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Android Based Message Conveying System Using Bluetooth

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Abstract: The main objective of this project is to develop an embedded system, which can be used for spontaneous advertisement using LCD (liquid crystal display) by using android and Bluetooth module. Now a day, every advertisement is going to be digital. The big shops and shopping centers are using the digital moving displays now. In railway station and bus stands everything including ticket information, platform number etc is displaying in digital display. But in order to change the display message, they can send updated message using android compatible device using Bluetooth as a communicator. This project can be used to update display message within seconds on any screen connected to Bluetooth.

Keywords: Android, Bluetooth, UART (universal asynchronous receiver transmitter), LCD (liquid crystal display), MCU (Microcontroller unit), Embedded C, PU (processing unit), hex file.

I. INTRODUCTION

This project has immense application in colleges and offices for conveying notices instantly. The proposed system uses an AVR microcontroller. A Bluetooth device is interfaced to the microcontroller using UART communication protocol. An alphanumeric LCD display is connected to the microcontroller to display the information entered. Once the user connects Android application device to this system using Bluetooth, message can be sent using Android app based GUI and at receiving end, message from Bluetooth device is transferred to the microcontroller to display.

The main controlling device of the whole system is MCU, Bluetooth module (HC05) and Buzzer. The message sent through predefined application from user android mobile phone is received by Bluetooth module. Bluetooth module feds this information to microcontroller which process it and display on LCD display. Also the microcontroller horns a buzzer for every new message. To perform this task, MCU is loaded with an code written in Embedded C language.

II. DESCRIPTION OF HARDWARE

MCU is a device which integrates a number of the components of a microprocessor system on to single chip. It has inbuilt PU, memory and peripherals to make it as a mini computer. UART of MCU is used to interface Bluetooth module for serial communication. LCD is interface to MCU using digital input output pins.

LCD screen is an electronic display module and find a wide range of applications in instrumentation. A 16x2 LCD display is preferred over seven segments and other multi segment LEDs. The reasons include LCDs are economical, easily interfaced and have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. A 16x2 LCD can display 16 characters per line and there are 2 such lines.

A buzzer or beeper is an audio signaling device. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke.

A HC-05 Bluetooth module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. It enables any board with a wireless connection to connect to any other Bluetooth device with SPP (Serial Port Profile), such as mobile phones and laptops. Serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband.

III. DESCRIPTION OF SOFTWARE

Embedded C compiler based software is used to create a hex file from Embedded C code. Then simulation software is used to test the prepared code. After successful testing of prepared Embedded C code. Then another software is used to burn the hex file inside the MCU.

IV. ADVANTAGES

1. We can send or change the message wirelessly.
2. It can help in Saving Paper.
3. No Cost for Conveying Message.

V. WORKING

A Message is sent through an android phone using an android app via Bluetooth. Bluetooth module HC-05 on the embedded board receives the message and transferred it to the ATmega16 MCU as shown in Fig. 1. Then MCU reads the message and process it. The processed message is then sent for display to the LCD. As the message comes to the board, LED blinks and notify. There is also a buzzer attached which will beep as an alert and then the message will be displayed on LCD.

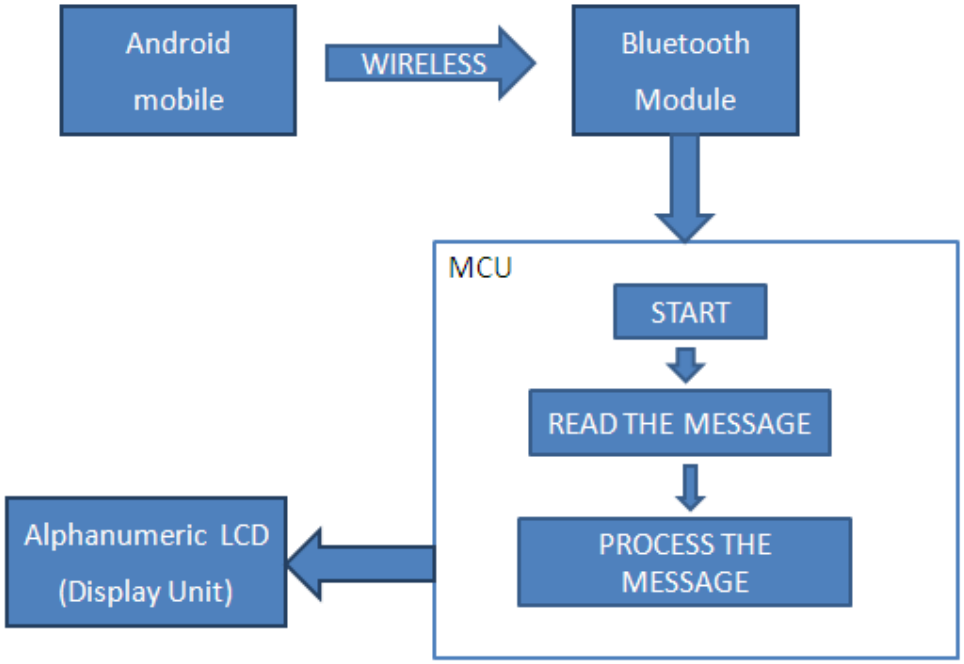

Fig 1. Working of the device

VI. Conclusion

Proposed system can transmit or conveys the message wirelessly. In the industry or colleges, it can be used to convey urgent messages in less time and there will be no need of a person to send message to everyone. Proposed system can help in saving time, money and paper.

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