GLOVE FOR DEAF GROUP 41

Amit Graduation Project

Made by

Hager rafaat

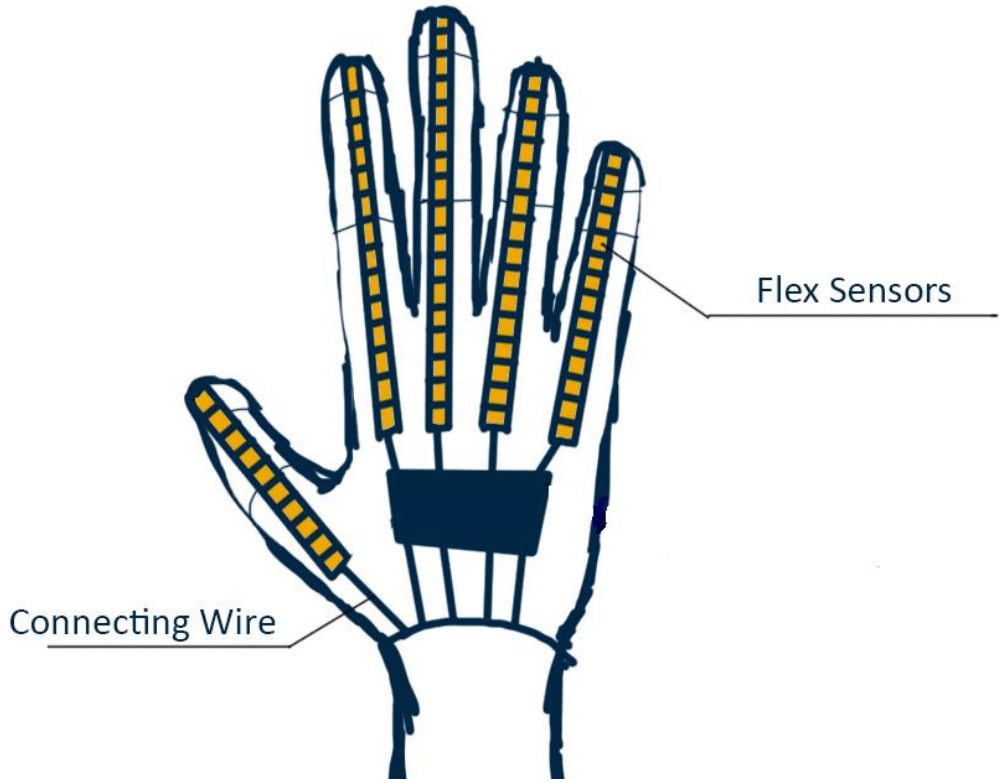
AGENDA:

- Problem Description
- Sequence
- Flowchart
- Proteus Simulation
- Coding

PROBLEM DESCRIPTION

As sign language is used by deaf people, the goal of this project is to create an embedded system that can translate the sign language into words using an LCD.

In each finger ,there is a flex sensor which is used to get readings represent finger movements then convert to certain logic to display the corresponding word to those movements in the LCD.



