

Digital Clock in Regional Language

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Abstract:

Abstract—Our country India speaks many different languages. Many Indians speak languages like Indo-European (74%), the Dravidian (24%), the Austro-Asiatic (Munda) (1.2%), or the Tibeto-Burman (0.6%) families. The Indian Constitution's schedule eight also defines 22 different languages. Indians always prefer to talk regional native language for day today communications. Indian Government also has a plan to include different native languages for official use like a display system at public places for sharing the information with common people. Much of this information is in the form of numbers like flight number at the airport. At many public places like airports and rail way stations, time plays an important role since most of their schedules are based on time. Our project is based on the design of a digital clock to display real time in the native regional language like Marathi language for native regional display applications. This design is simple, cost effective and user friendly and displays digital time in natural language.

Keywords: Regional language, display, design, clock

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I. INTRODUCTION

World moves with the time and a digital clock is normally used to display the real time along with the date at different places. Technologies like a 7-segment display, dot matrix display, Liquid Crystal Display (LCD) and graphic display are used in the digital clock to display the real time. Most of the digital clocks are designed to display time in English language in the format hours, minutes and seconds (HH:MM:SS). Our project is based on designing a digital clock in a native regional language in the form HH:MM:SS. It is a microcontroller based application with facilities

like time adjustment and language selection. The time of the clock or selection of language can be done using a simple push button switches. Our design is simple and the cost effective. Though 7 Segment displays are widely used in the digital clock, they may not be suitable for regional native digital clock since regional language characters are different than English characters in their styles and curves. The matrix display is used in our project since it is more flexible to display the regional native character patterns. The displayed regional native digit characters for real time in our digital clock are more clear and

attractive. Our proposed project design can be able to display numerals of different scheduled Indian languages like Assamese, Bengali, Bodo, Dogri, Gujarati, Hindi, Kannada, Konkani, Kashmiri, Maithili, Malayalam, Manipuri, Marathi, Nepali, Oriya, Punjabi, Sanskrit, Santali, Sindhi, Tamil, Telugu, and Urdu along with English.

II. OBJECTIVES

Objective of our project is to support digital India in regional native language, so that common people are more comfortable for reading and regional language becomes familiar with everyone. Our design proposes a Multilingual digital clock so that it can display the real time in multiple languages as per selection on a single display. Our design can be useful in schools and colleges so that during education process it become easy to learn regional language numeric characters practically. It can be also useful in public places like hospitals and railway stations. It can be useful for the common people who do not know English language and are familiar only with their regional language since it becomes easy for them to understand time in natural language. It is also possible to replace the existing analog clock used in most of the places with a digital clock to support digital India.

III. LITERATURE SURVEY

Normally 7 segment Light Emitting Diode (LED) displays are preferred because they are comparatively easy to construct, use, consumes low power and its price is comparatively lower than other types of displays. Even higher segment displays like 13 segment LED displays are available which are more attractive in look than the previous designs, but their drawback is since it uses 13 segments to display, they are more complex to use and are not easily available in the market. The regional native language characters cannot be displayed efficiently using a 13 segments display as curving angle of character is

not possible in 13 segment display [1]. To display almost all regional language character the author of this paper proposed to choose 16 and 17 segment because displaying of all regional character is possible using such multi segment displays [1]. But the multi segment displays are also not available easily in market and 17 segment displays yet not developed. If we want to implement using 17 segment, we need to develop 17 segment display separately which will increase the cost of overall project design specially for developing the display [2]. Authors [2][3] in their project proposed to use dot matrix display which is more accurate and they used six 8x8 dot matrix LED display and interfaced it with microcontroller as 6 dot matrix display in the form of 48 rows and 48 columns. Total 96 port pins will be required to interface it with microcontroller and practically it is impossible to implement it. Technique of a shift register and buffer is used to reduce the port pins for columns to 8 and 3 for rows.

IV. PROPOSED SYSTEM

The system we propose is to display time in regional language using microcontroller and Real time clock as shown in

figure 1.

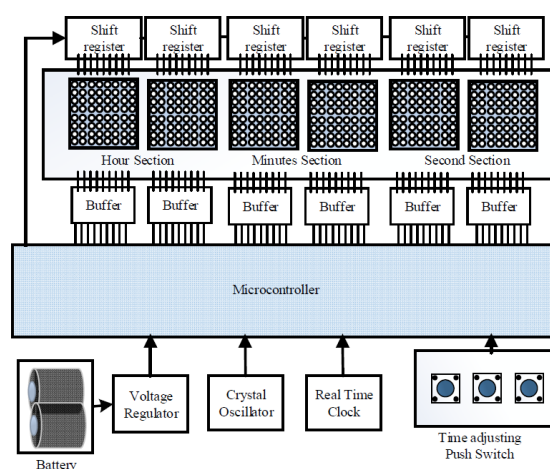


Figure 1. Block diagram

Microcontroller: 8051 Microcontroller (μC) shown in figure 2 is the heart of this project and it is

responsible for all the processing. It is an 8 bit μ C. Basic version has 128 byte of Random Access Memory(RAM) and 4KB of Read Only Memory (ROM). It has two 16 bit timer and support serial communication. Microcontroller is interfaced with shift register and buffer in order to reduce port pin i.e. 96 pins is reduced to 3 rows pin and 8 column pin.

