Smart Home implementation using Arduino Board and Arduino IDE

Miss. Sampada Tayade[1], Miss. Aditi Bidwai[2], Mr. Brijesh Shinde [3], Mr. Ajay Ingole[4], Mr. Vaibhav Shinde[5]

Gramin Technical and Management Campus, Nanded, India
Computer Engineering

ABSTRACT

Smart Home is robotization of household devices so that it could be controlled through outside devices. The project is on the use of Arduino uno board and IDE to robotize home appliances. The significance of this project is providing security, reliability, interactivity to the users. This paper has details about different allotments to the project, it is an embedded system where IDE and Arduino and other hardware combine to form a system.

KEYWORDS

Robotization, Arduino IDE, Wireless, Relay

1. INTRODUCTION

Robotization or automation of house appliances is the most trending technology used in the today's world. Everybody is so dependent on the upcoming technologies. People around the globe tend to use the automation on the daily basis. The countries like Japan, Canada, United States, Singapore and many more adopted robotization.

The project of smart house implementation works for creating consciousness among users to use energy forms efficiently and wisely, apart from the till now used switches and boards we wanted to robotize the appliances.

The Arduino IDE is the interface for the communication between wireless module and Arduino chip. This interaction is carried out using relays and sensors. House automation is a favourable field ensuring comfort, security, less consumption of energy and providing a platform for user to make devices handsfree

The project purpose is to make things easier for the people in need and hurry. Aged can use this robotization because it is easy to use and affordable and that's ease for their elderly life.

2. COMPOSITION SURVEY

The wireless robotization systems that use Bluetooth technology od components that command user's appliances attached to the system. The moto of using hand's free technology is to provide remote operability to user. This application has been developed using Bluetooth module that provides interconnections between devices and control system [1]. Smart houses are built as a challenge to high technological living [2]. IOT system can also be a part of robotization [3]. The features like surveillance, span, price and convenience had been surveyed [4].

3. PROSPECTIVE WORK

The house automation has a system in networked, controllable devices that closely work to make use of devices comfortable, build fit, efficient and safe. In this Arduino Chip, Arduino IDE, Wireless module, Drivers for relays and the necessary parts. The ATmega328 microcontroller reads the inputs and transfer to the relays. The program has to be loaded to connect software to the hardware modules. HC-05 wireless module.

The projects core is Arduino which is mosty used in robotization. Which is cost efficient and works perfectly with large or medium scale projects. Arduino is connected to wireless module which transmits radio waves in short distance to operate devices connected to system. This creates a personal area network (PAN) in the smaller environment, the IDE uses c language to have a code in , IDE provides a platform to run , debug , write and integrate code that can be uploaded to a hardware , so the system can work in co-ordinate manner. The default baud rate of HC-05 in command mode is 38400bps and 9600 in data mode.
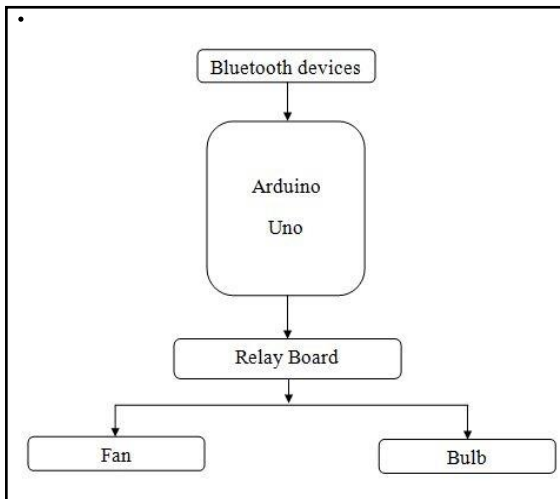
Block diagram of smart home implementation

3.1. DISCRIPTION OF ATmega328

The ATmega328 is heart of Arduino Uno, the microcontroller is the basic idea to create Arduino. It is commonly used in many projects and autonomous system where a simple. low powered, low cost.

Most common implementation of this chip is on Arduino development platform, such as Arduino Uno, Arduino Pro Mini, Arduino Nano models.

Specifications

- IC type: AVR microcontroller
- Core size: 8-bit
- Speed: up to 20MHz.
- Number of I/O: 23
- Program memory size: 32kb
- Program memory type: Flash
- EEPROM size: 1K x 8
- RAM size: 2K x 8
- Voltage:1.8V -5.5V
- Manufacturer: Atmel

3.2. WIRELESS MODULE

The wireless module of Bluetooth used in communication is HC-05. This can be used as hive and drone configuration.

Working of HC-

- Step 1: Connecting HC-05 with Arduino
- Step 2: Connect the LED and control it using Arduino serial monitor
- Step 3: Send serial commands to Arduino using serial monitor
- Step 4: Work with Arduino and testing the communication
- Step 5: Installing Evothings Studio
- Step 6: Introducing Bluetooth serial
- Step 7: Developing Front end using Evothings
- Step 8: Reviewing the complete Bluetooth
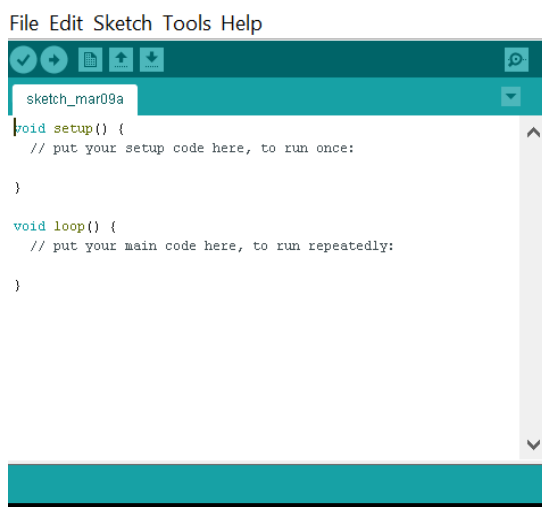

HC-05

Pin description of HC-05:

- Key/EN: used to bring in command
- VCC: connects 5V or 3.3V
- GND: ground pin of module
- TXD; transmits serial data
- RXD: receive data serially
- State: it tells if connected or not

3.3. ARDUINO IDE

The latest version of Arduino IDE is faster and even more powerful. In addition to more modern editors and more responsive interface it features accomplishment, code cruise and live sorter.

Versions of Arduino IDE:

- Arduino OOxx
- Arduino 1.0.x
- Arduino 1.5.x Beta
- Arduino 1.6.x
- Arduino 1.8.x
- Arduino 1,0,6
- Arduino 1.8.16
- Arduino 1.8.18

Arduino IDE sketch

5. NEED OF ROBOTIZATION

Potency: It produces more efficient and effective work. more work is done in less amount of time. Minimizes the work errors done by manual working.

Assurance: It increases working safety by preventing accidents.

Saving: Robotization saves time by being able to produce a greater magnitude of products

Promptness: Less work distraction or no need to take breaks.

Consistency: It never need to divide their attention between a multitude of things.

Perfection: Quality of work is delivered they are less likely to make mistakes, eliminates the possibilities of human error

6. CONCLUSION

This paper, the architecture for affordable and flexible house robotization using Arduino based implementation. The given architecture uses wireless module for interconnection between user and appliances.

7. REFRENCES

To work on with this paper successfully we needed to refer multiple websites and already made researches below are some of them mentioned.

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