SMART GLOVE FOR GESTURE INTERPRETATION

S. Yamini, B. Veda Sahithi, K.B.V. Lakshmi, T.Y.S.S.Pranathi, K.Neeraja

SRM University – AP

ABSTRACT

Inability to communicate with others limits several people's day to day activities and forces them to face a deep social and psychological impact. Numerous scholarly inventions have been developed to overcome the difficulties faced by the differently abled peoples. One of such implementations is the "Smart Gloves".

In this paper, we aim to develop a Smart glove for message interpretation, based on a gesture recognition technology , that converts the hand gestures into speech signals. In hardware model the flex sensor, which is made up of a bend sensitive resistance element, is used to capture the gestures of a disabled person. Sensor sends the collected data to the Arduino which then accesses the previously defined data and convey the meaning to others.
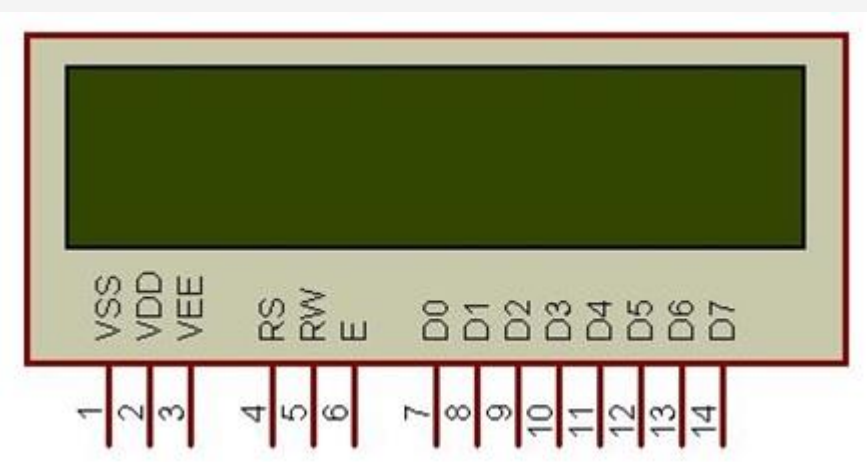
OBJECTIVES

To develop a system that recognizes hand gesture and displays the text and then it converts to speech.
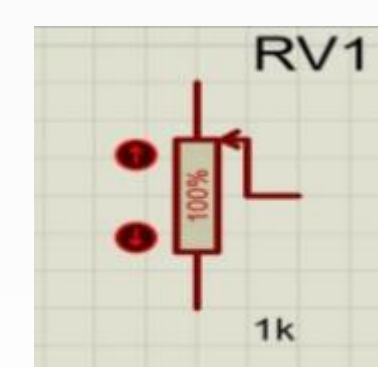
MATERIALS
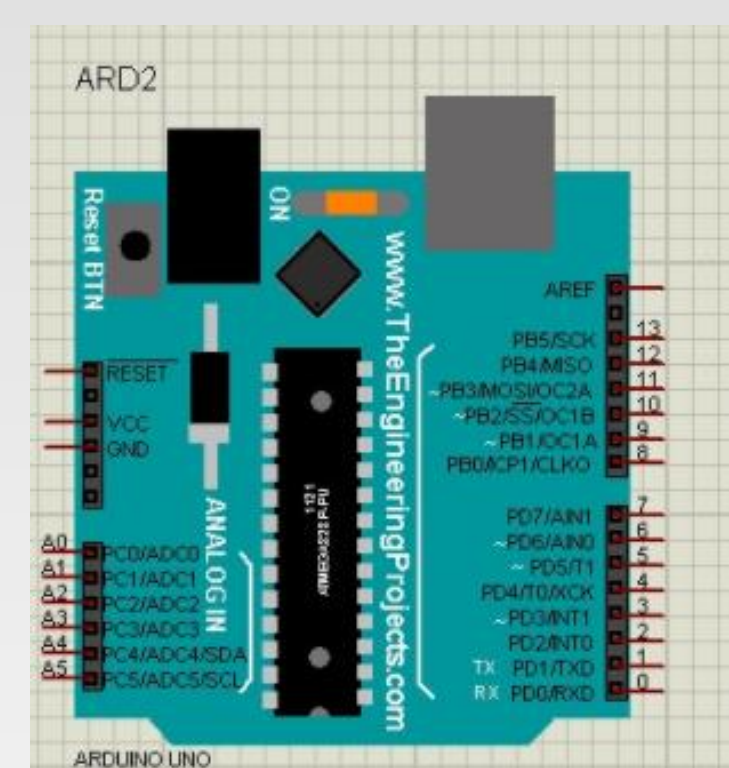
ARDUINO UNO

