Glove for Deaf group 35

Amit Graduation Project

Made by

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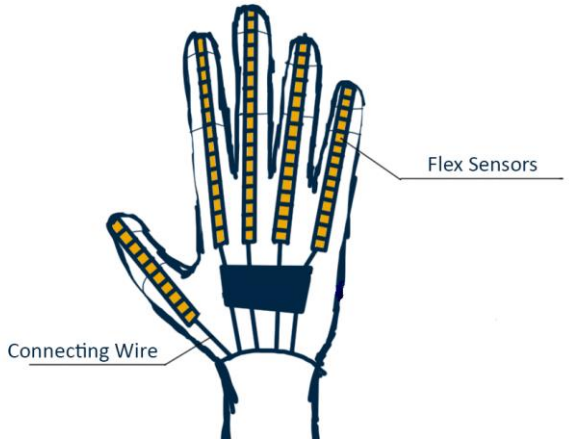
Agenda:

- Problem Description
- Sequence
- Flowchart
- Simulation screenshoot
- 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.



Required signs

Sequence

- Getting sensors readings for conversion
- Mapping values
- Decision making
- LCD display

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;
}
```

Mapping values

Flat

Represented as 4v which means setting potentiometer range (%100----%80)

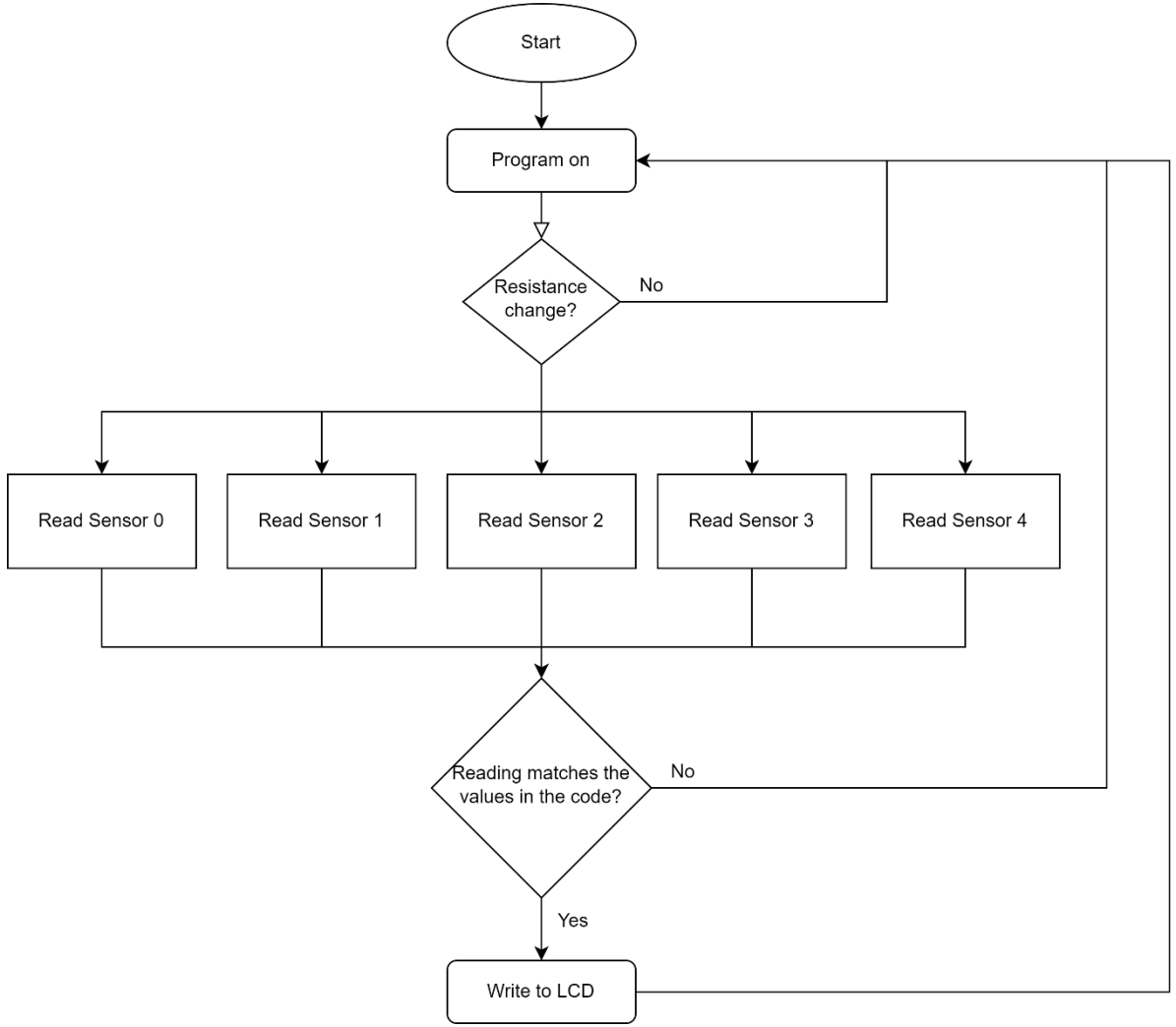
90° Bend

Represented as 2v which means setting potentiometer range (%60----%40)

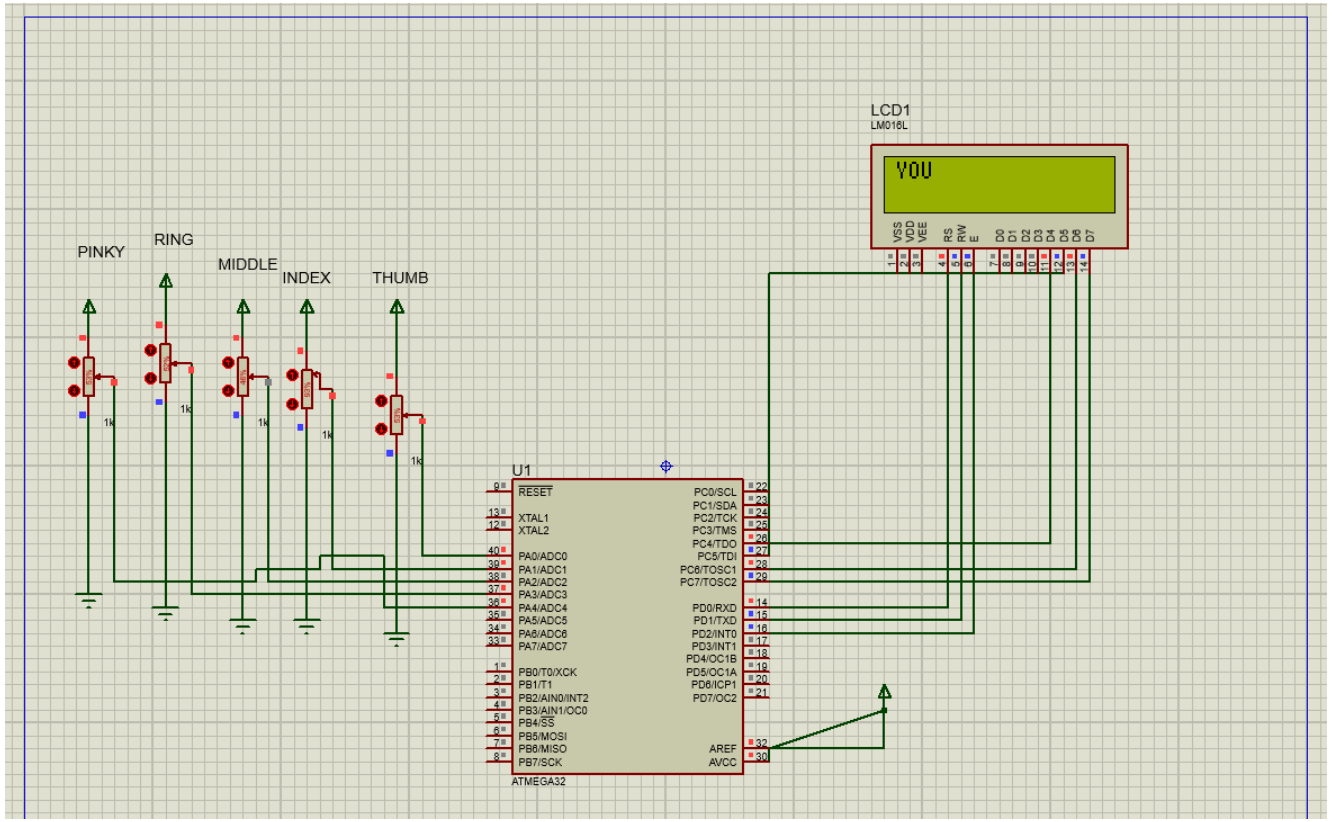
