

Application Based Analysis and Design Using Microcontroller

Dr. Ashutosh Tripathi¹

¹ amity university

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Abstract

Now day's automation systems are very common to each and every field of human life. Humans want to lead a leisure full life. The theme work of this paper is also based on this idea. The idea is to automate the appliances using a normal mobile phone system. These paper fistly commands a system which governs a system which gives the command to appliances to either switch on or off. The system works on some common day's technologies which are mobile networking using GSM or CDMA, Duel Tone Multiple Frequency and basic encoding and decoding techniques. In this project we try to give the same prototype for this type of trains. We are using microcontroller 89c51 as CPU. And secondly the motion of the train is controlled by the stepper motor, for displaying the message in the train we are using intelligent LCD display of two lines. The train is designed for three stations, named as A, B and C. The stoppage time for every station is 3sec and time to travel from one station to another is 6sec, there is a LCD display for showing various messages in the train for passengers. There are indicators, which are used to show the train direction i.e. UP path and DOWN path .before stopping at the station, the train blows the buzzer. it also includes an emergency brakes system due to which the train stops as soon as the brakes are applied and resumes journey when he emergency situation is over.

Index terms—

1 INTRODUCTION

n the paper two mobiles are employed one at user side which is carried by the user and second at the receiver part. At receiver part the mobiles DTMF output is fed thought the ear phone jack to the receiver circuit. When the DTMF tone is fed to the receiver circuit It converts the analog DTMF signal to digital output and this digital output is fed to the Microcontroller 892051. In Microcontroller a specific code is written to process the details of the digital output from the decoder chip MT8870. For every input from MT8870 there is a specific command is written in the Microcontroller 892051 and corresponding to the input code makes one of the output pin of Microcontroller 892051 high which commands the relay driver IC chip II.

2 WORKING

Before starting with Motorola IC MT8870 it should be configured properly. Power supply is connected on +5v on pin 18 and ground on pin 9. The DTMF input is supplied to the pin 3 through a resistance of 100k so that a proper amount of current is drawn to the pin 3 for operating the IC. Crystal oscillator of frequency 3.57MHz is deployed between pin 7 and pin 8. Output is taken from pin 11, 12, 13, 14 through pull up resistors.

38 **3 III.**

39 **4 MICROCONTROLLER 89C51**

40 The use of microcontroller ensures the reliability of the system. Before starting with the working of Microcontroller
 41 892051 it should be configured properly. Pin 20 is connected with Vcc and Pin 10 with Ground. An oscillator of
 42 11.0592 MHz is deployed between the pin 4 and pin 5. Input from the MT8870 is fed to the pin 6, 7, 8, 9 which
 43 are general purpose input/output pins.

44 These pins are also considered as Port 3, so while programming the controller programmer consider input Port
 45 as P3 here. And output is taken from general purpose input/output Port 1. The out put is a 8 bit output so
 46 that it can control the eight pins of relay driver IC.

47 The Microcontroller code according to the input of MT8870 is given as:

48 Coding of motion of the train is controlled by the stepper motor, for displaying the message in the train we
 49 are using intelligent LCD display of two lines.

50 The coding of the metro train prototype is given in the assembly language. The Programmer main routines
 51 are the routines for running of stepper motor in forward Direction and in reverse direction Message on the LCD
 52 data e q u p1 busy e q u p1.7 r s e q u p3.5 r w e q u p3.4 e n e q u p3.3 B z r e q u p0.2 l e d f e q u p0.0 l e d b e
 q u p0. ¹



Figure 1: Application

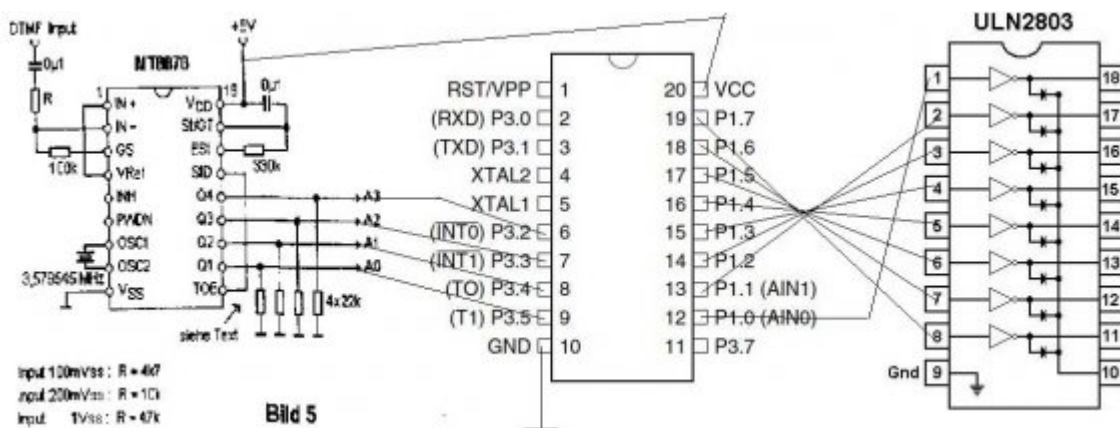


Figure 2:

54 Author : Department of Electronics and Communication, Amity School of Engineering and Technology, Amity
55 University Rajasthan, Jaipur-302002. Email : ashu20034@gmail.com IV.

56 .1 RESULTS AND CONCLUSION

57 The whole system is perfectly developed and tested under the laboratory. This system is very cost effective and
58 easy to deploy in the existing systems. This

59 [David E. Simon (ed.)] *An Embedded Software Primer* by, David E. Simon (ed.) Pearson Education.

60 [Raymond et al. ()] *An Introduction to real time systems: Design to networking with C/C++*, J A Raymond ,
61 Donald L Bhur , Bialek . 1999. Prentice Hall Inc. New Jersey.

62 [Building Embedded Linux Systems by Karim Yaghmour] *Building Embedded Linux Systems* by Karim Yagh-
63 mour, O'reilly.

64 [Man ()] *Design with Microcontroller*, John B Peat Man . 1998. Pearson education Asia.

65 [Designing Embedded Hardware by John Catsoulis, O'reilly 3. Embedded System Design by Frank Vahid, Tony Givargis]
66 *Designing Embedded Hardware by John Catsoulis, O'reilly 3. Embedded System Design by Frank Vahid, Tony*
67 *Givargis*, John Wiley & Sons, Inc.

68 [Embedded System Design by Peter Marwedel] *Embedded System Design* by Peter Marwedel, Kluwer Academic
69 Pub.

70 [Heath ()] *Embedded Systems Design*, Steve Heath . 1997. Newnes.

71 [F (ed.)] *Programming and Customizing the AVR Microcontroller* by Dhananjay Gadre, MGH 10. *Fundamental*
72 *of Embedded software* by, F . Daniel W. Lewis, PHI (ed.)

73 [Moore ()] *Real time Programming: A guide to 32 Bit Embedded Development*. Reading, Grehan Moore , Cylix
74 . 1998. Addison-Wesley-Longman.

75 [Alan C. Shaw (ed.)] *Real-time systems & software* by, Alan C. Shaw (ed.) John Wiley & sons, Inc.

76 [Burns and Wellings ()] *Real-Time Systems and Programming Languages*, Alan Burns , Andy Wellings . 1997.
77 Harlow: Addison-Wesley-Longman. (Second Edition)