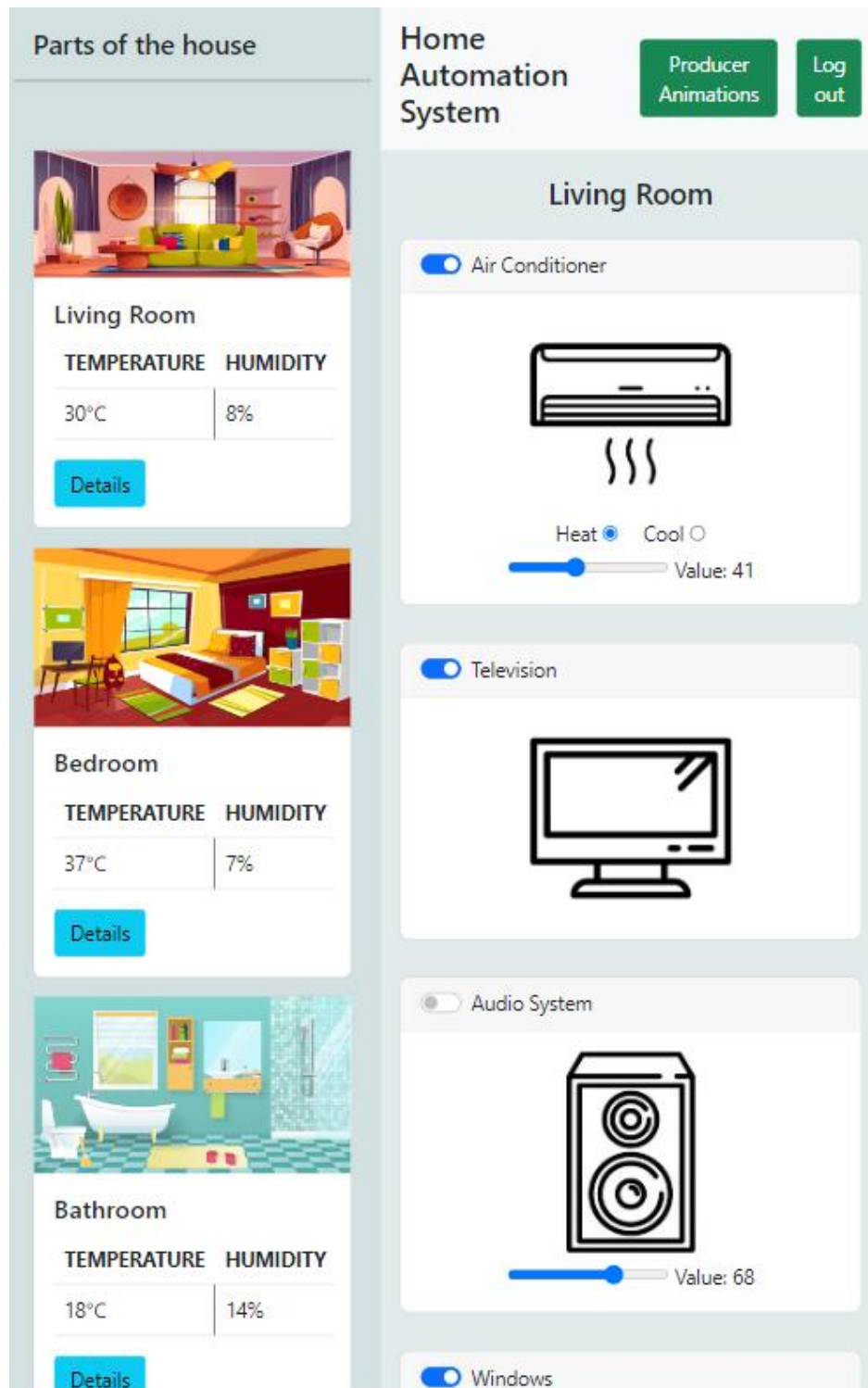
Producer Animation Part:



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:



Database:

An user table to hold user data.

