

Example of report on project review

[Life](#), [Home](#)



Project Title/ Home Automation System/

B. Eng Electronics Engineering

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Project Title: Home Automation Systems

The automation plays a vital role in saving human effort and providing accuracy in its operation. Automation can be done in many ways; it's a real challenge to choose a most suitable system for a particular application. The Raspberry Pi and Z wave technology used in the home automation system helps to save energy, time and ensures security of the home.

- Detail Specifications

In this project we are going to use raspberry pi board, Z- wave card, Z- wave appliance plugs/switches/thermostat/sensor/remote control and mobile application. The detailed specification of each of the components is given below.

- Raspberry Pi Board

The raspberry pi was developed in UK by raspberry pi foundation. The main intention of developing raspberry pi is for teaching basic computer science in the schools. The raspberry pi manufacturing deals with the Newark element 14, RS component and eGoman. The raspberry pi has a BCM2835 system on a chip. The BCM2835 configuration has ARM1176J2F-S700MHZ processor, with a RAM of 256 MB later it is upgraded to 512MB (Firmware on the chip (Anon, 2013)).

The Raspberry Pi computer was manufactured in two models, namely models

A and B. The model B was priced at \$35 while the other model was priced at \$25; this was because the more expensive model came with an Ethernet port while the cheaper one did not (Cook, S. M (1994)). Having said that, model A would consume less power than model B. There were several problems during the production of Model B including the wrong Ethernet port being attached and a lot of regulations having to be passed. Even though with such setbacks, the Raspberry Pi computer was greeted with great reception globally (Denis A. K (2013)).

- Z- Wave Card

In this project we are using the RaZberry, which is a tiny daughter card mounted on the top of the raspberry pi GPIO connector (RaZberry daughter card (Anon, 2013)). The system is powered by the raspberry board with 3.3V and it communicates using TTL and the TTY signals (RX/TX). Z- Wave technology is a wireless communication technology which is specifically designed for home automation. This is specifically designed for the home users to control their house hold appliances using remote control (Paetz D. C (2013)). The Z-wave uses low power RF radio, which is connected to the home electronics such as lighting and other entertainment system. The Z-Wave produces 900MHZ. The Z-Wave helps to automate the home simply and reliably. The Z-Wave has a hardware and software together, which enables to create mesh network via Z-Wave language (The general Z Wave overview (Anon, 2011)).

- Z Wave Appliance

Z Wave uses some hardware components like switches, remote control, sensor,

thermostat in order to have a complete control. The switches used by the Z-Wave technology are of different types dimming switch, ON/Off switch, micro switch etc. The sensors used in Z- Wave are used to monitor the temperature, light, contact sensors. Z- Wave has different types of kits Z-Wave lighting kits, Z- Wave security kits, energy management kits, Z- Wave home control kits (About Z Wave (Anon, 2011)).

- Methodology for the Solution

The first step is to set goals on the application to be automated and their requirements for the each and every applications needs to be satisfied. The second step involves the background research of the each and every components used in this project. The background research helps to gain deep knowledge on the type of hardware used to automate all the appliances in the home. After doing the background research it is necessary to learn how to connect the hardware devices. The next step involves choosing the software for automating the home appliances. Choosing reliable software is necessary for the smooth operation. After creating the automation products it is necessary to test the hardware and the software used in the product. The hardware and software is the key devices for a good operation of any automation devices. The testing may gives a two type of results, one may satisfy the testing requirements and other may not satisfy the testing requirements. The hardware's or software's which are not satisfied the testing requirements are analyzed again to fix the problem, and the fixed problem can be corrected. The short brief on the methodology are

given below.

3. Optional Analysis and the Selection

Options available for the project will be finalized by preferring the better ones.

3. 1 The Raspberry Pi board

Instead of using the raspberry pi board of 256 mega bytes, the raspberry board of 512 mega

bytes can be used since it uses SD card for booting and inbuilt storage purpose. The tools are available for the python as the main programming language (Cook, S. M (1994)). Model A has only one USB with no ethernet controller, but the model B has two USB with the Ethernet controller (Cook, S. M (1994)).

3. 2 Z Wave Card

Instead of using RaZberry tiny daughter card, it is also under consideration to use Z- Wave optional card and driver, the Z wave optional card and driver allows the continuous installation and the control of home and the commercial automation systems used in lightning, temperature control and the security (Z Wave optional card and drive (Anon, 2013). Choosing correct peripherals like switches, plugs, sensors and remote control for the Z wave card is necessary. The dimmer switches, micro switches, and other switches are also under consideration.

- Project Planning Monitoring and Control

The project planning involves the time required to complete a particular process in the project. The process involved in the project is for doing research, it is necessary for us to take nearly 9 months for doing research,

since research is a important criteria for providing good results. The next process involved is finding the right technology, it is necessary for us to take two months for completing this process. The next step involved is of finding the latest hardware, it is necessary for us to take 1 month for completing this process. The complete planning and the time duration for completing all the process are given below.

- Risk Analysis

There are lot of risks may occur while completing the project. The time management is one of the risks; this can be avoided by using the planning chart. The risk may occur while learning the new software coding; this can be avoided by looking through the sources to gain understanding. The risk may occur while purchasing the equipment, this may be out of stock in UK; it can be avoided by ordering the equipment abroad. The risk may occur If any of the equipment got damaged, this can be avoided by keeping the spare equipment. The problem may occur in the connectivity to the home automation, which can be avoided by re- evaluating the code. The complete explanation on the risk analysis is given in the table below.

The risk involved in this project can be avoided by taking necessary steps, it is important to monitor the each and every risk involved. The project planning chart is to be updated based on the progress and the risk involved in the project.

References

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