SEQUENCE

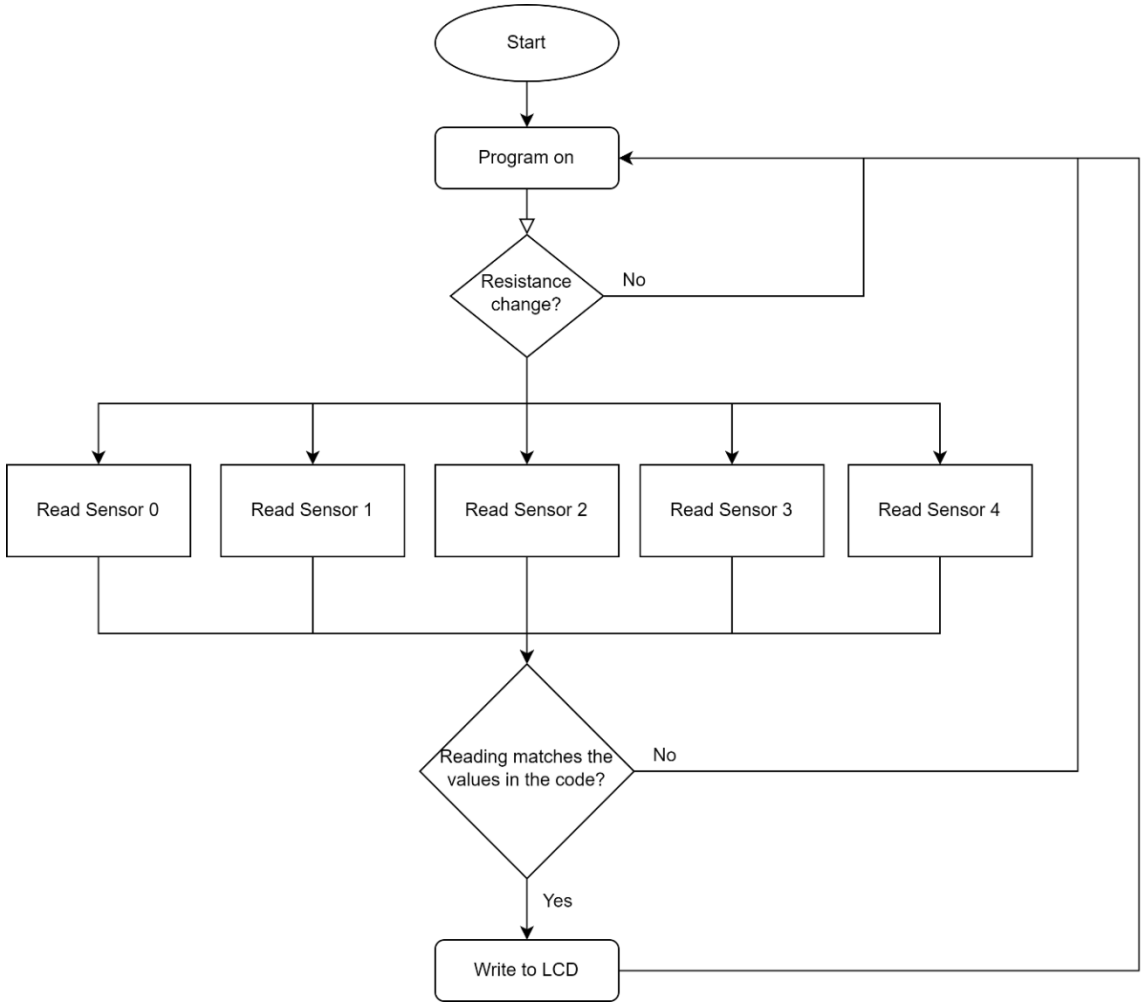
Getting sensors readings for conversion

Mapping values

Decision making

LCD display

FLOWCHART


Start
Program on
Resistance change?
No
Read Sensor 0
Read Sensor 1
Read Sensor 2
Read Sensor 3
Read Sensor 4
Reading matches the values in the code?
No
Yes
Write to LCD

HOW TO GET SENSORS' READINGS?

Switching ADC channel

```
for (int ChannelNumber = 0; ChannelNumber < 5; ChannelNumber++) {
    ADC_Channel_Select(ChannelNumber);
    ADC_StartConv();
    Results[ChannelNumber] = ADC_read()*.00488;
}
```

SIGNS:


Examples
انت
أنا اراقبك
حقا احبك
أحبك
هذا رهيب
اتمنى لك حياة سعيدة
عمل جيد
AMIT

MAPPING VALUES

Flat

Represented as 4v which means setting potentiometer range

(%100----%80)

