Bluetooth Based Dc Fan Controller

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ABSTRACT

This paper presents the overall cost-effective FAN control through Android mobile with wireless micro controller. This is designed using Bluetooth technology will be beneficial to our society. The System is made to satisfy the needs of elderly and physically challenged people. Automated process gives more comfort for users, reduce risks and increase performance. Recent days the Smartphone and tablets are becoming powerful with new and useful characteristics. This is suitable to develop control systems. In this project, we introduce an Android OS based application for Smartphone that communicates with the fan through mobile device continuously to control the FAN speed according to the surrounding temperature.

Keywords: PIC Microcontroller, Bluetooth module, DC Fan.

I. INTRODUCTION

In modern days the popularity of controlling electrical device through phone has been increasing due to high performance and reduce work by connecting through Smartphone which is useful for elderly and physically disabled people, who can access and control the Appliances by staying at some place and access them remotely without the help of others. This can increase the life quality of them. Wireless technology is emerging day by day, several different connections are introduced such as Bluetooth, WIFI, and GSM. Bluetooth with globally available frequencies of 2400Hz is able to provide connectivity up to100 meters a speedup to 3Mbps. Based on the microcontroller the data may send and receive between the mo-bile device and hardware is possible.

This communication between two devices by using Bluetooth is more reliable and securable.

A. Existing System

Managing household appliances from a computer or a Smartphone was invented in existing system there was used to control only ON and OFF process. The used technologies in existing system we may use GSM, infrared and Wi-Fi. By using this method it takes more time to configure and control the appliances. Even it may cover large areas but it produces more interference while using GSM to connect with mobile internet.

B. Drawbacks

- ✓ More time consumption
- ✓ Cost effective
- ✓ Interference problem
- ✓ Data connection required
- ✓ Less reliability

C. PROPOSED SYSTEM

The Bluetooth technology is the gift for the modern automation which operates over 2.4GHz frequency, Bluetooth technology can link digital de-vices within a range of 10m to 100m at the speed of up to 3 Mbps depending on the Bluetooth device. This proposed technology is used to adjust the speed variation, and control the speed of the FAN using Blue-tooth signal

through Android mobile phone by using android application.

D. Advantages
- ✓ More reliability
- ✓ Low connection
- ✓ Unwanted wiring reduced
- ✓ Faster transmission
- ✓ More useful for elders and physically challenged

II. COMPONENTS

A. Bluetooth Module
Bluetooth is a wireless technology standard for ex-changing data over short distances. If the distances may exceeds it cannot work. Range of Bluetooth is 30 feet. HC-05 module is an easy to use Bluetooth Serial Port Protocol module, designed for translucent wire-less serial connection setup. Serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (En-hanced Data Rate) 3Mbps Modulation with entire 2.4GHz radio transceiver and baseband. It uses CSR Blue core 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature). It has the footprint as small as 12.7mmx27mm

B.PIC MICROCONTROLLER:
The name PIC initially referred to Peripheral Interface Controller. PIC have a set of registers that function as general-purpose RAM. The code space is generally implemented as on-chip ROM, EPROM or Flash ROM.

C. TEMPERATURE SENSOR:
Temperature Sensor LM35 series are precision integrated-circuit temperature devices with an output voltage linearly-proportional to the Centigrade temperature.

D. DC MOTOR DRIVER AND DC FAN:
A DC fan is a electrically powered machine. A fan consists of a rotating arrangement of a vanes or blades. The rotating assembly of blades and hub is known as impeller, a rotor, or a runner. Motor Drivers acts as current amplifiers since they take a low-current.
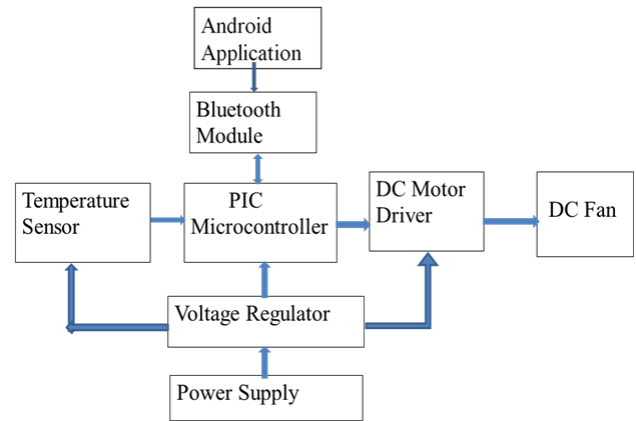
III. BLOCK DIAGRAM
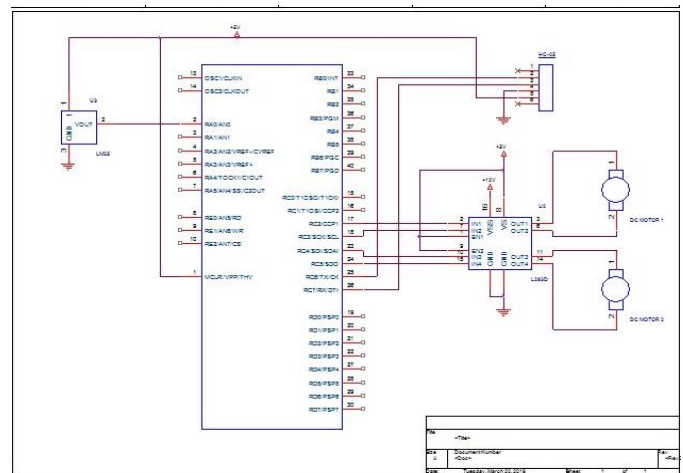

Figure 1

IV. CIRCUIT DIAGRAM

Figure 2

A. Circuit Description:
- ✓ First we need to connect the 5V regulated power supply to Vcc pin of PIC then connect the analog and digital GND pins to the GND.
- ✓ Temperature Sensor is connected to the I/P of the ADC pin i.e, AN0 pin of the PIC microcontroller(pin2 to pin2) and the other two pins i.e, pin1, pin3 are GND and Vcc respectively.