45° Bend

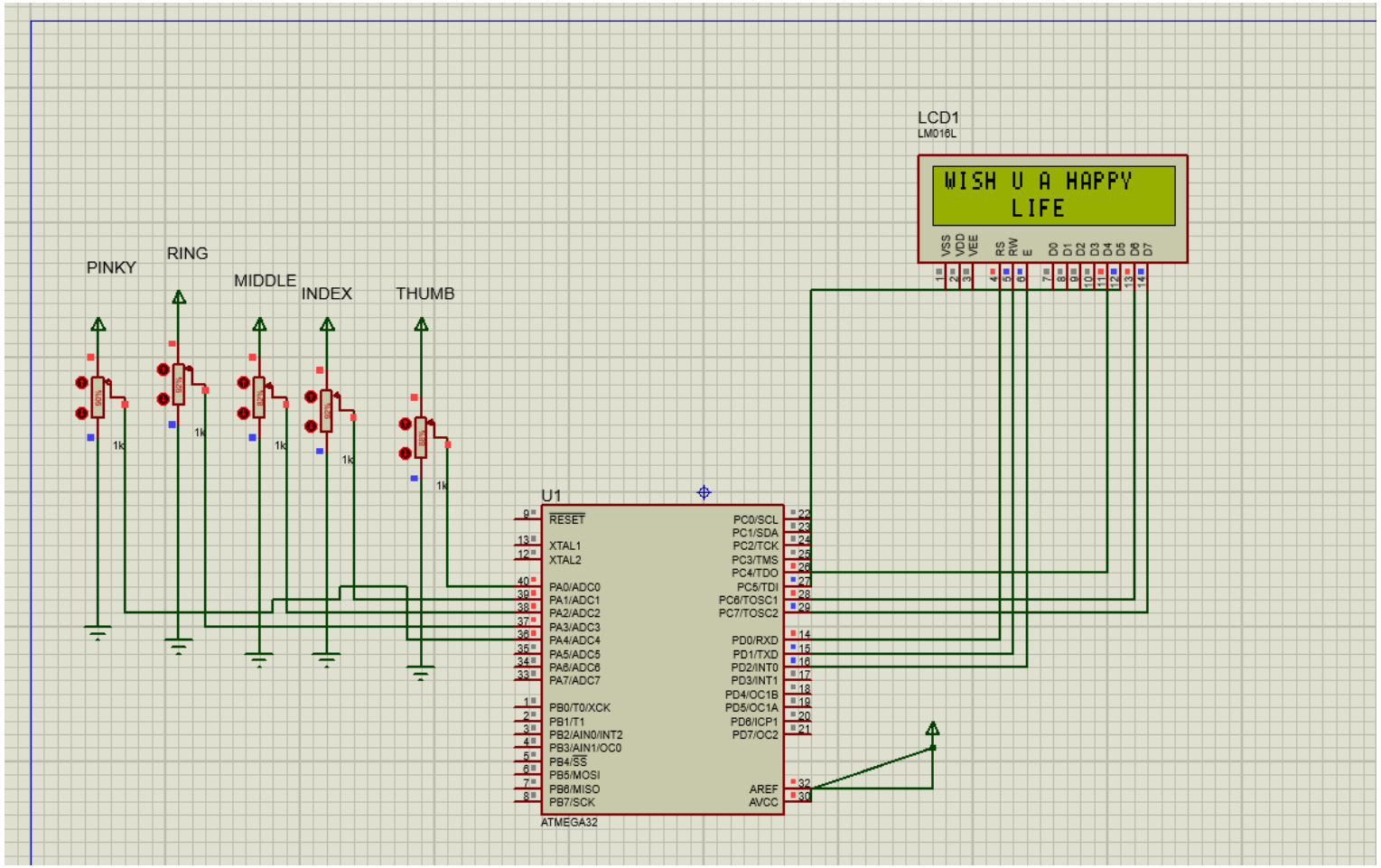
Represented as 3v which means setting potentiometer range (%80----%60)

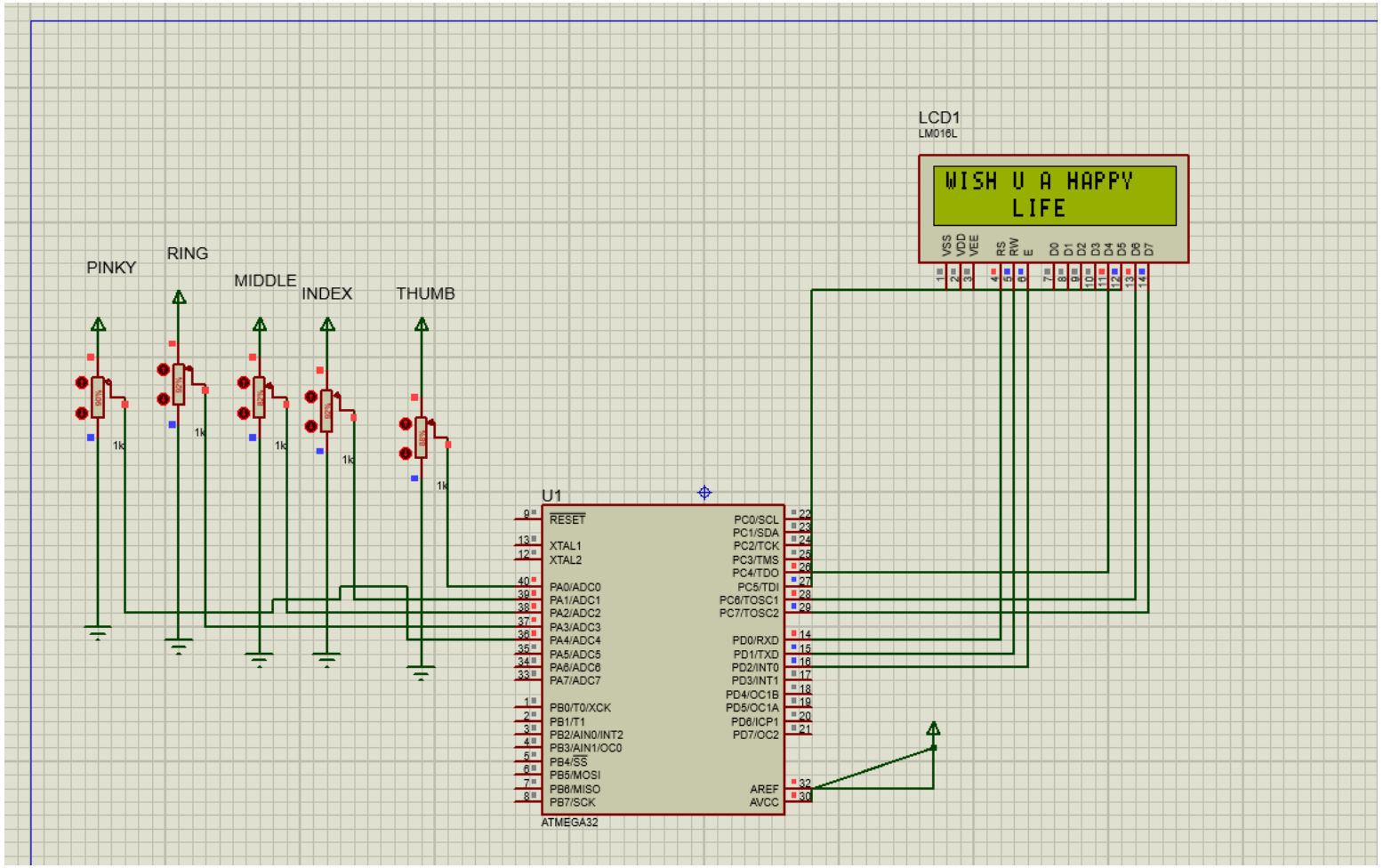
Flowchart


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

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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PA7/ADC7