90° Bend

Represented as 2v which means setting potentiometer range

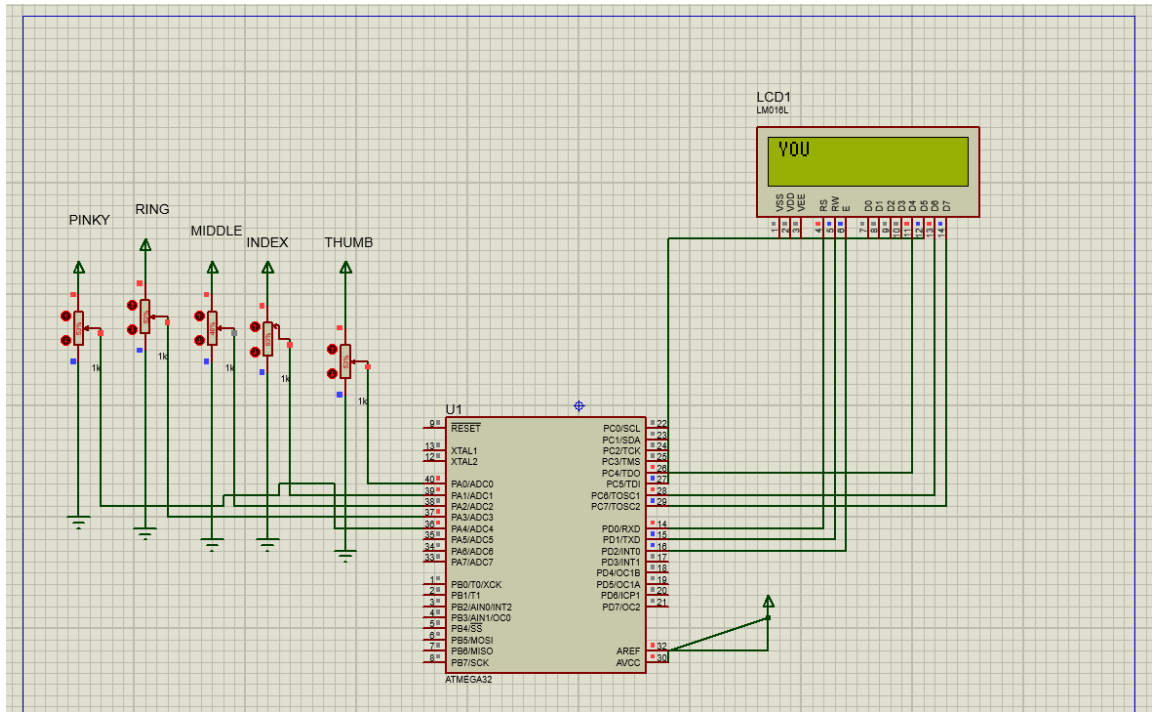
(%60----%40)

