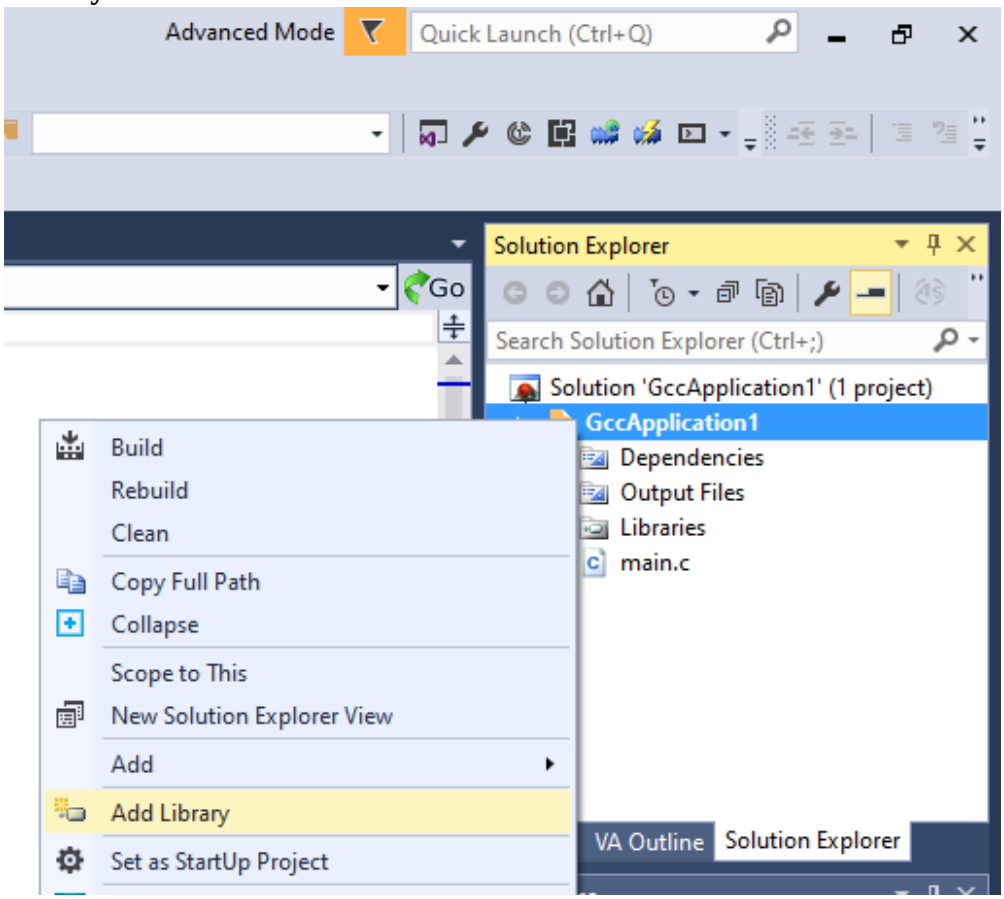
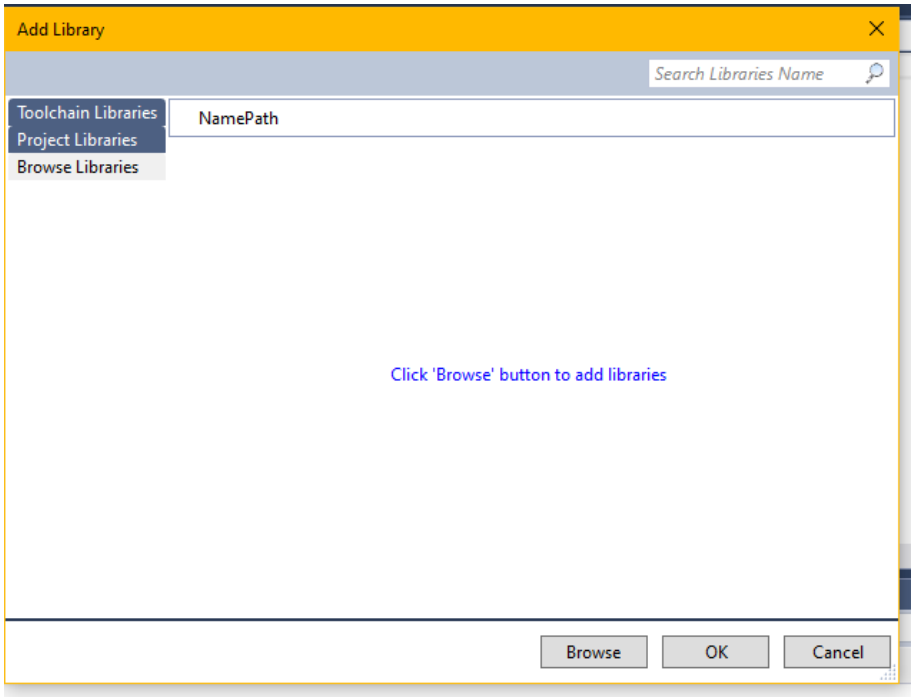
# 16x2 ALPHANUMERIC LCD DISPLAY