- Another part of the PIC is connected to the HC05 Bluetooth module and to the DC fans through a motor driver IC i.e, L293D.
- The HC05 bluetooth module has 6pins, as we know that Vcc and GND of the module goes to Vcc and GND of PIC. The TXD pin i.e, pin3 goes to RXD pin of PIC and RXD pin i.e, pin2 goes to TXD pin of PIC.
- The I/P pins of the motor driver are connected to the PIC microcontroller. I/P1 and I/P2 of the motor driver IC are connected to RC2 and RC3 of PIC. The I/P 3 and I/P4 of the motor driver IC are connected to RC4 and RC5 of PIC. Output pins are connected to the DC fans.

V. SOFTWARE REQUIREMENT

SOFTWARE USED: Embedded C
Embedded C is a set of language extensions for the programming language.
- It possesses cross development in nature.
- It is dependent on hardware architecture.
- It is used for limited resources like RAM, ROM and I/O peripherals on embedded controller.
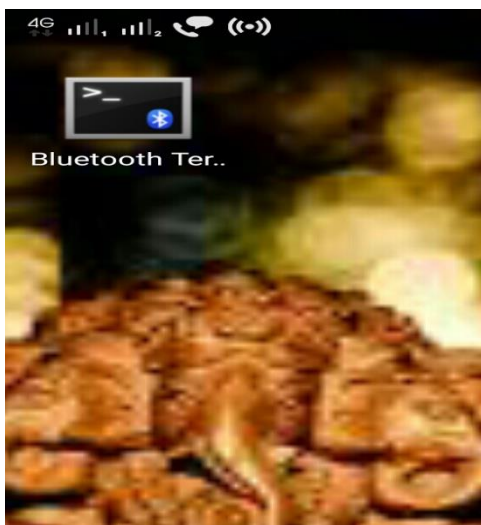
A. Model Output
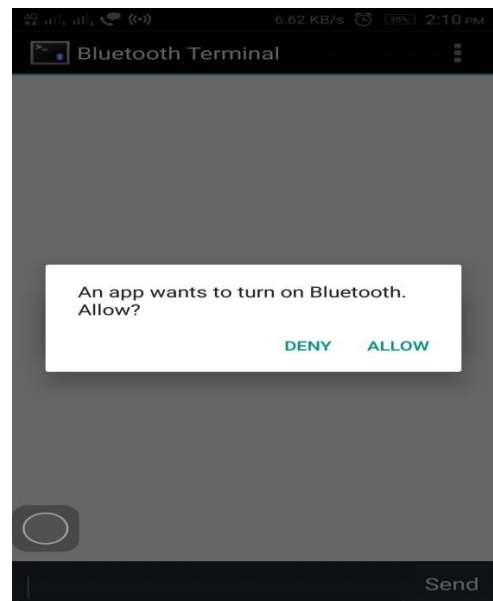STEP1:

Figure 3. simple application

STEP 2:

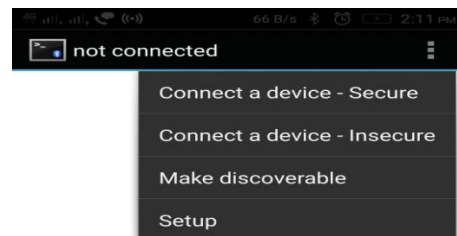**Figure 4.** Response by the user

STEP 3:

Figure 5. Selects the Bluetooth device
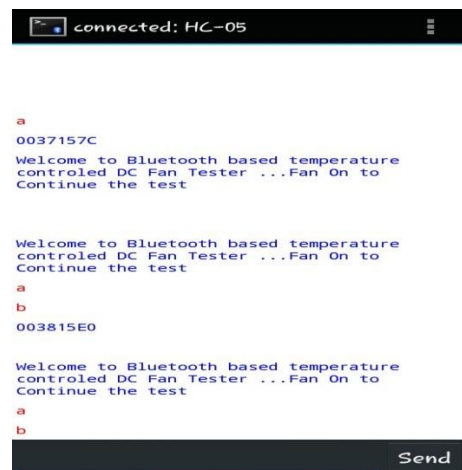
STEP 4:

Figure 6. Select the operation

VI. CONCLUSION

This system is designed at low cost and it is used to improve the standard of living .The wireless connectivity through the android device provides help to the people especially to elderly and physically challenged people.

The implementation of the Bluetooth connection in control board allows the system to install in simple way, the control board can be directly installed besides the electrical switches. The wiring of the electronic equipment's can be greatly reduced. By using the help of Bluetooth, the devices can be controlled in faster and easier comparing with other technologies.

VII.   REFERENCES

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