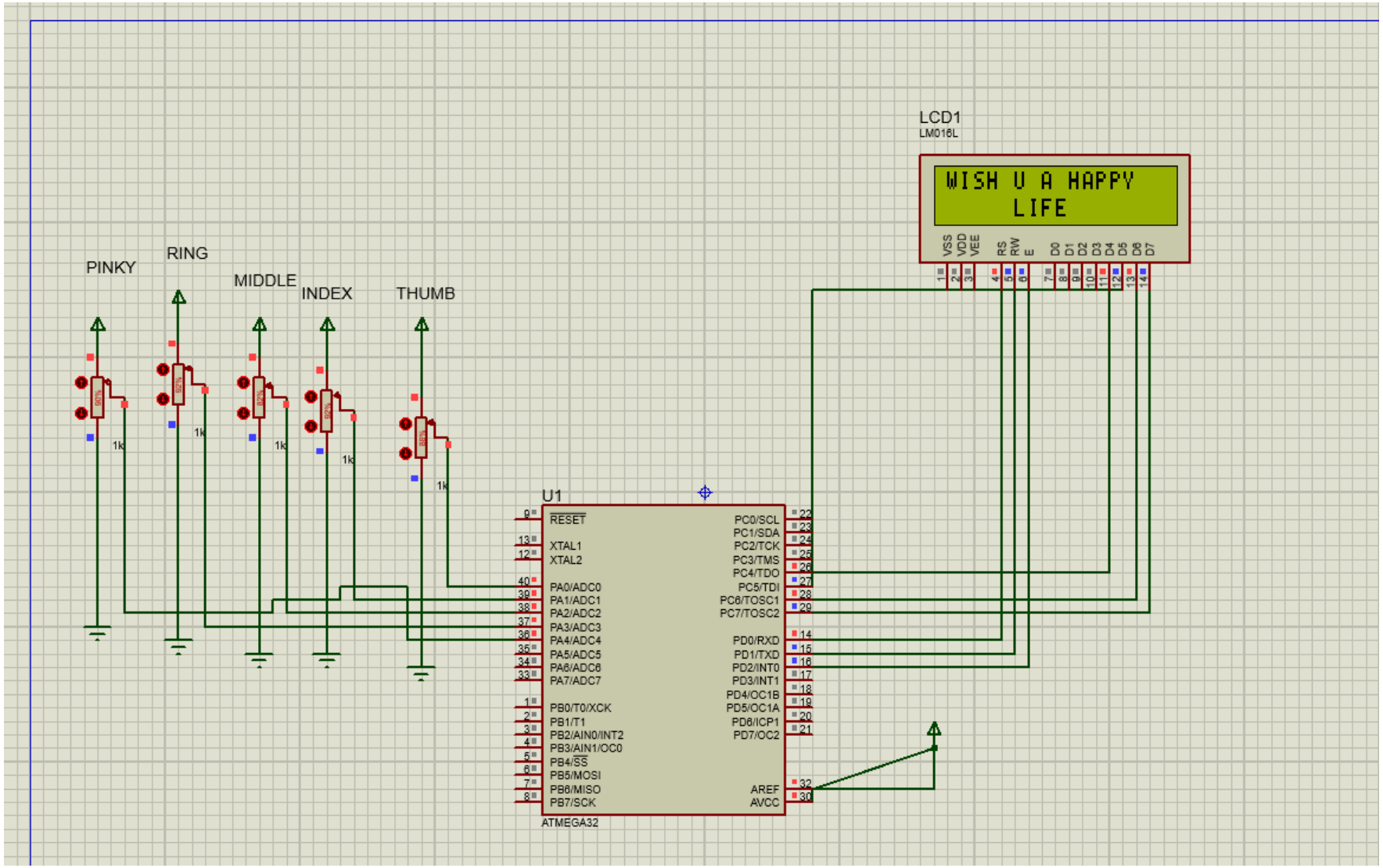
45° Bend

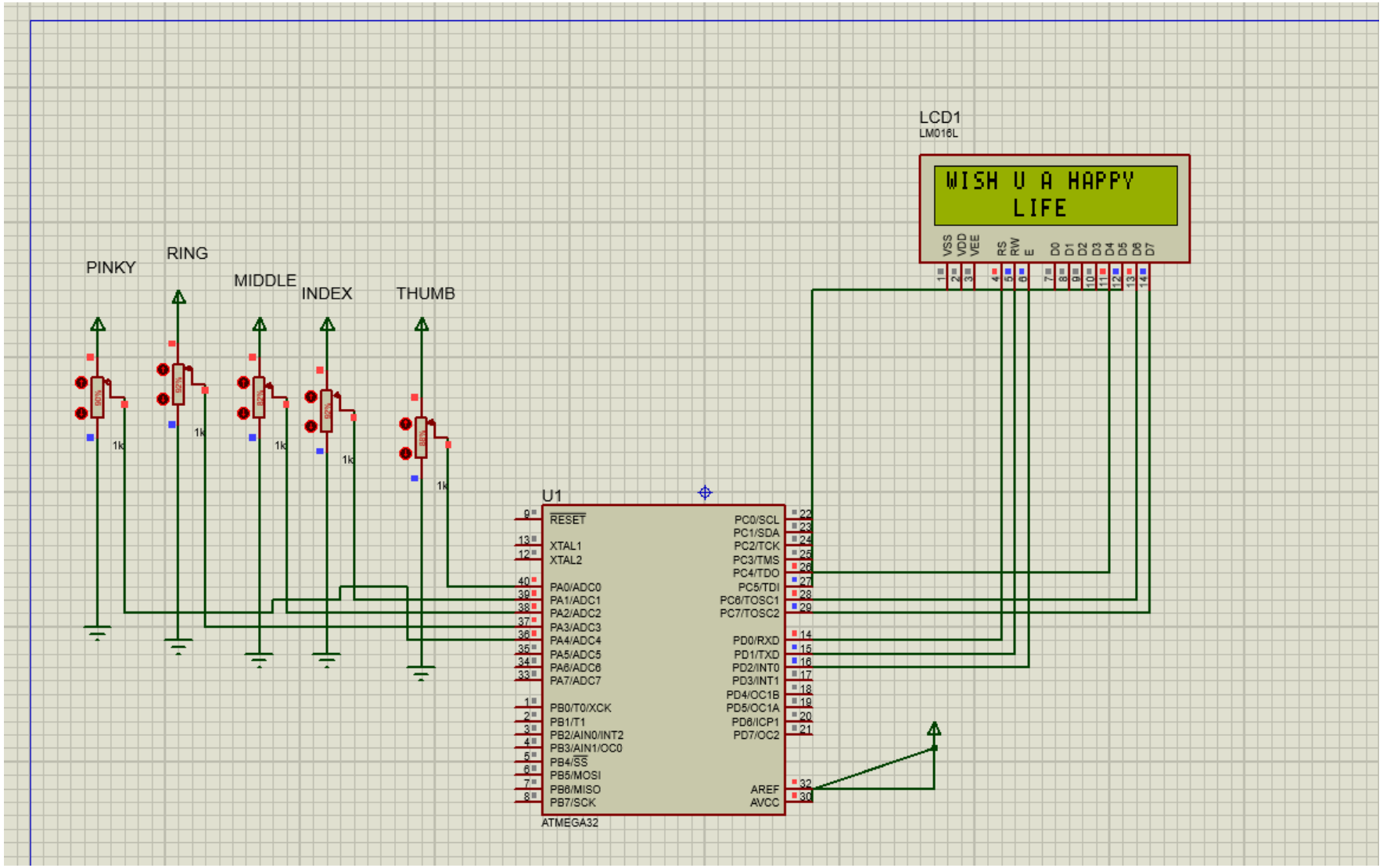
Represented as 3v which means setting potentiometer range