Dot Matrix Display: An LED dot matrix display consists of a matrix of LED's arranged in a rectangular configuration. It is an array pattern, used to display different characters, various symbols and images. The desired character or graphics can be displayed by controlling switching of a desired pattern of LED's. Configuration of such display is dot size of 3.0mm circular dot, 8 columns, 8 rows and height 32x32mm.

Real time clock generator: The DS1307 is a standard hardware shown in figure 3 is a serial real-time clock (RTC). It is a low-power, full binary-coded decimal (BCD) based clock. The real time clock is used to generate the accurate timings. It supports clock, calendar and provides data like seconds, minutes, hours, day, date, month, and year.

Buffer/shift register: Ideally 96 pins are required for handling dot matrix in the form of rows and columns. However, the use of six shift registers reduces the required row pins to 3 from 48 and the use of buffer reduces the use of column pins to 8 from 48.

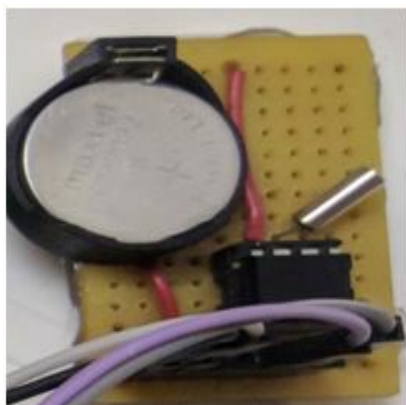


Figure 2.8051 Board

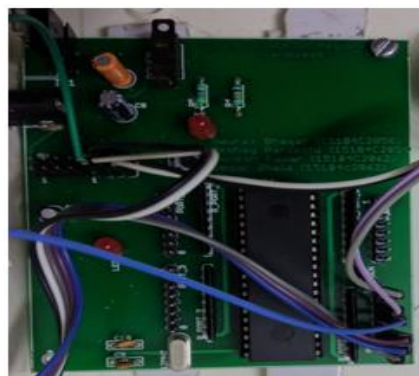


Figure 3.RTC Circuit

V. FLOW CHART

Figure 4 shows flowchart for the part software of the proposed project. Flow chart shows how to adjust the time using increment mode or decrement mode. Software of the project was developed using high level programming.

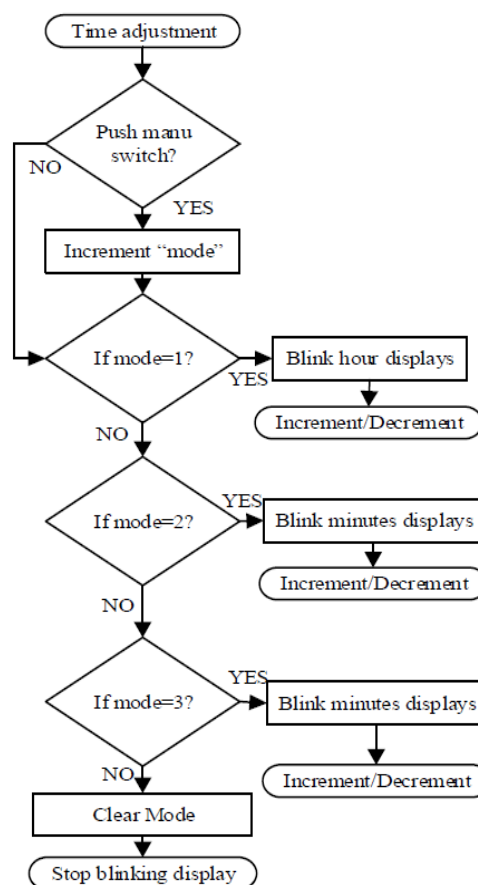


Figure 4.Flow Chart



Figure 5. Display in Regional Character



Figure 6. Display in English character

VI. RESULT

Figure 5 shows the display of real time in Marathi language in HH:MM:SS format and Figure 6 shows the display of time in English language in HH:MM:SS format.

VII. CONCLUSION

Mother tongue which is a regional native is our pride and identity of a person. We should practice our regional language in every aspect of life. Digital clock in regional language is one step towards the aim digital India in regional language. This idea can be extend to all Indian languages like Urdu, Gujarati, and Kannadetc .Our project is to preserve the glory of our language and to represent it throughout the world at different public places by displaying real time in regional language. We should practice it besides English language. This is our small attempt to design electronic devices that support natural language. This project can be further extended to add audio facility such that real time can be sounded in the regional native language along with display.

VIII. REFERENCES

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