Raspberry Pi Based Scrolling Message Display

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Abstract:
LED Scrolling Message Displays are becoming very popular. Display Board is primary thing in any institution/organization or public utility but sticking various notices is a difficult process. A separate person is required to take care of this notices display. This project takes part in advance hi-tech wireless display board. The project is built around the Raspberry pi from Broadcom. Using Wi-Fi transceiver a wireless interfacing can be provided to make it more user friendly. A software Application based string output sender can be programmed to send the alphanumerical string to the Raspberry pi and then to the display.

Keywords: Power Supply, LED Display, Raspberry Pi, Scrolling Message, Wireless Transceiver, LAN controller.

1. INTRODUCTION

The growing popularity of the Raspberry Pi in the Electronics & Telecommunication has spurred the department. The main objective of the project is display of important messages to people widely without much manual efforts. Important notices can be displayed within a short span of time and these notices can be upgraded within minutes. This paper aims to propose Raspberry Pi for daily use in institution/organization which will utilize its fast wireless Broadcom system. The project provides us with easy and user friendly interface to display any message on the LED matrix. There is no need to manually write the message like in conventional display boards thus it is more popular. Moreover the LED display is more catchy and can be seen from a distance compared to the conventional display boards. Furthermore there is huge future scope for modification in the message display fields. For example use of Raspberry Pi or GSM device to transmit the message, android applications, use of 3 colored power led etc.

The Project is divided into the following parts:

a. A software interface to input the message string to be displayed.
b. Wi-Fi transmitter module on COM port to send the serial data to the Wi-Fi receiver on the Raspberry Pi unit.
c. The Raspberry Pi unit which will serially decode the data from the Wi-Fi receiver.
d. The LED matrix which will display the final output in the form of alphanumerical characters.

The Broadcom Raspberry Pi 3 B+ Module is used for the main purpose of giving final output to the LED matrix. As the memory capacity of this R-Pi is not much limited, but it is memory interfaced with a sufficient capacity EEPROM IC to fetch the decoding codes for the alphabets, numerical and special symbols. Use of LED provides many advantages like low cost, high brightness, low power consumption, ease of maintenance, easily available etc. The Software interface to be used here works like the Terminal which are used to sends the binary data. We can manually adjust the data form to be sent to the display board.

1.1. Power Supply
Power Supply is an important part of a circuit. It provides required supply to different blocks of the circuit from input.

1.2. LED Matrix
The LED matrix designed is 16x32 per character matrix. The anodes of the rows are made common and their common terminal is given to the power supply via transistor array and the cathodes of the columns are made common and given to the negative terminal of the supply via transistor array. The anodes in the rows and cathodes in the columns are made common so that it forms a logic wherein we can access a particular LED with controlled inputs from the Raspberry Pi GPIO port.
The initial step is to design the LED matrix which will display the information. The LED matrix, after the designing of the Raspberry Pi unit with external EEPROM interfacing, the Python coding for encoding the alphanumerical data into hex code according to the dimensions of one character on the matrix, here (16x32). Wi-Fi transceiver assembly and finally the software based user interface to input the message to be displayed.

3. CONCLUSION

By introducing the concept of wireless technology in the field of Electronics & Telecommunication we can make our communication more easier and faster, with greater efficiency we can display the messages with less errors and maintenance. The desired messages to be displayed on the LED matrix are written on the software interface in the PC or Mobile (Smart Phone) and this message is transferred using wireless technology and is eventually obtained on the LED matrix. Latency involved in using of papers in displaying of notices is avoided and the information can be updated by the authorized persons.

4. APPLICATION

A. Educational Institution and Organization:
Currently we rely on putting up papers on notice boards to inform people of events. E.g. Placement news, cultural activities news, etc.

B. Advertisement:
In shopping malls we get to hear the offers on various products from time to time. Instead we continuously display the information regarding the products and related offers on electronic display boards.

C. Railway Station:
Instead of announcing the delay in arrival of trains we can display the information.

4. REFERENCE

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