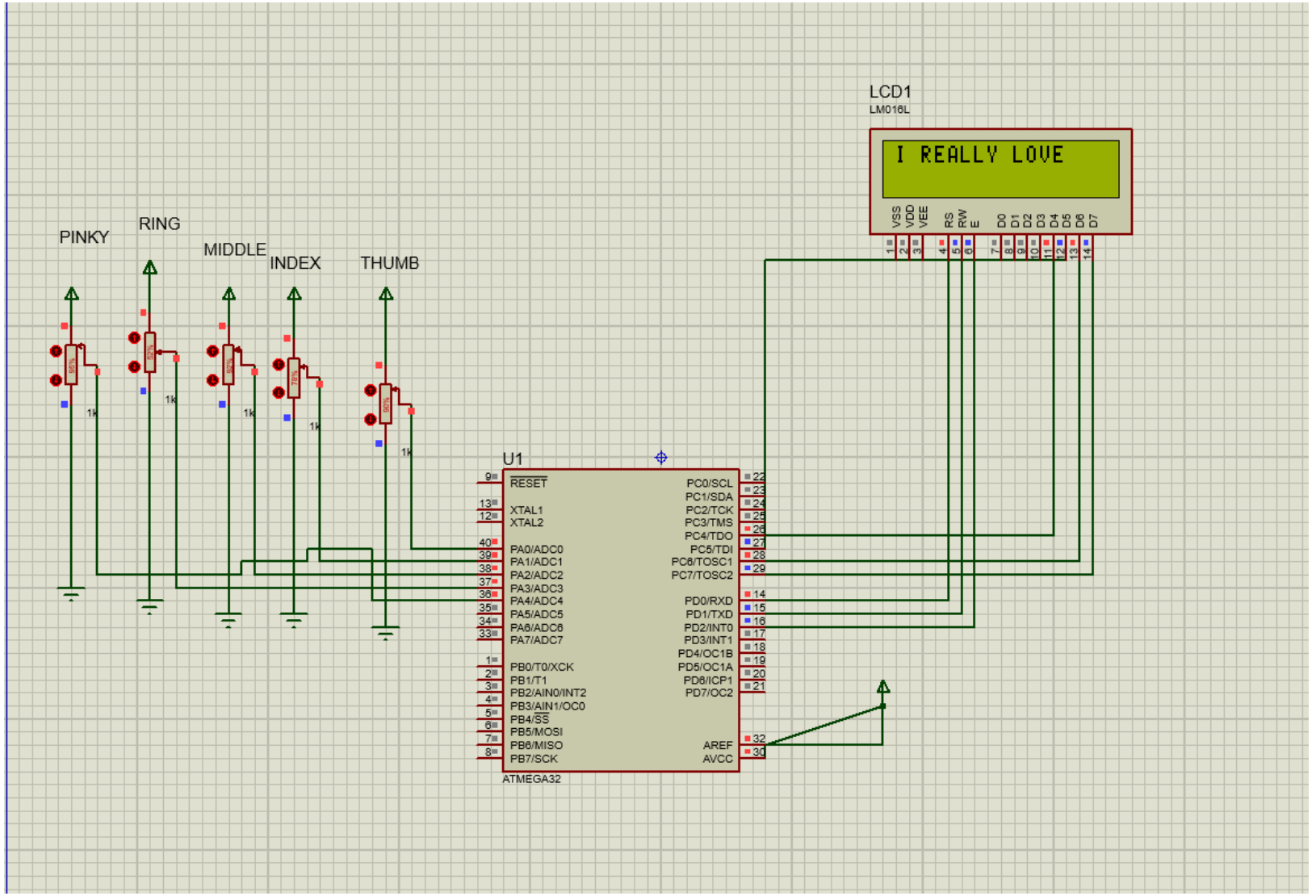
(%80----%60)