PB0/T0/XCK
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PB2/AIN0/INT2
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PB4/SS
PB5/MOSI
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PD4/OC1B
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PD7/OC2
AREF
AVCC
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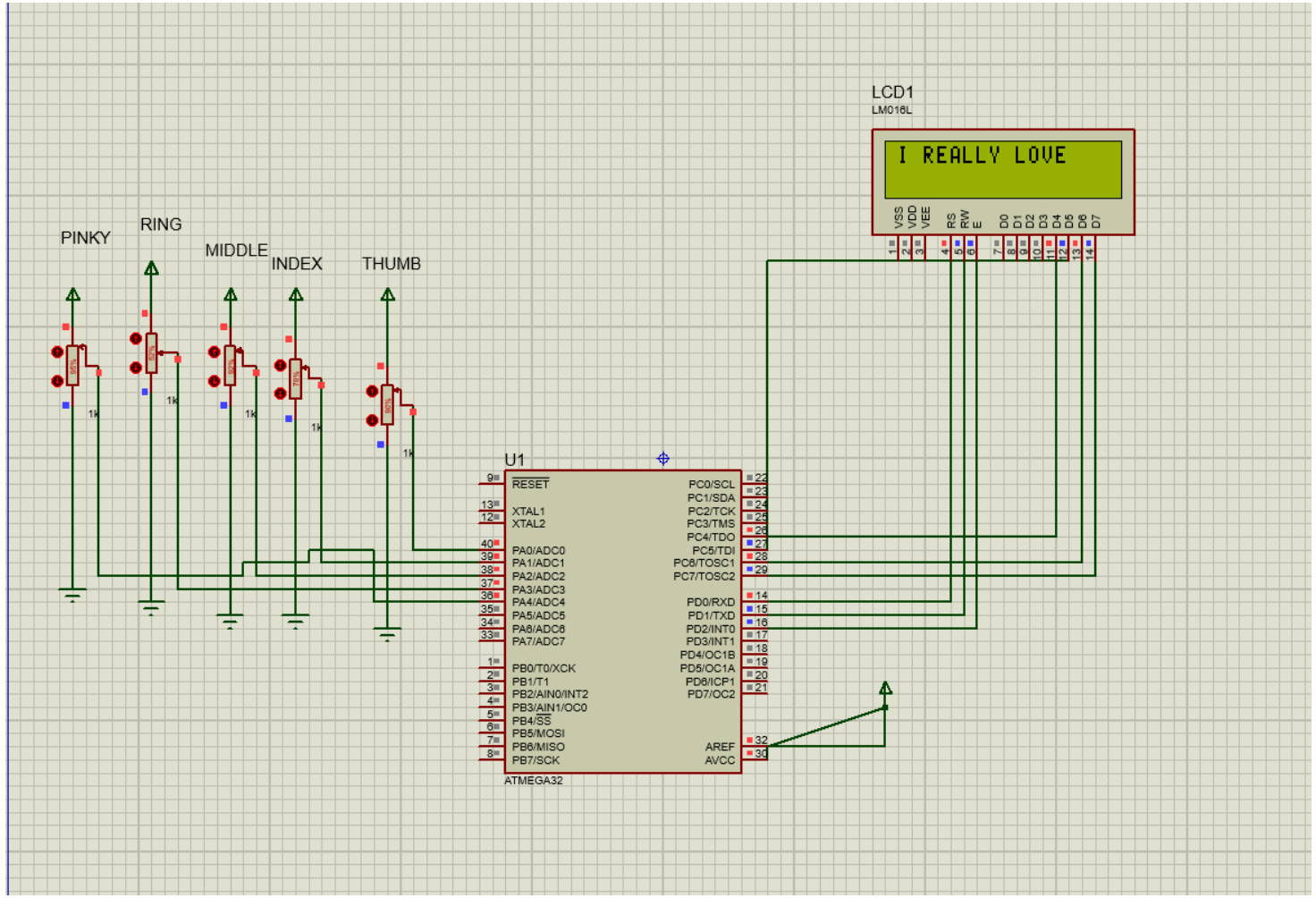
