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Home Automation System using Android

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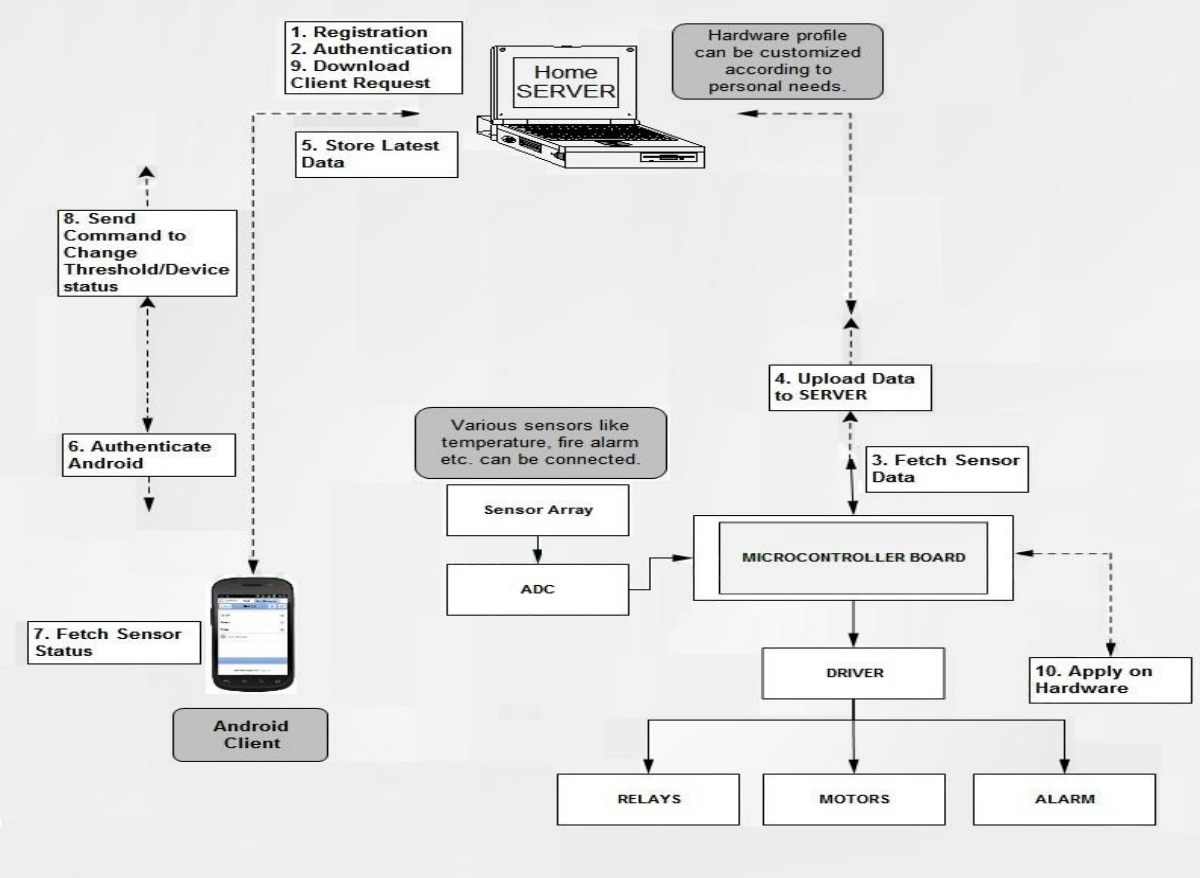
Abstract – *Today's homes require sophistication control in its different gadgets which are basically electronic appliances. This has revolutionized the area of home automation with respect to an increased level of affordability and simplicity through the integration of home appliances with smart phone connectivity. Smart phones can communicate to any other devices in anad-hoc network with a connectivity options like Bluetooth/Wi-Fi etc. Different devices and the appliances in the home like lightings, Fan, home security and Motor are now being connected to the Internet so that it can be controlled remotely using the Smart phones or Tablets. Not only devices can be controlled, but home environment can also be continuously monitored for maintaining certain desired temperature or monitoring amount of energy consumption. Hence, this will contribute to overall cost reduction and energy saving which is one of the main concerns of today.*

Keywords – *Android ADK, Android Phone, AVR Microcontroller, MySQL*

I. Introduction

In this System, Home Automation System has been designed for mobile phones having Android platform to automate an Wi-Fi interfaced microcontroller which controls a number of home appliances like lights, fans, bulbs and many more using on/off relay. The devices in a household that could ease the tasks of using the traditional method of the switch. The most famous and efficient technology for short range wireless communication- Bluetooth/Wi-Fi is used here to automate the system. Automation of the surrounding environment of a modern human being allows increasing his work efficiency and comfort. Hence with the help of his android mobile phone, some daily household tasks can be accomplished by using the android mobile phone.



System Architecture

II. Literature Survey

2.1 Deepali javale, Mohd. Mohsin, Shreerang Nandanwar and Mayur Shingate. "Home Automation and Security System using Android ADK" In International Journal of Electronics Communication and Computer Technology (IJECCT) Volume 3 Issue 2 (March 2013).

This paper describes the design of home automation and security system using android ADK. The design is based on Standalone embedded system board android ADK (Accessory Development Kit) at home. Home appliances are connected to the ADK and communication is established between the ADK and android mobile device or tablet. The home appliances are connected to the input/output ports of embedded system board and their status is passed to ADK. They have developed an authentication to the system for authorized person to access home appliances. The device with low cost and scalable to less modification to the core is much important. It presents the design and implementation of automation system that can monitor and control home appliances via android phone or tablet.

III. Classification of an existing System

In the previous system, they have used Arduino BT controller. But we have used AVR microcontroller which is really cheap and affordable as compared to Arduino BT controller.
In the previous system the Arduino BT directly sends data to Android/tablet. But in our system we have created home server where we fetch the data generated by sensors and store that data in database.
In our system we can monitor sensor data and control devices form home server and we can grant permission to android user for retrieving, controlling and monitoring the data which is stored in home server database.

IV. System Modules

Server Module-
First User needs to authenticate to the home server. After Authentication the user can configure hardware profile of microcontroller as per user's personal needs. The Latest data of home server will be uploaded to the server. Server stores the latest data in MySQL database and that data will be given to Android client on his Authentication.

Android Client Module-
The Data of Microcontroller will be on Clouded Server in database that data can be accessed by Android Client. Android user can perform various activities like turn no/off lights, fans etc. Also Android user can set threshold value for home appliances.

Microcontroller Module-
Multiple sensors can be attached to the microcontroller. The data from the sensors will be sent to server module for monitoring the sensor data. The commands send by Android client will be operated on microcontroller module.

V. Conclusion

In our project, we have demonstrated a home automation system which will reduce the electrical bills. It will provide a safety to kids at home while operating appliances. Old aged and handicapped people can operate appliances from anywhere in the home. It also reduces the efforts and saves the time. Home appliances can be scheduled and operated according to user's convenience.

VI. References

[1] Deepali javale, Mohd. Mohsin, Shreerang Nandanwar and Mayur Shingate. "Home Automation and Security System using Android ADK" In International Journal of Electronics Communication and Computer Technology (IJECCT) Volume 3 Issue 2 (March 2013).

