



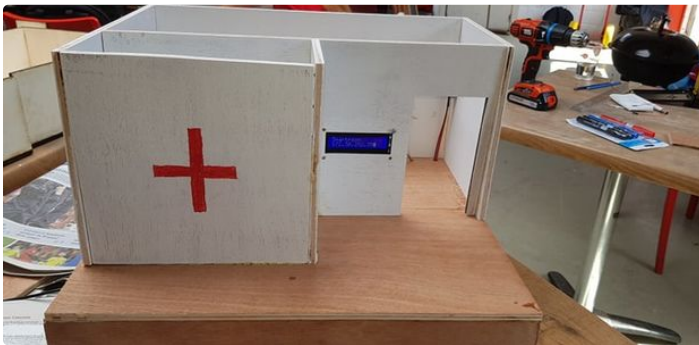
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Smartroom Using Raspberry Pi



by RubenRoose

For my project I made a Smartroom for Hospitals. Now you can ask me why did you choose this idea? well my mom was really sick this year and she could not do much around the house so she stayed in bed most of the time and I thought that for my project I should find a why to make her live a bit easier.



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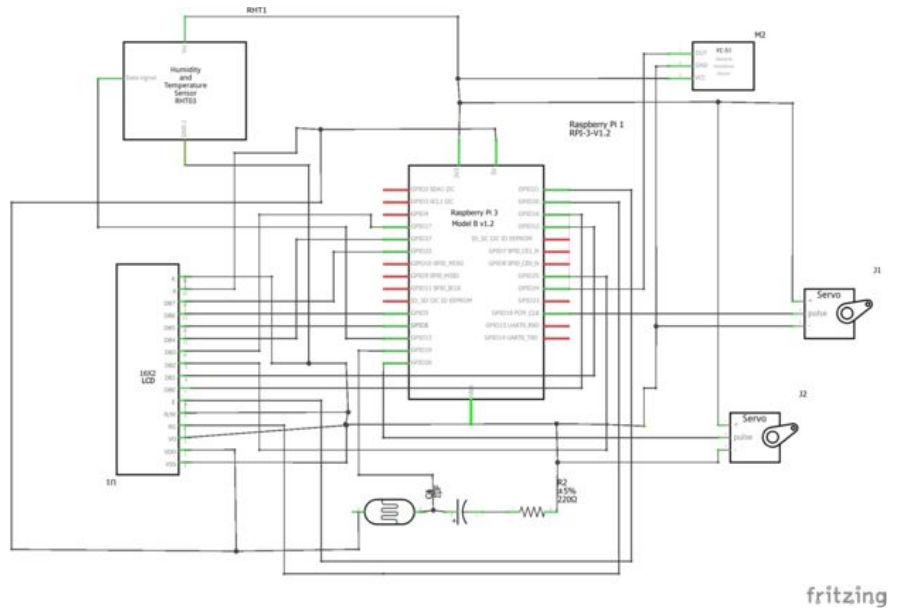
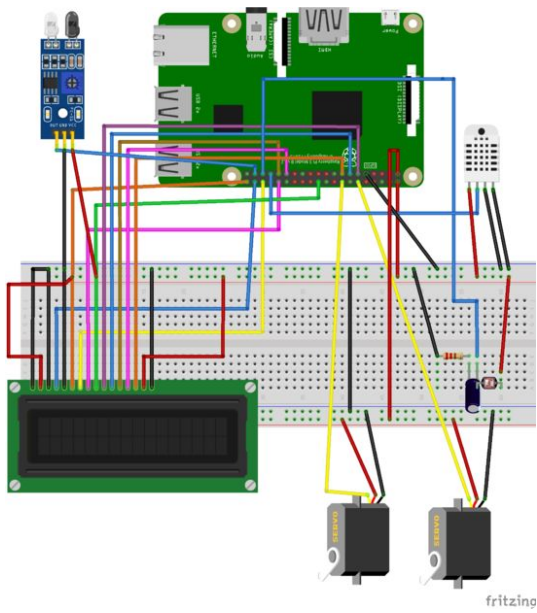
Step 1: Wiring