LCD1
LM016L
I REALLY LOVE
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
RESET
XTAL1
XTAL2
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PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
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PD3/INT1
PD4/OC1B
PD5/OC1A
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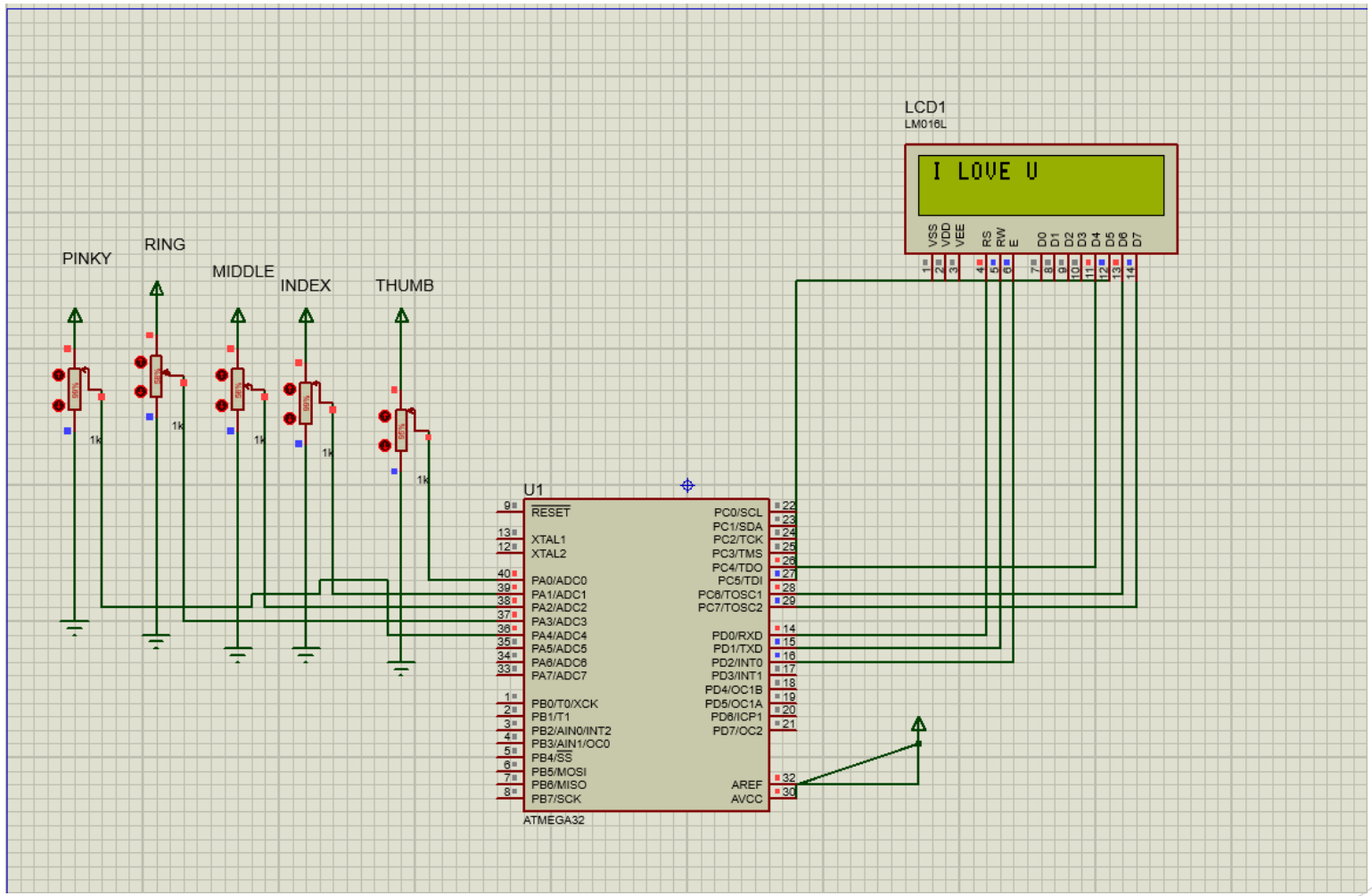