LCD

POTENTIOMETERS

METHODS

In the proposed system potentiometers are used in place of flex sensors and according to the gesture made by the user the voltage values will be changed accordingly. The output of this potentiometer is processed using Arduino UNO. Predefined threshold values for each gesture and its corresponding messages are stored in the database of the Arduino. When the input voltage of the Arduino exceeds the threshold value, LCD displays the message that was assigned to the gesture in the database. We have given two modes in the code for control and speech modes. A buzzer is connected to Arduino which buzzes every time when a speech mode is selected in order to emphasize the urgency of the gesture given by the user.
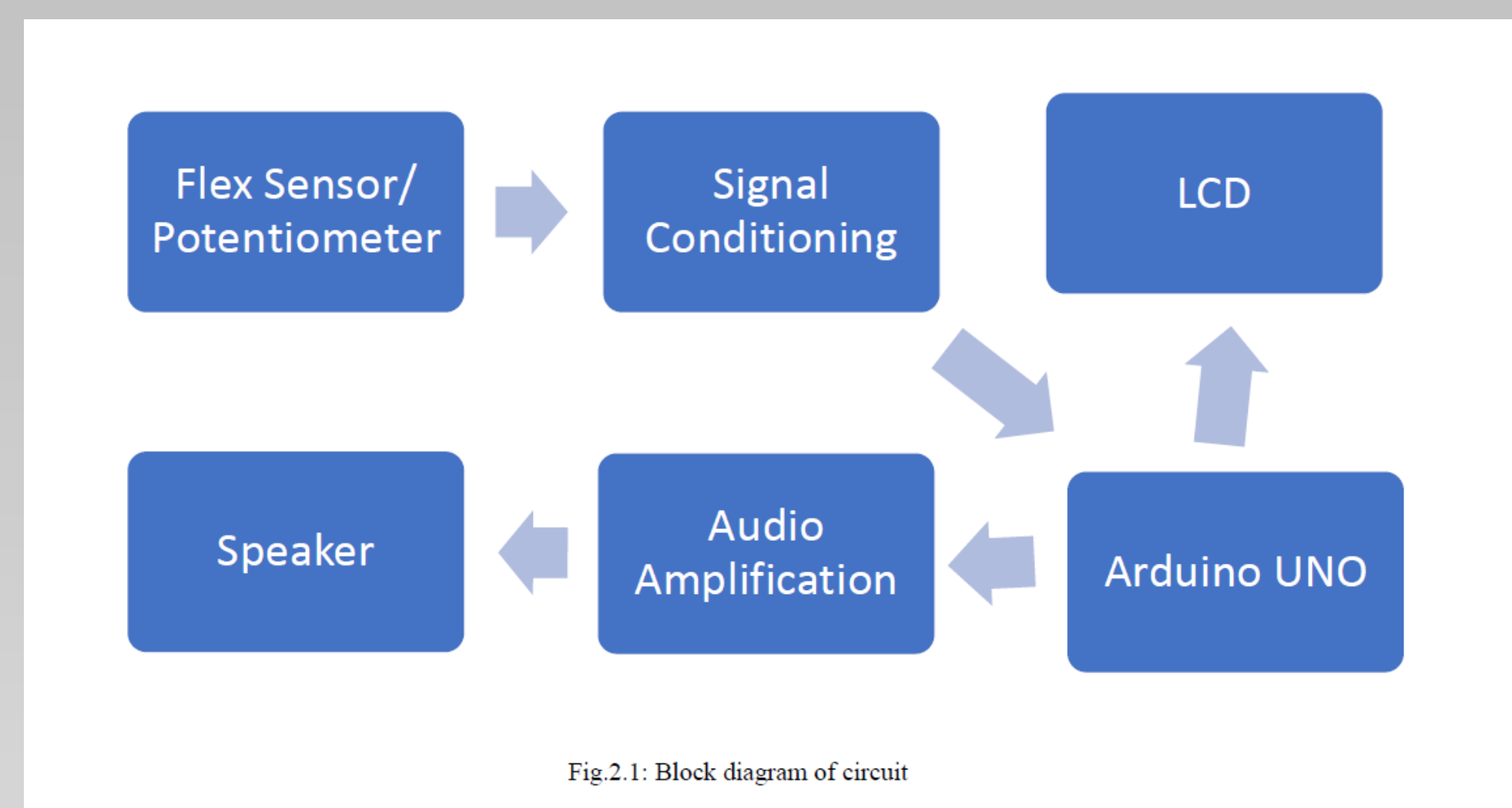

Fig.2.1: Block diagram of circuit

CIRCUIT DESIGN

The one end of the potentiometers RV1, RV2, RV3, RV4, RV5 are connected as Analog inputs to Arduino A0, A1, A2, A3, A4. The other end is connected is to the power supply of 5V and the third end is grounded.

