ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 3, March 2018

English to Braille Language Converter using Arduino

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ABSTRACT:Visually impaired people are the indispensable unit of our community. Their disabilities about the eyesight make them less accessible to computer, educational software and digital data which turn to limit their own knowledge. The main problem faced by them is to read digital data in terms of Braille language. Braille language is represented by 6 dots arranged in 3x2 matrix and it is readable only through the sense of touch. This paper introduces electronic Braille which consists of Braille reader . Reading is possible through tactile pin module arranged in 3x2 matrix . Whatever data is to be read or write will be send by Keypad. This small electronic Braille device will be portable and has a low cost than that of learning materials of blind people.

KEYWORDS: ArduinoUno ATmega328,Vibrators, Braille language, Visually impaired people, Keypad

I. INTRODUCTION

According to the statistical analysis of the visually impaired peoples by the World Health Organization, among 285 million peoples 246 million have low vision whereas 39 million are totally blind. This analysis shows that the visually impaired peoples cannot be ignored.

The visually impaired as well as the deaf and blind people are facing distinct unpleasant problem for communication with outer world, because vision is the most important sense to acquire maximum information and knowledge. But to live along with this blindness, a visually impaired people forces to build a strong capability to make constructive use of sense of touch. To read information the blind people uses the sense of touch and the sense of touch can be used to develop dot patterns called as Braille. Braille delicate tactile formation. This perception for the sense of touch makes visually handicapped people intuitive end users of technologies that aim to exchange information through this secondary sense i.e. sense of touch.

Braille or tactile writing and reading had found by the Louis Braille, was born in France in 1809. He innovated tactile writing and reading system by 1820, but had not welcomed preferably as a writing and reading channel for visually impaired. It was accepted as a standardized tactile reading and writing for the visually handicapped in 1918 .

Reading, writing as well as understanding of outer world knowledge for the blind people is performed via Braille only. According to the international standard of cell, one Braille cell is consisting of 6 dots arranged in matrix as shown in fig. 1. Braille is written through 63 different number of combination produced over one Braille cell. For the given English alphabet, the specific dot(s) of the Braille cell rose than others. Blind person uses sense of touch to read the Braille cell and then understands the given English alphabet.

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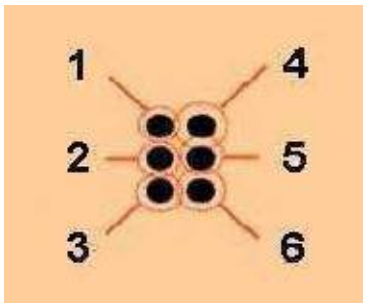

