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**Hardware Status of Smart Home Project**

Dear Prof. Medri:

In order to complete our capstone project that covers the concepts of electronics and programming, reviews and studies were conducted during the past weeks. This memo is intended to explain our hardware status and progress. Additionally, we will roughly examine our project’s components that include hardware and software parts. During the development of the project, we are going to rely on completed projects on Github repositories that correspond to our project needs.

According to equipment.md file on our repository, we already have the following parts:

* RaspberryPi microcontroller (HDMI cable, SD card, Enclosure, USB card reader, Power Supply and Ethernet cable)
* Arduino Uno
* Passive buzzer
* Servo motor (SG90)
* Stepper motor (28BYJ-48)
* Stepper motor driver board (ULN2003)
* Temperature and Humidity module (DHT11)
* Motion sensor (HC-SR 501 PIR)
* Sound sensor (KY-038)
* Water level detection sensor
* Card sensor (RFIO-RC522)
* Plastic card

Parts that need to be purchased:

* Camera for RaspberryPi
* Enclosure (Polyvinyl chloride board or cardboard of size 1m2)
* Utility knife
* Glue gun or super glue

For the enclosure part, we are planning to buy one piece of PVC (polyvinyl chloride) or cardboard to put everything together. With the relationship to the information mentioned above, we think that $100 is a reasonable budget.

We have chosen the RPi platform for the development because it features a variety of handy things. This small computer lets us use Python programming language with lots of very useful libraries. About sensors and their applications:

* The servo motor will open and close a door
* The Buzzer will be triggered in case of emergencies
* The stepper motor will rotate plastic blades in case of high temperature in the room
* The Temperature and Humidity module will send readings to RPi
* The motion sensor will be used to control lighting in the house. If it senses motion, it turns on the light.
* The sound sensor will act as a motion sensor but it will trigger a buzzer and send a notification to the user if the door is closed.
* The water level detection sensor will send a notification to the user in case of a deluge
* Card sensor will be located on the rear side of our enclosure in order to close the door by using a plastic card
* The camera for RPi will be turned on when the door is closed and record until the door will be open by the plastic card

**Code interaction is going to be via (SSH) serial connection via Putty.**

**Wireless is going to be emulated via Raspberry Pi VM in Debian.**

**Currently there is no sensor/effector code in our repository because one team member still works to get the right code done and the other Raspberry Pi holder has to get USB-to-Ethernet delivered soon (because there is no RJ45 port in laptop).**

To sum up, our team relies on the experience gained during previous courses. The information above should give a glance what we expect to use at a decent level. The next step is to understand all necessary hardware and software aspects of our project and be able to effectively apply received knowledge to build a device that can compete on the market.

Our Github repository link:

[Smart Home Repository Link](https://github.com/n01291955/SmartHome.git)

Sincerely,

PocketCrib Team