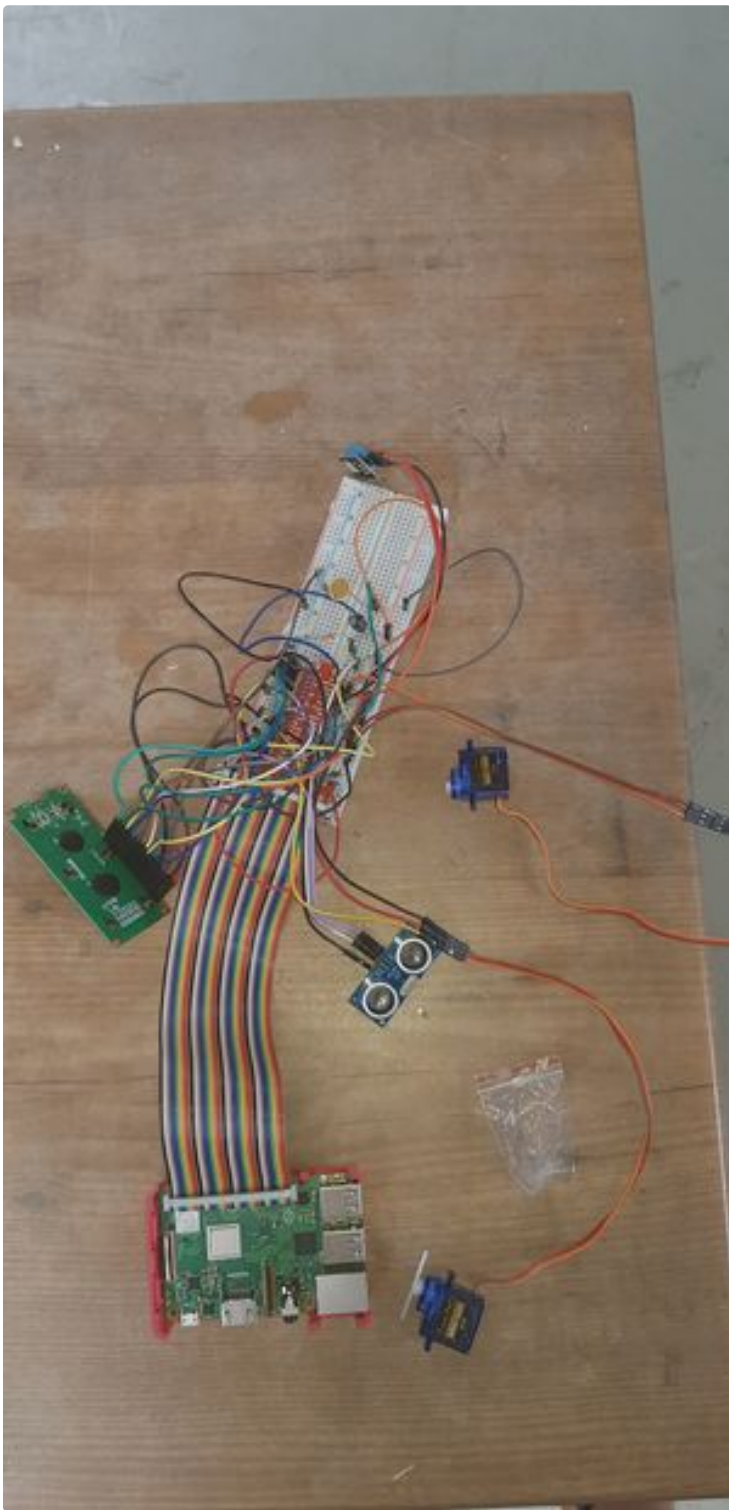
First we are going to wire over electronics so you have the basics of your project.

Download Fritzing and draw a circuit. this way it's easier to see which GPIO pins you will use on your Raspberry Pi.

Fritzing: <http://fritzing.org/download/>

Tip: draw your wires in a organized way otherwise it will look like spaghetti and you won't know wich wire goes where.





Step 2: Database

Make a database model using MYSQL workbench. If that is done forward engineer your model. If that worked than you have made a database in MYSQL.

Now we will put the database in you Raspberry Pi

The first step you take is to check if your Pi is up to date. You can use the following command:

```
sudo apt-get update  
sudo apt-get upgrade
```

Now install the Mysql server:

```
sudo apt-get install mysql-server
```

Then Install the Mysql client

```
sudo apt-get install mysql-client
```

Now look at the sql server by the command:

```
sudo mysql
```

You can now import your database code by opening the .mwb file with the sql workbench and forward engineer. You copy the code and paste this in the mysql from the Raspberry. The database is made.

For the user to get all the permissions, just add your username in the table

```
grant all privileges on smarthome.* to 'yourname'@'%' identified by 'yourname';
```

Now you need to refresh the table now

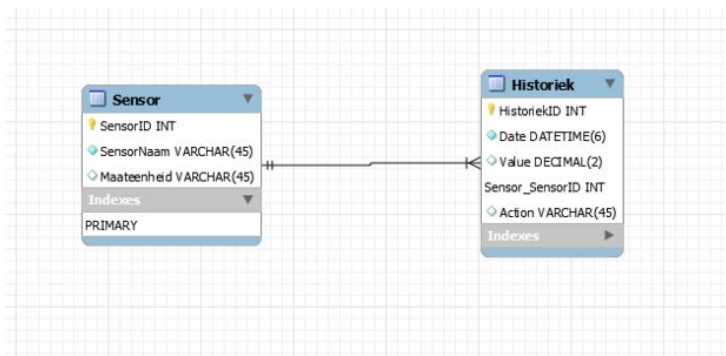
```
FLUSH PRIVILEGES;
```

To check this you can simply try:

```
use smartroom;
```

```
select * from Historiek;
```

In Sensor table you can find all the active sensors with their id. The Historiek table shows the date and time, values and the sensorID.



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Step 3: Setup

Interfaces

If you want to start coding you will need to enable the Spi and i2c in your raspi-config.

```
sudo raspi-config
```

Now you can go to the categories 1-Wire and Spi and both enable them.

Wifi

Now we will connect the pi with wifi.

First log in as root

```
sudo-i<br>
```

Then fill in the name and password of your wifi network

```
wpa_passphrase="wifiname" "password" >> /etc/wpa_supplicant/wpa_supplicant.conf
```

Then enter the WPA client

```
wpa_cli
```

Select the interface

```
interface wlan0
```

Now reload the config

```
reconfigure
```

And now you can check if you are connected

```
ip a
```

Packages For the webserver to run the Site install Apache2

```
sudo apt install apache2 -y
```

Then go to python and install these packages

- Flask
- Flask-Cors
- Flask-MySQL
- Flask-SocketIO
- PyMySQL
- Python-socketIO
- requests
- pip
- gpio
- time
- Adafruit_DHT

Step 4: Code

Backend

For the backend, I wrote my python code in pycharm. I used multithreading to make the code run on the background so it can work together with other code.

On the frontend there are a two buttons who can open the curtain and bathroomdoor. there is also live data so you can see the Temperature and the Humidity.

use the code on github:

Frontend

<https://github.com/Rubenroose/smartroom.git>

Smartroom



Step 5: Case

For the case I used multiplex wood and I glued it together. but you can use whatever material you want.