The 4,6,11,12,13,14, pins of 16*2 LCD are connected to the output pins 8,9,10,11,12,13 of Arduino UNO.

The 7th output pin of Arduino is connected to one pin of the buzzer and the other pin is grounded.
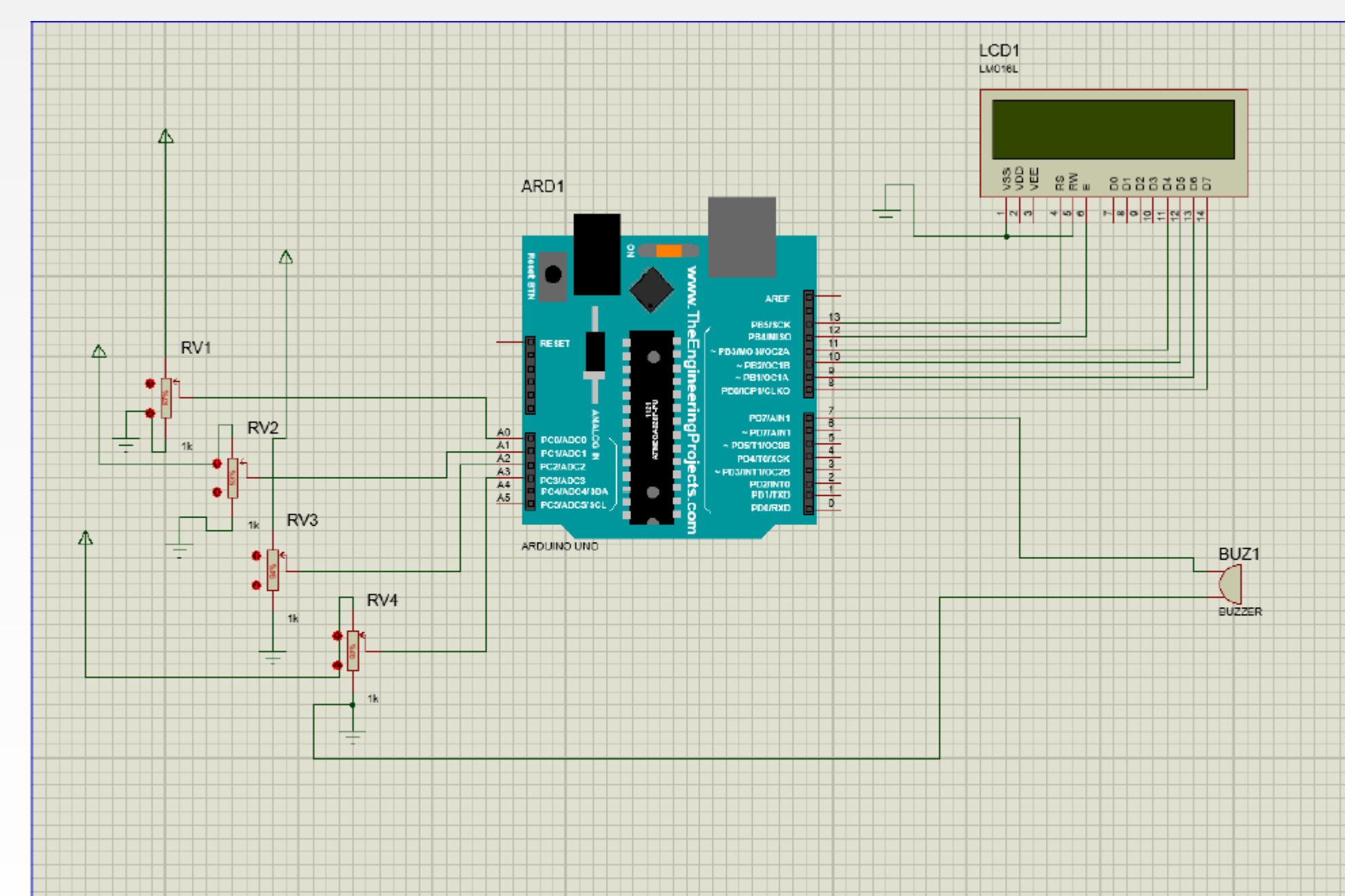

