HOME AUTOMATION USING MICROCONTROLLERS

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Abstract :In this project a remote controlling home automation system is made. A program based microcontroller technology is used in this project, ATmega8 which assists in turning on or off the different load. It is essential to mention that; here we turn on or off different load as example Light, Fan, TV, etc. This mention work by the Microcontroller program and device used ATMega8. The ultimate goal of this project was to create a functional microcontroller & remote based load controlling system. For this project, it was important that the Microcontroller scheme be able to save our time and easy to switch. With a more efficient Programmer and Microcontroller, this goal could be reached without consuming more load.

Index Terms – Images, search engine

I.PROBLEM IDENTIFICATION

Existing System:

In this modern world, everyone is busy in their work and has less concentration to home and needs their home to be automated, to make them more comfortable. And also, it is the duty of each person to consume less energy and also efficiently. This home automation systems satisfy the basic needs of the customer such as safeguarding the home and to cut down the energy that is wasted. The system consists of microcontroller which receives input from sensors and sends output based on the input signal.

Drawbacks of Existing System:

The challenge with all these products comes in aggregate when consumers start buying a lot of them. What if the consumer bought a Nest thermostat, Kwikset door lock, Phillips Hue lighting, Lutron light switch, a Sonos audio system, and a bunch of Belkin wireless plugs? First, the consumer would have six different apps to set up, learn and use the tall look and feel different. Additionally, there aren't easy ways to make the devices work asone system if you wanted to trigger an event after an event. What if I wanted my outdoor lights to turn on after the garage door unlocks? That's not going to happen because it requires two separate apps. There are other issues, too. For many of these products, you will need to have separate wireless adapters plugged into the wall. You see, many of these devices works on a different kind of wireless network. It's not just WiFi, among home automation solutions, there is Zigbee, Zwave, Insteon, Itron, RadioRA2 and more. Because devices are speaking a different wireless "language", they need a different wireless adapter.

II. ARCHITECTURE DIAGRAM

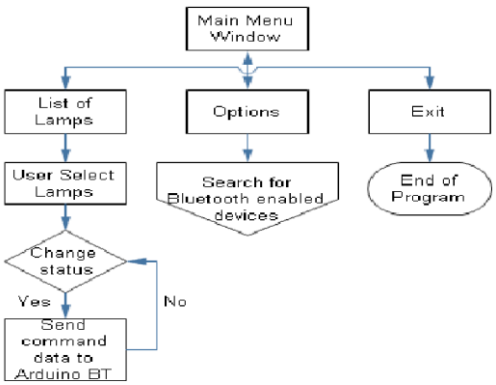

Fig. 1 Architecture Diagram

III. MODULES

The project is divided into 4 modules as follows:

Project creation & browsing module: – Smart Home Control brings an Extravagant Simplicity to the combined power of the 21st Century technologies, with a beautifully simple interface and a reduced number of menu options for what would otherwise be a long and complicated checklist of processes. With Smart room Smart Home taking care of your custom installation, you can

be sure of spoke and immaculate system to complement the personal design and feel that you have chosen to create in your home.

AVR module: – The AVR microcontrollers are based on the advanced RISC architecture and consist of 32 x 8-bit general purpose working registers. Within one single clock cycle, AVR can take inputs from two general purpose registers and put them to ALU for carrying out the requested operation, and transfer back the result to an arbitrary register.

Synchronization module: - This module is responsible for the synchronization of all the actions performed by the users, and the coordination behind-the-scenes in order to reflect the changes needed to update each user to the latest revision of the project.

Proteus Design Suite: - The Proteus Design Suite is a Windows application for schematic capture, simulation, and PCB layout design. It can be purchased in many configurations, depending on the size of designs being produced and the requirements for microcontroller simulation.

To run the program successfully, the following packages will have to be installed: a) proteus simulation software b) keil IDE

Keil IDE :

Keil was founded in 1982 by Günter and Reinhard Keil, initially as a German GbR. In April 1985 the company was converted to Keil Elektronik GmbH to market add-on products for the development tools provided by many of the silicon vendors. Keil implemented the first C compiler designed from the ground-up specifically for the 8051 micro controller. Keil provides a broad range of development tools like ANSI C compiler, macro assemblers, debuggers and simulators,linkers, IDE, library managers, real-time operating systems and evaluation boards for Intel 8051, Intel MCS-251, ARM, and XC16x[1]/C16x[2]/ST10[3] families.

Proteus simulation software:

The micro-controller simulation in Proteus works by applying either a hex file or a debug file to the microcontroller part on the schematic. It is then co-simulated along with any analog and digital electronics connected to it. This enables its use in a broad spectrum of project prototyping in areas such as motor control, temperature control and user interface design.

IV. TECHNICAL REQUIREMENTS

Software Requirements:

Proteus :It can be purchased in many configurations, depending on the size of designs being produced and the requirements for microcontroller simulation. All PCB Design products include an auto router and basic mixed mode SPICE simulation capabilities.

Embedded c: It includes a number of features not available in normal C, such as, fixed-point arithmetic, named address spaces, and basic I/O hardware addressing.

V. CONCLUSION

The final device managed to achieve the following results: How we can load on off automatically depends on remote control we learnt through this project. The device is controlled by an Atmel Atmega8L which is fast enough and has enough memory to carry out all required tasks. The entire design has a very efficiency for sensing temperature, light & water. It can be seen from the above points, that the device has fulfilled the requirements and specifications that was placed upon it and has also gone some way in having additional features that would serve it as an excellent device. One last major improvement would be to use as many surface mounted components as possible, particularly using a surface mounted MCU and resistors and as many other components that could be replaced with surface mounted equivalents. Future we will design a better & compact PCB and good quality circuit by using surface mounted component. This device demonstrates that engineering is an interesting and exciting field which can help to benefit countless people in other parts of the world.

VI. REFERENCES

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