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

Initially it has to have:

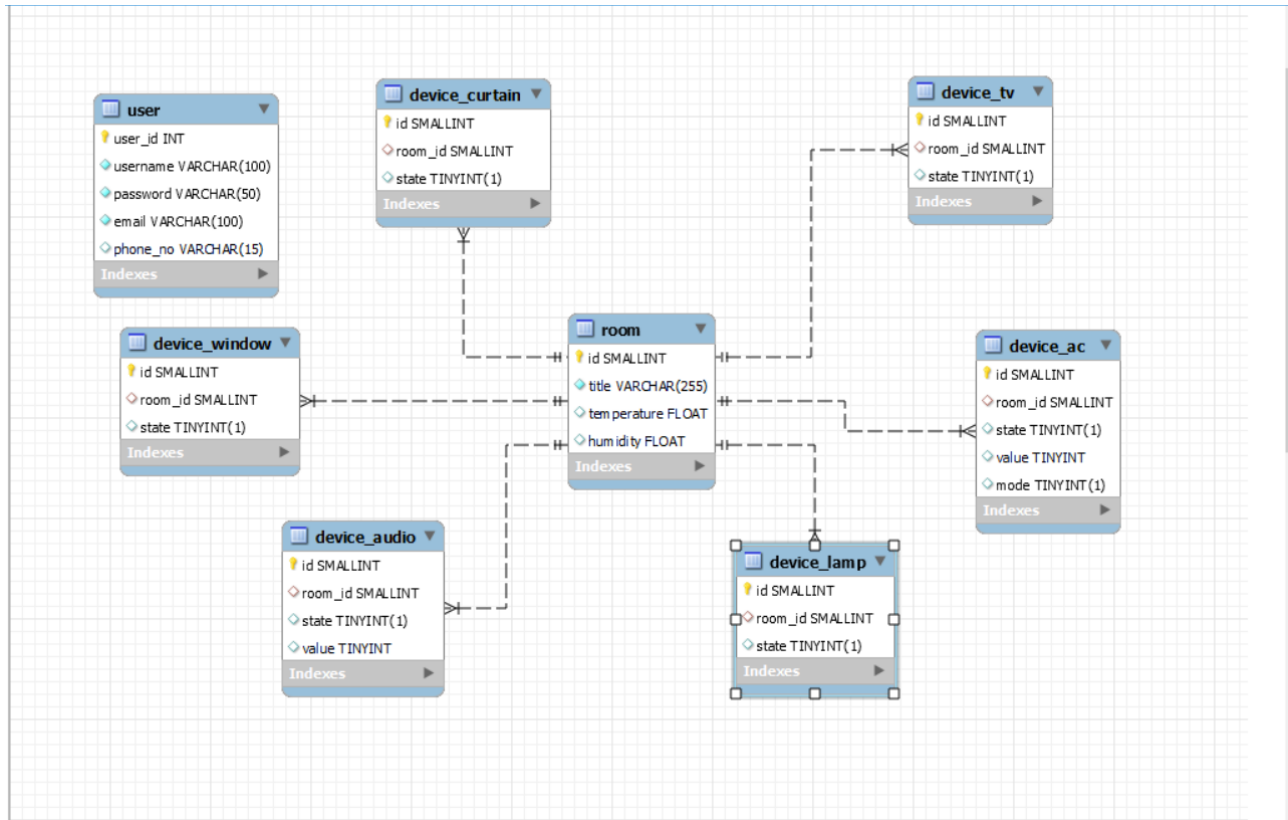
Id->1 for living room,

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.

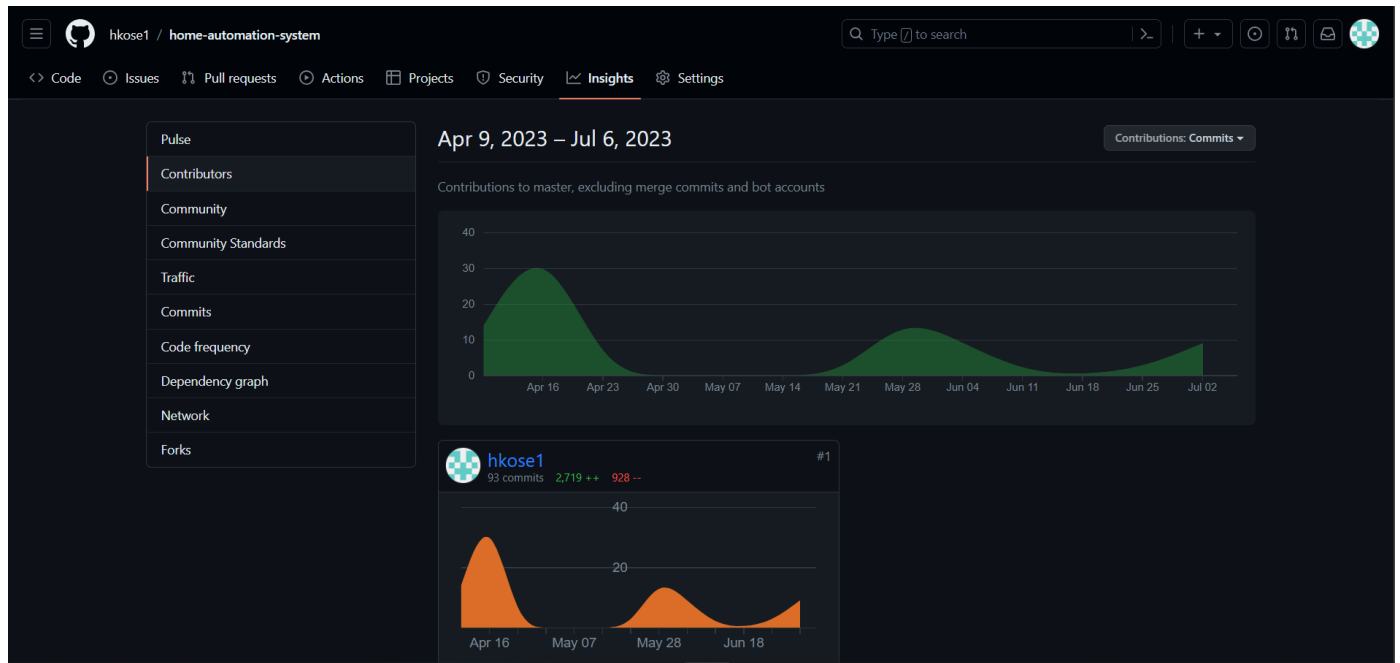
4. Home page:

- 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:



```
MINGW64:/c/xampp/htdocs/home_automation_system
Haydar@DESKTOP-8CL3COE MINGW64 /c/xampp/htdocs/home_automation_system (master)
$ git log --oneline
64495bc (HEAD -> master, origin/master) adding a chart that holds the device's toggling data
576de17 fixed daily device usage time.Now it calculates time like in real life.Even if the application is off but the device is on it calculates the time though
87b1852 Can not change the device attributes if the device is off. For example changing the air conditioner mode or its degree is not allowed if it is off.
a5f103c Updating chart animation. Chart's data which is static is changed to dynamic.
8ad5aa9 adding functionality to show or hide the password field
26f91e9 to prevent from resubmission when page is refreshed
753adcf adding some validations for username and password
9029593 fixed a bug when calculating the temperature value
fe1e6f5 fixed the methods which related with adding new device. fixed calculating new device id at db level in db_devices.php->add_device() method
1256de7 can add new devices and the deleting function for devices is updated
bd25cdd deleting a device from a room is supported anymore
216a048 final report
6aa0997 fix
27fd426 updated the device_ac table
565d514 setting the form's action value dynamically according to the selected room
5595509 adding a hover effect when hover over the rooms
78f9e50 added a link on the navbar to route producer animations part
c4bba05 updated the robbing animation function to provide a sound when animation start
67f2da2 created robbing animation function
12da9f9 creating an robbing animation form
922cf92 add id to the window object to start the robbing animation
fa64e3d initial commit
527e38a added id fields to the temperature values
35ded5b added an animation function to animate the room's temperature and also added some utility functions
76d8dca added an asyn function to handle the animation which changes the room's temperature values
ebcbfd9 get temperature from producer and save it in to the database
04df283 initial commit
7f3939c initial commit for producer part
52d527d added safety to incoming values from php input because they can come as undefined not to get undefined warnings they made safety usign ?? null patern
924bb38 removed some debugging code
307397b while adding values to the database there were some bugs because of the php evaluates 0 to the false so the problem is solved
a67dbff removed debugger code
06cf1b9 fixed some typos
335e755 fixed a bug while saving the mode value to the database
9430559 setting ac device mood on mysql database
b051d96 save the changes on ac device mood
6a9a915 added mood property to the air conditioner system
9343eb7 handled ac's mood
6b81ff6 Merge branch 'master' of https://github.com/hkose1/home-automation-system
8845525 fixed range value elements
c1892c2 updated
1afd8c5 updated for saving range values
b22826d updated postRangeValue func
b3612af fixed a bug on saving user data
5672e08 displayed room titles
c132a9a project report
f824b61 updated for some bugs
9b2402b added functions to interact with device data
52151a1 added a php file called save_changes to save user data to the db. Getting ajax post values
db92432 moved scripts which inside index.php to script.js
c33c64d moved images
38e9f95 changed project structure for images
e3deba2 added function to get temperature and humidity
1125b69 fixed a tiny bug
b7cdaac added some style
```

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)

```
$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.

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