AREF
AVCC
ATMEGA32


LCD1
LM016L
I LOVE U
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
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THUMB
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PC3/TMS
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PC5/TDI
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PD1/TXD
PD2/INT0
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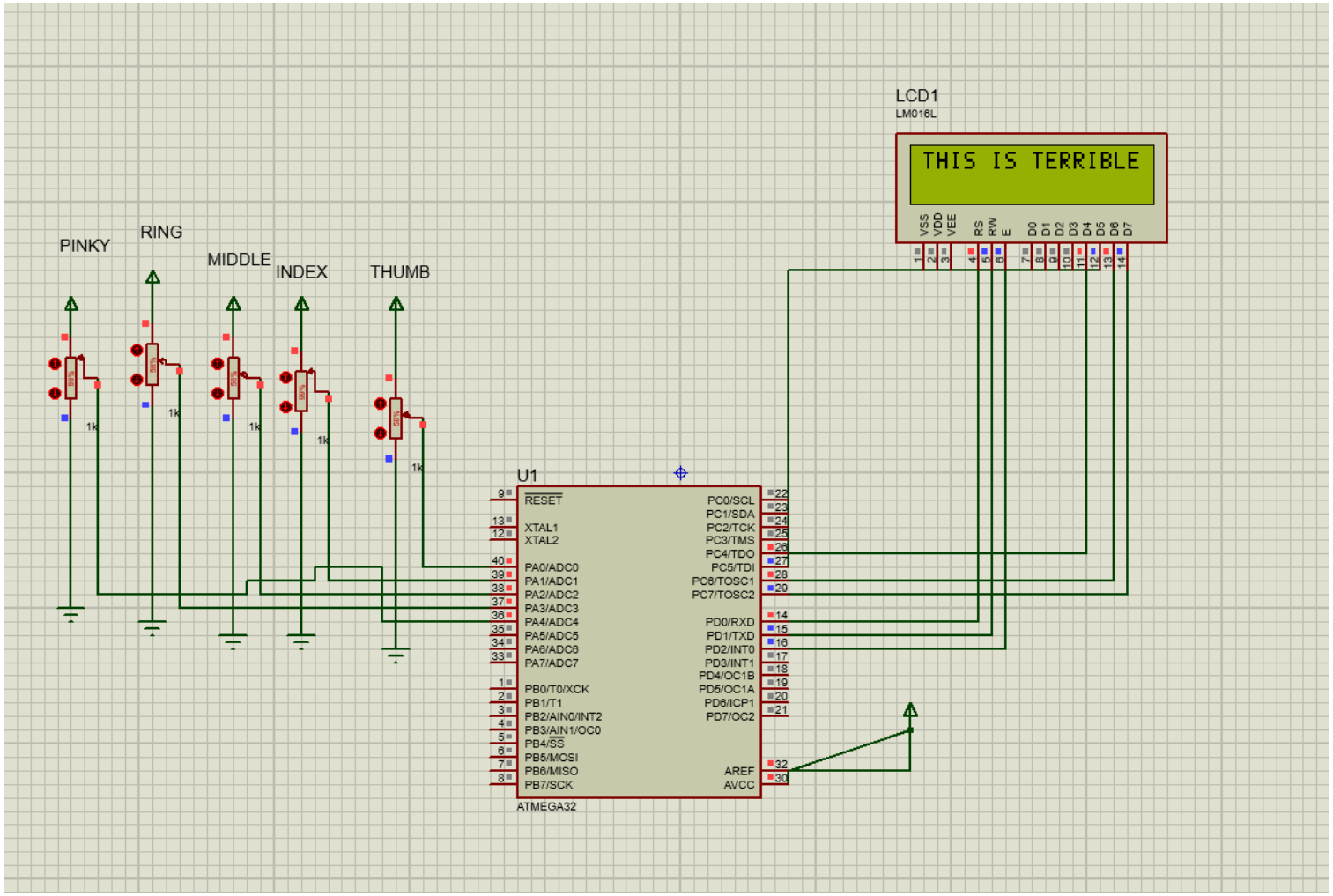
LCD1
LM016L
THIS IS TERRIBLE
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
INDEX
THUMB
1k
U1
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PC5/TDI
PC6/TOSC1
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PD0/RXD
PD1/TXD
