Home Automation With Gardening System.

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ABSTRACT

Home automation allows us to control household appliances like light, door, fan, AC etc. It also provides home security and emergency system to be activated. The proposed system does not require a dedicated server PC with respect to similar systems and offers a novel communication protocol to monitor and control the home environment with more than just the switching functionality. The objective of our system is to take care of several domestic systems that may normally be difficult for those who are handicap or elderly to take care of. The proposed system also has a dedicated gardening feature. The proposed idea will allow a user with any android enabled device to run a piece of downloadable software on any mobile devices. Everybody knows that good things happen when you pair a Raspberry Pi with an Arduino, which includes everything from a Star Trek-like tricorder to a kegerator interface. One Instructables user (Electronichamsters) decided to take the boards and design an extensive home automation platform that's able to monitor just about everything inside and outside of user's homes.

1. INTRODUCTION

Home automation or domotics is building automation for a home, called a smart home or smart house. A home automation system will control lighting, climate, entertainment systems, Gardening system and appliances. It may also include home security such as access control and alarm systems. When connected with the Internet, home devices are an important constituent of the Internet of Things. Home automation or Smart Homes can be described as introduction of technology within the home environment to provide convenience, comfort, security and energy efficiency to its occupants. The project presents a low cost and flexible home control and monitoring system using an embedded microprocessor and microcontroller, with IP connectivity for accessing and controlling devices and appliances remotely using Smart phone application adding intelligence to home environment can provide increased quality of life. Home automation not only refers to reduce human efforts but also energy efficiency and time saving. With the introduction of the Internet of Things (IoT), the research and implementation of home automation are getting more popular. The Internet of Things (IoT) can be described as connecting everyday objects like smart-phones, Internet TVs, sensors and actuators to the Internet, where the devices are intelligently linked together enabling new forms of communication between things and between things themselves. Building IoT has advanced significantly in the last couple of years since it has added a new dimension to the world.

2. PROBLEM DEFINITION

Existing system
The existing system comes with only a single remote controller with only a single device. So if the number of devices increases the number of remotes also increases. If we are having 100 such devices, then we need to have 100 such remotes separately for each device.

Proposed system
The proposed system is implemented by using an ARDUINO UNO board which will be operating the devices which needs to be

controlled via ARDUINO UNO board. For this project we are going to use a Bluetooth module HC-05 connected to user's mobiles Bluetooth in order to communicate with user's smart phones using serial data communication.

A program is written in the ARDUINO program editor, which is then compiled and uploaded in the RAM of the ARDUINO microcontroller. The editor converts write-up language into the ARDUINO machine understandable language. The processor executes the program and controls the flow of electrons throughout the board and the pins of the board. This ARDUINO board can be attached to the additional boards like Ethernet board to control the objects via a wireless XBEE pro adapter or some other devices. If this ARDUINO board is made more complex we can actually make the automated devices automated. We can connect multiple analog devices in order to get the input data from the natures surrounding and process the data to control the digital devices. This whole event is carried out at the real time which in leads in the home automation. Devices like infrared sensors, ultrasonic sensors, proximity sensors, temperature, soil sensor etc. can be attached for getting the input from the surrounding
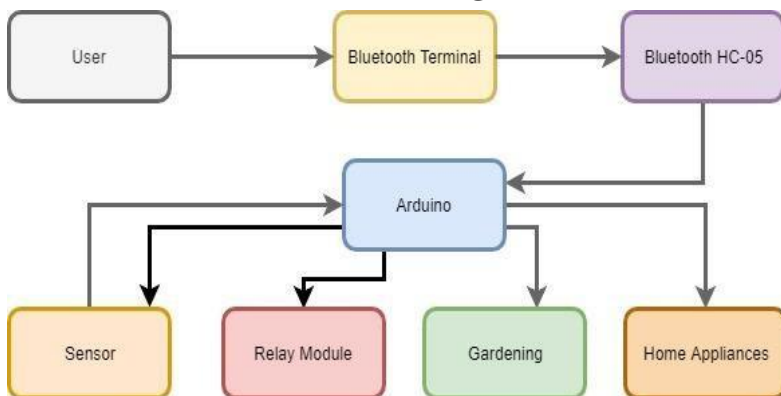
3. SYSTEM – ARCHITECTURE DIAGRAM

Fig. Block diagram

The system model comprises of three distinct entities :(1) ARDUINO board; (2) User; and (3) the Relay module. The user has the whole control since the user is connected with the Bluetooth module by HC-05. Every user will be having a RFID tag and according to the priority of the user the system allocates the commands to the user. User sends the command to the ARDUINO board via Bluetooth module HC-05 and by checking the priorities the system controls the devices.