FIG 1: SIX DOT BRAILLE CELL

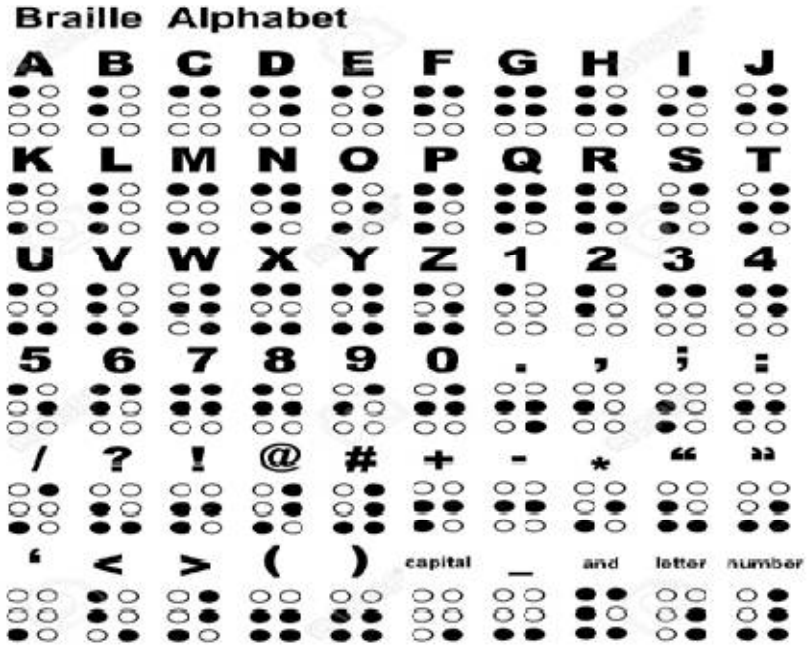

Fig 2: Braille Alphabet Chart

II. LITERATURE SURVEY

[1]Braille to Text and Speech for CECITY Persons , by P. P. Chitte1, Y. A. Pimpalkar,
Virtual Simulation and Embedded Module of Mobile Phone Using modified Braille Display,by Mohamed Iqbal.M, Padma Balaji.L, Jayakar.M , Gokul. P, KarthikKumar.R, Jairam

[2]A low cost portable Refreshable Braille for Blind people, by Ashwini S. Bagane, Prof. S.R. Jagtap (ICCEH-16),

[3]Advanced Braille System-Communication Device for Blind-Deaf People by Saraswathi Y., ShivangiGarg, SpurtiKulkarni, Swetha1, Kiran- In first system iInput given from keyboard to FPGA is first converted to the number sequence. This combination of number sequence forms corresponding English text.16X2 LCD display is used for display the English text and also to display message such as “HELLO”.A voice output similar to the English text is presented as a response to the user.

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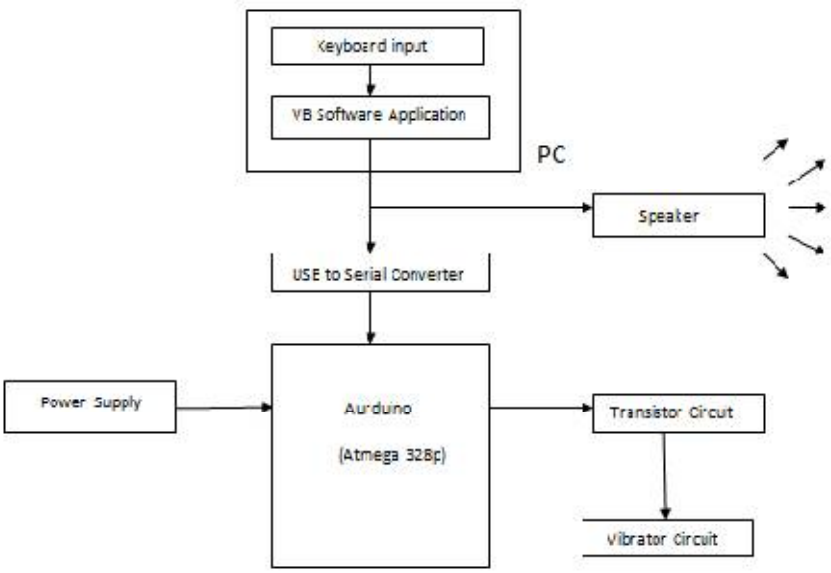
III. RELATED WORK

We have presented a system for blind student. While their lack of sight could represent a limitation during learning. This technology is presented that can be used for learning for blind student. The objective of this project being sensing through vibrators in Braille, which configures 6 dots according to input text. This system has proven to be useful tool for a blind person, so that using this system ,it become easier to learn and read for blind person. We can also develop Multilanguage to Braille convertor.

IV. BLOCK DIAGRAM



The text message that needs to be sensed is input to the PC. VB software helps the text to be converted into electrical signals (corresponding to the interpretation of individual alphabets in Braille). An Assembly level program for processing these signals and giving directions to them is burnt on this Arduino.
The objective of this project being sensing through vibrators in Braille, which configures 6 dots according to input text. These vibrations are created on mobile vibrators by transistorized circuit with respect to receiving signals from Arduino.

V.SYSTEM SPECIFICATION

There are different components are used in this system to convert English message into Braille language. The specifications of these components are as follows:

- **ATmega 328P Microcontroller**:Arduino is the main controller of the system. It will control all the operations of the system. It is the 28 pin IC operates on 5V supply.

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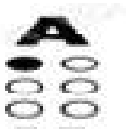
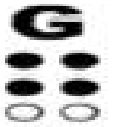
- **Transistor**: It is a current activated device.Transistor is used as a switch. It requires 100 mA collector current and 5 volt power supply.