Fig.2.3: Circuit Design

RESULTS

In this proteus virtual model of smart gloves we used potentiometers, Arduino UNO, LCD, speakers. we have designed the code for two modes such as control mode and speech mode. The potentiometers are given with inputs and then this input data is sent to Arduino UNO which then sends output to LCD. The control mode is for appliances operation and speech mode is for messages.
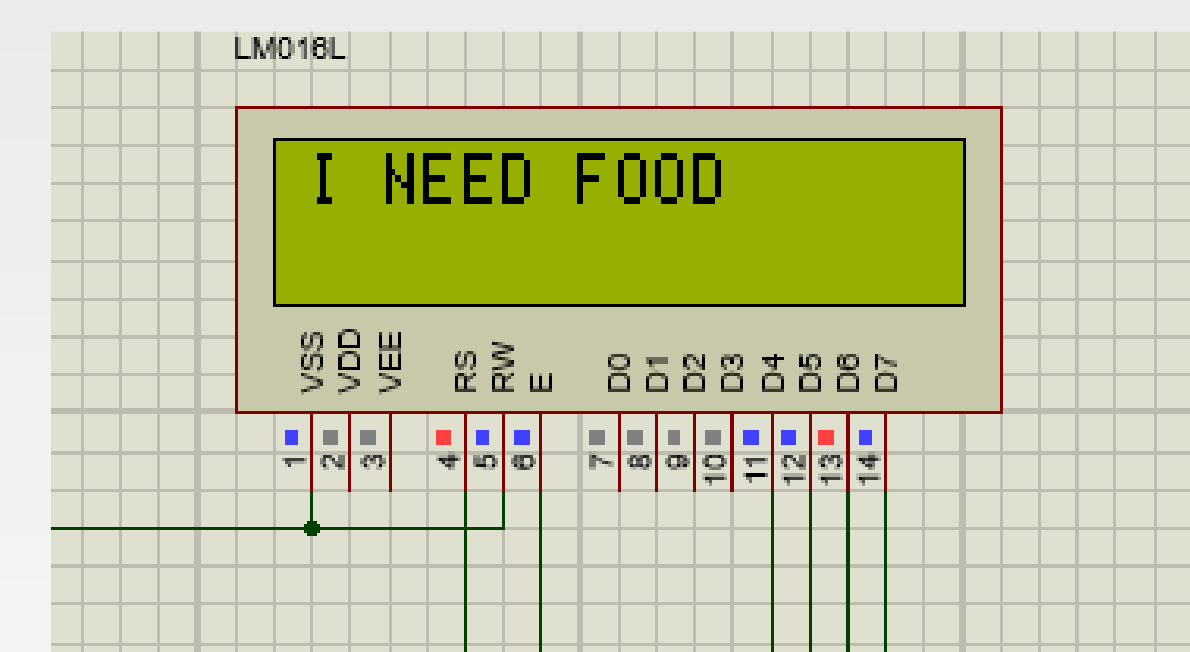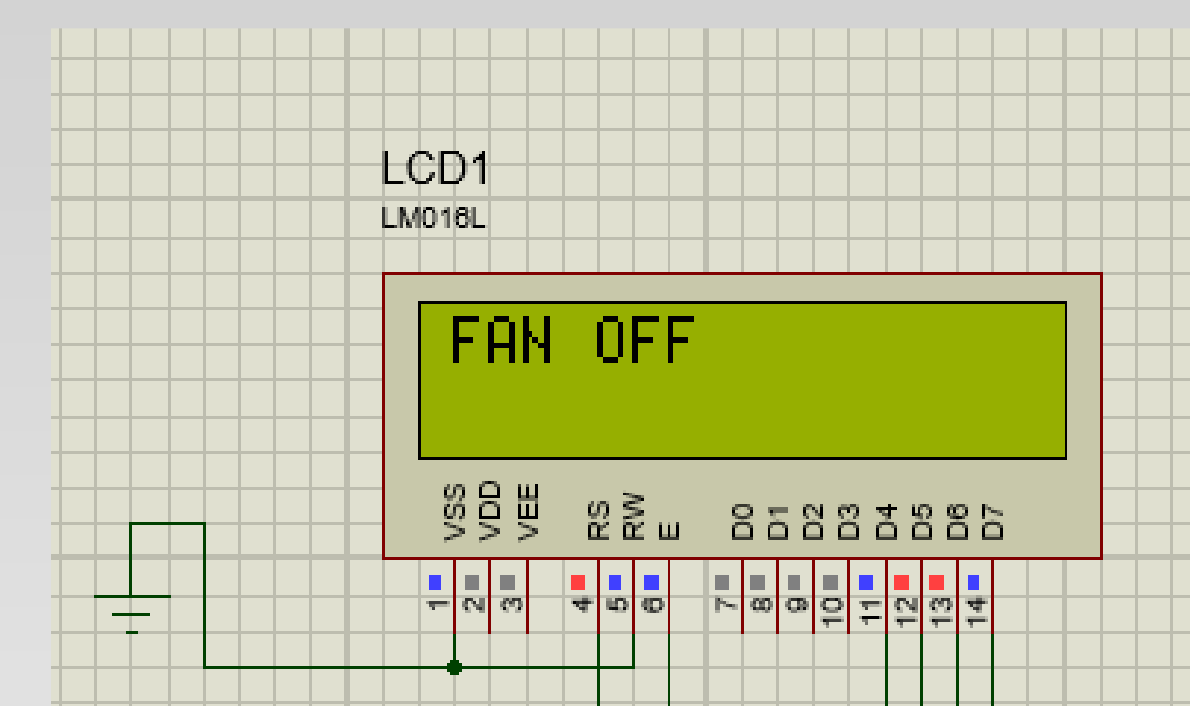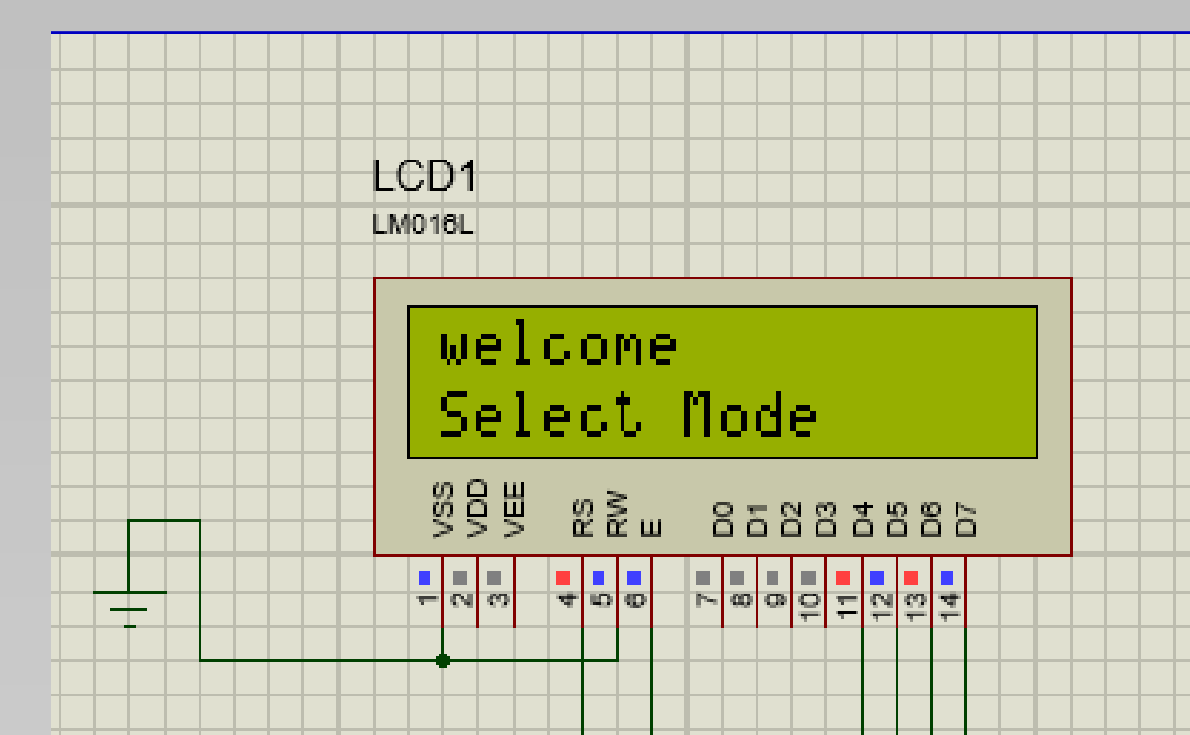
CONCLUSIONS

The Smart Glove that was designed and implemented with two different modes. Each mode specifies different gestures of the user like "LIGHT ON", "I AM HAPPY", "I NEED FOOD", "FAN OFF" etc.,

This system is reliable, efficient, easy to use and a light weight solution to the user as it bridges the communication gap. During this project we have faced various challenges and we have tried to minimize the problem.

We have tried to minimized the problem by giving the output in the simple form of speech which makes others to understand easily.

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