4. TECHNICAL SPECIFICATION:

Hardware Specification:

The hardware requirements are as follows:

➢ Arduino UNO
➢ Connecting wires
➢ Bread board
➢ Bluetooth Module HC-05
➢ Ultrasonic sensor
➢ Temperature Sensors
➢ Soil Sensor
➢ Water Pump
➢ Home appliances
➢ 5V Relays
➢ Smartphone

Software Specification:

➢ Java development kit.
➢ OS (Windows XP and onwards)
➢ Arduino IDE
➢ Bluetooth Terminal

5. APPLICATION

➢ Precise and safe blind control.
➢ Security cameras can be controlled allowing the user to observe activity around a house or business right from a Monitor or touch panel.
➢ Security systems can include motion sensors that will detect any kind of unauthorized movement and notify the user

through the security system or via cell phone.
➢ Faster operation and efficient.

6. FUTURE SCOPE

Data logging facility can be included in case of recording historical data, special data, special events and system data.
Computer can be interfaced for more complex & precise application.
System reliability can be improved.
Voice interactive services can be added to offer better interaction with user.

7. FEATURES

➢ The range of this system 10 meters i.e. 33 feet's so you can control the system from anywhere in the house.
➢ It will automatically turn lights on at night time and turn off at day time.
➢ It will start cooling system like fan, AC etc when house temperature increases and system stops if temperature is Decreases.
➢ It has separate Gardening feature
➢ It will automatically detect the moisture in soil near the plant and will water the plant as the need.
➢ Since it doesn't only use the IR remote for communication there is no need for focusing on the device.
➢ It uses the Bluetooth module HC – 05 for serial communication.
➢ It doesn't need to be in the serial manner in order to send the data to the system

or communicate with the system.

Logical Model of System Use-case diagram
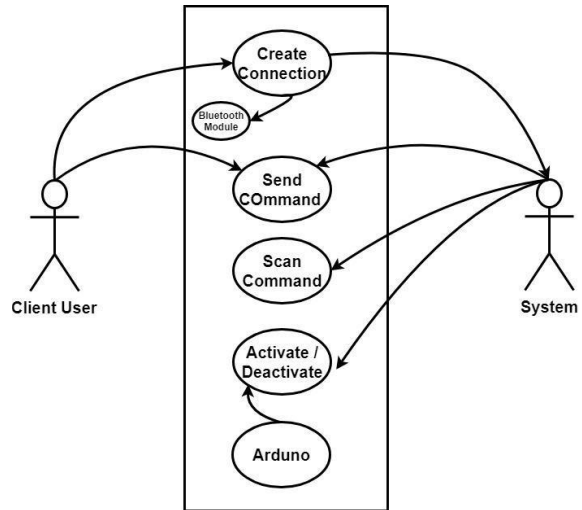
Accompanied by other types of diagrams as well

Activity diagram

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modelling Language, activity diagrams are intended to model both computational and organizational processes (i.e.workflows). Activity diagrams show the overall flow of control
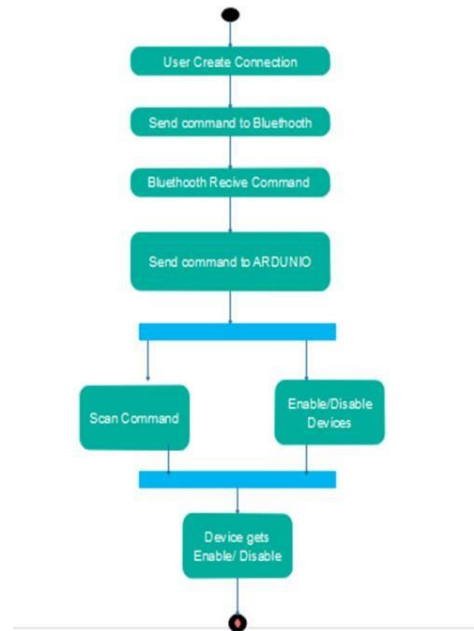
8. CONCLUSION

With the knowledge of new techniques in 'Electronics' we are able to make our life more comfortable. One such application of electronics is used in "Home Appliances Controlling using Android Mobile via Bluetooth" The approach we followed and which is explained in this project report is novel and has achieved the target of "Home Appliances Controlling using Android Mobile via Bluetooth" satisfying user needs and requirements. Home Appliances Controlling using Android Mobile via Bluetooth is automatic versatile system. It can be implemented in industry, home, agricultural field, remote and hazardous applications. It provides the flexibility & system reliability with low cost as well as less maintenance. It provides remote access to the system to deliver service at any time of the day. With this system, we can control as well as monitor the devices at remote location. This project has built in us confidence that any problem can be solved with sheer determination, hard work and optimism. We feel that our product serves something good to this world and we like to present it before this prosperous world. By doing this project, we were better able to understand the various facets of doing an embedded system project which is emerging as one of the most 'in demand' technologies right now.

9. REFERENCES

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