- **Vibrators**: An Eccentric rotating mass vibration motor(ERM) uses a small unbalanced mass on a dc motor, when it rotates it creates a force that translates to vibration. It operates on 3 to 5 volt power supply. It requires current less than 1 ampere.

VI.RESULT

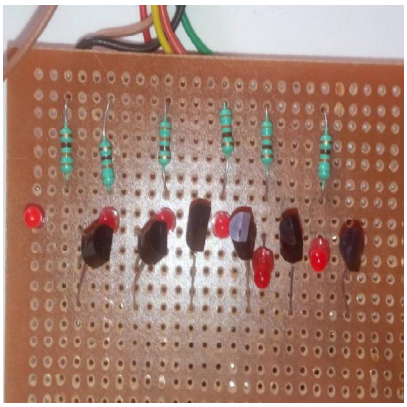


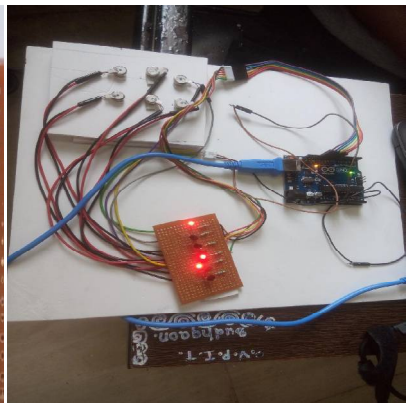
When we type letter A in VB application form ,the speech is generated according to the given input. This input string is transmitted to Arduino through serial connector. Based on program for 'A' the control signals are generated .
As shown in figure 14 for 'A' first dot should be raised .For that 1st vibrator is turned on.
Arduino Pin no.8 to13 are connected to transistorized circuit.
The vibrators are connected to Arduino through transistorisedcircuit.The control signals generated from Arduino turns on or off the vibrators.To turn on the transistor we require 3 to 5v.If the voltage is less than 3v then the transistor will be in off state.
For the letter 'A' the 1st vibrator is turned on while other vibrators are turned off.



When we type letter G in VB application form ,the speech is generated according to the given input. This input string is transmitted to Arduino through serial connector. Based on program for 'G' the control signals are generated .
As shown in figure 15 for 'G' 1,2,4& 5 dot should be raised . For the letter 'G' the 1st ,2nd ,4th & 5th vibrators is turned on while 3rd & 6th vibrators are turned off.

Braille matrix **Transistorised circuitEnglish to Braille system**





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VII.CONCLUSION

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REFERENCES

[1]DwijenRudrapal, RumanSarkar, Smita Das, "A Low Cost Micro electromechanical Braille for blind people to communicate with blind or deaf blind people through SMS subsystem", 3rd International Conference of the Advance Computing Conference(IACC),pp. 1529-1532, 2013.
[2]Gareth Evans, Paul Blenkhorn, "Automated Braille Production from Word-Processed Documents", IEEE Transactions on Neural Systems and Rehabilitation Engineering, Vol. 9, No. 1, pp 81-85, March 2001.
[3]Vrushabh S. Dharme, S. P. Karmore, "A Electro-Micromechanically Actuated Text to Braille Converted Refreshable Display with the Mono Cell", International Journal of Science and Research (IJSR), Vol. 4, No. 5 pp. 143-147, May 2015
[4]Alejandro R. Garcia Ramirez, Luiz Gustavo, Marcelo Bernart Schmidt, "Single Braille Cell", 5th ISSNIP-IEEE international conference on Bio signals and Bio robotics, 26-28/May/2014.
[5]AbhinavKulkarni, KishorBhurchandi, "Low cost e-book reading device for blind people", 2015 International Conference on Computing Communication Control and Automation, pp. 516-521.
[6]K. R. Subramanian, N. Sriskanthan, "Braille Display Terminal For Personal Computers", IEEE Transactions on Consumer Electronics, Vol. 36, No. 2, pp. 121-128, May 1990.
[7]www.euroblind.org

BIOGRAPHY

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