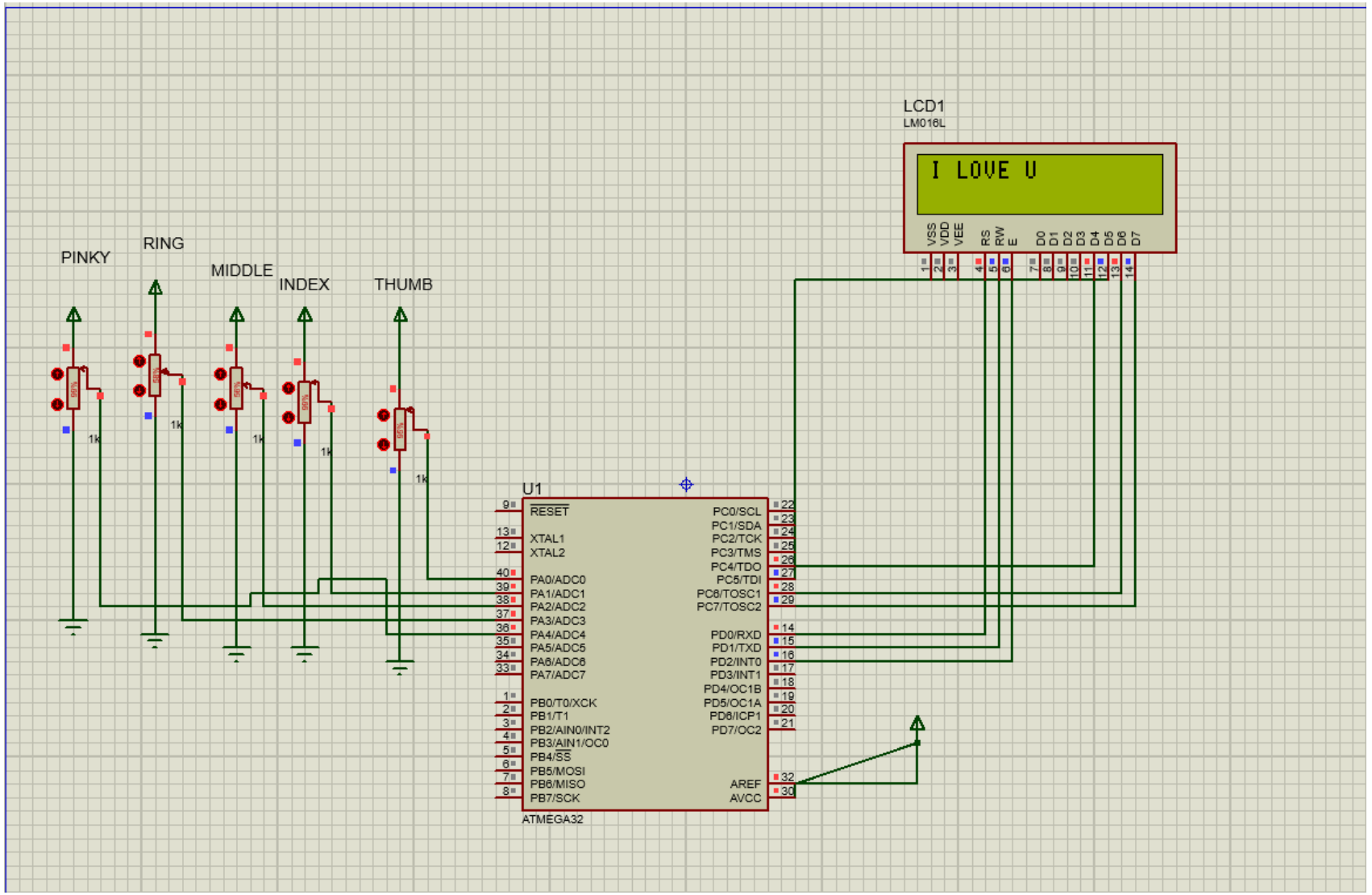
SIMULATION SCREENSHOT

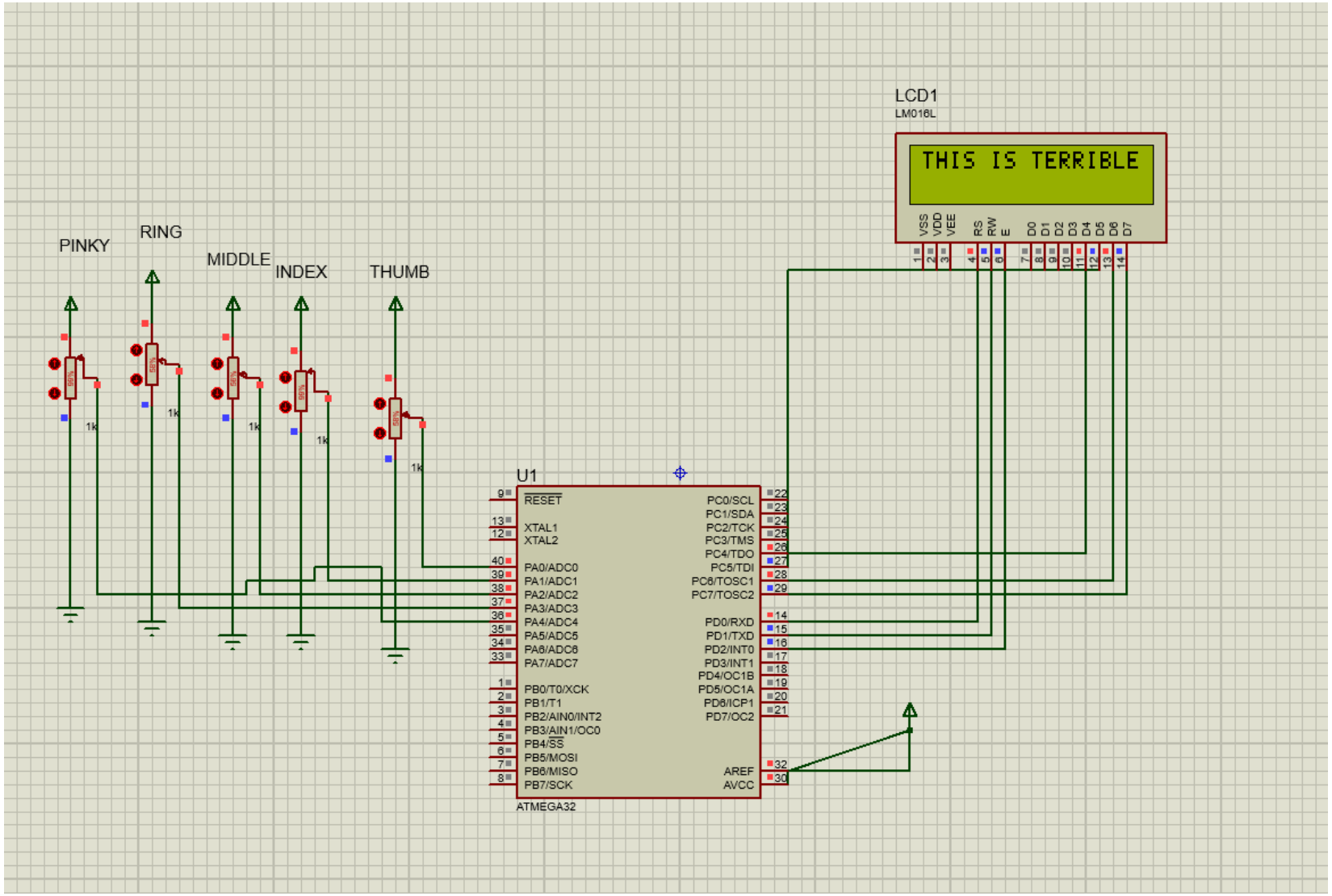


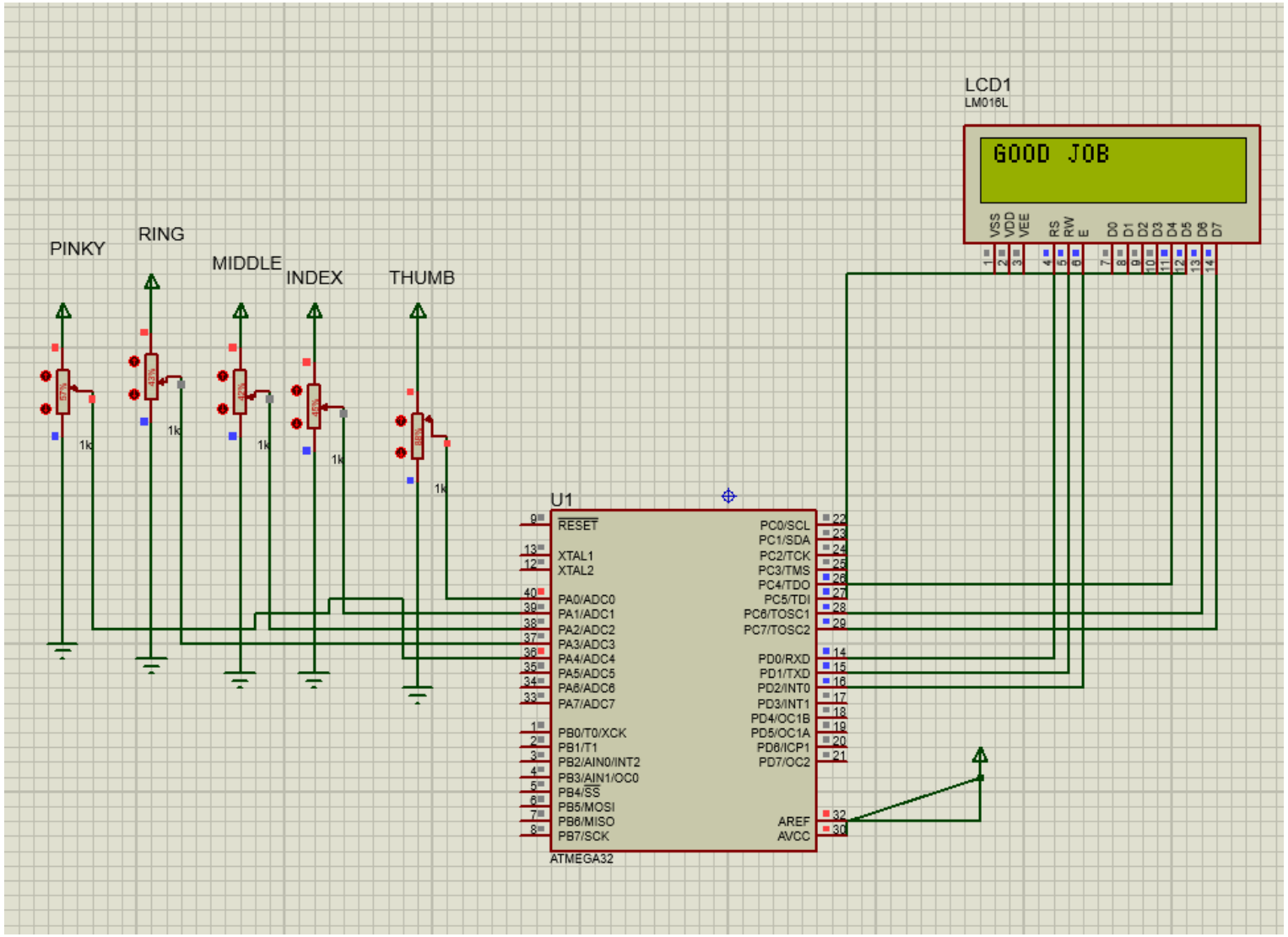

LCD1
LM016L
WISH U A HAPPY
LIFE
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32


LCD1
LM016L
WISH U A HAPPY
LIFE
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32


LCD1
LM016L
I REALLY LOVE
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32


LCD1
LM016L
I LOVE U
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32


LCD1
LM016L
THIS IS TERRIBLE
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32


LCD1
LM016L
GOOD JOB
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32

CODING

- Layered Archeticture.
  - Hal layer
  - Mcal layer

- GitHub Link:

https://github.com/Hager44/AMIT_GraduationProject_DeafGloves.git

Thanks