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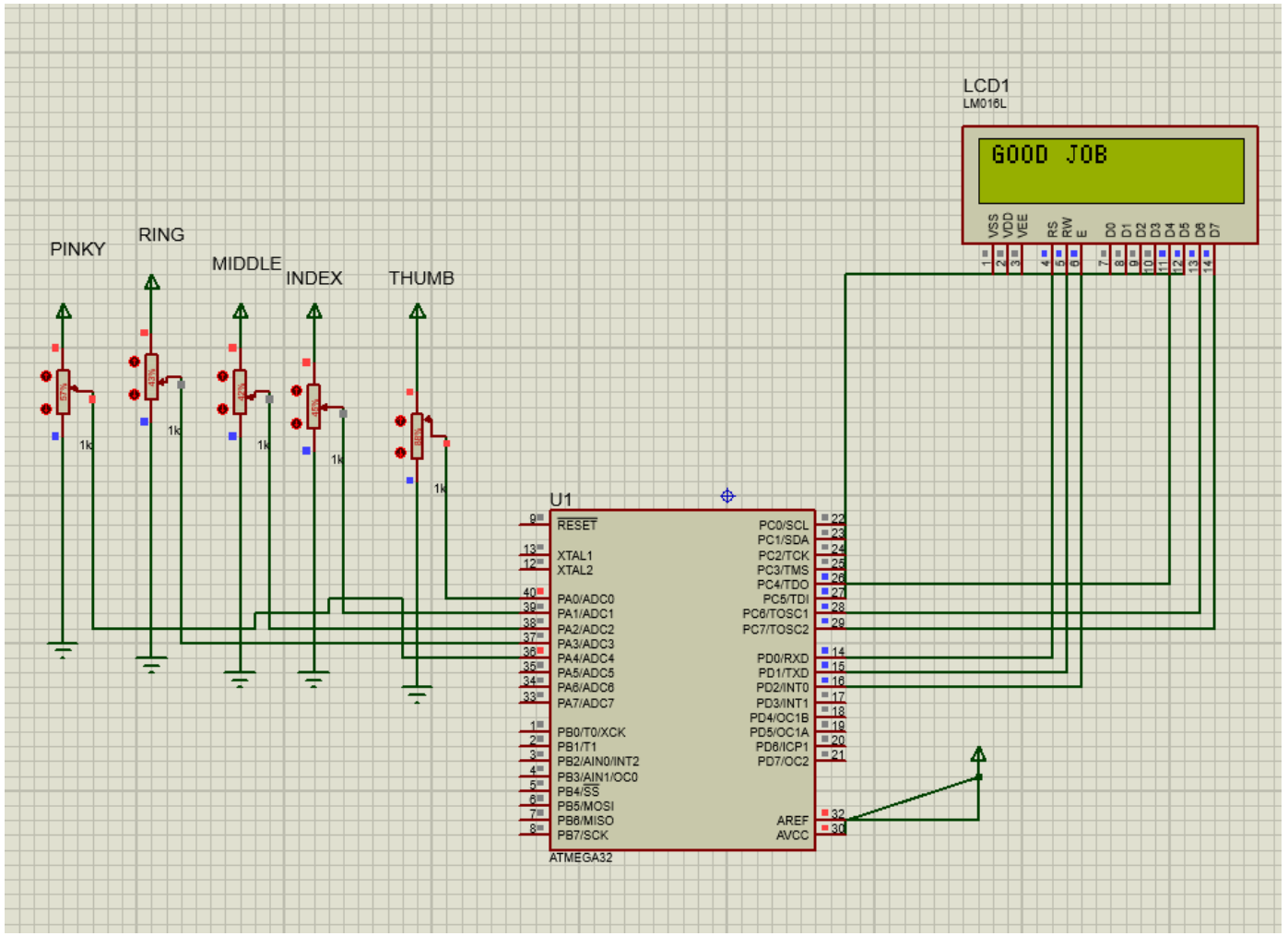
LCD1
LM016L
GOOD JOB
VSS
VDD
VEE
RS
RW
E
D0
D1
D2
D3
D4
D5
D6
D7
PINKY
RING
MIDDLE
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Coding

- Layered Archeticture
- HAL
- MCAL

- Link:https://github.com/eman877/Amit_Graduation_project_Glove-for-deaf.git

Thanks