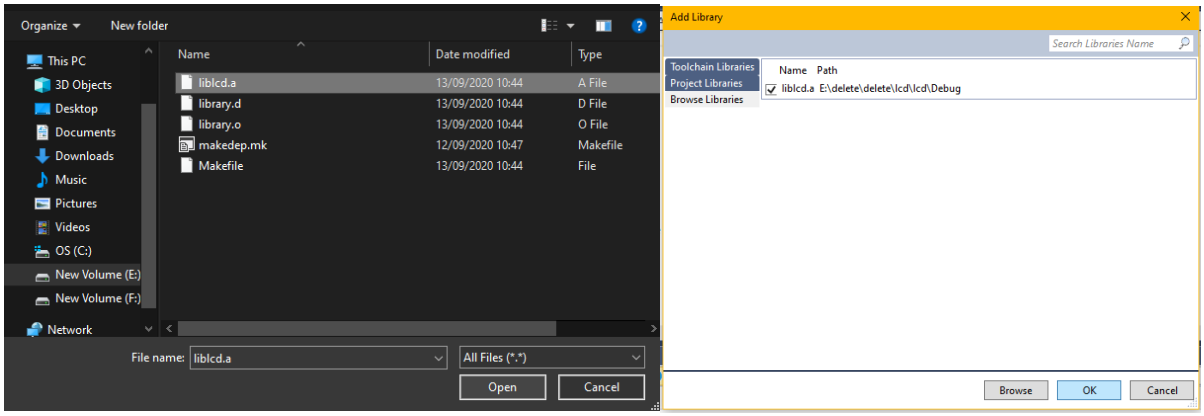
1) Download and extract the lcd library in a folder or inside a project folder
2) In the Solution explorer window, right click the project title and click **“Add Library”.**



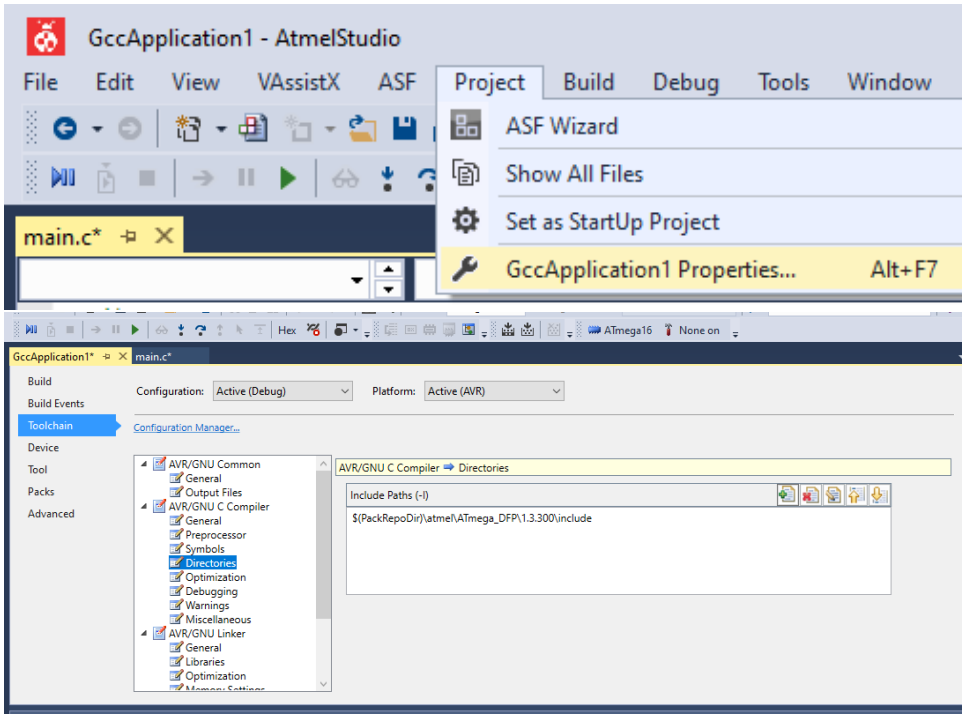

3) Click **“Browse Libraries”**

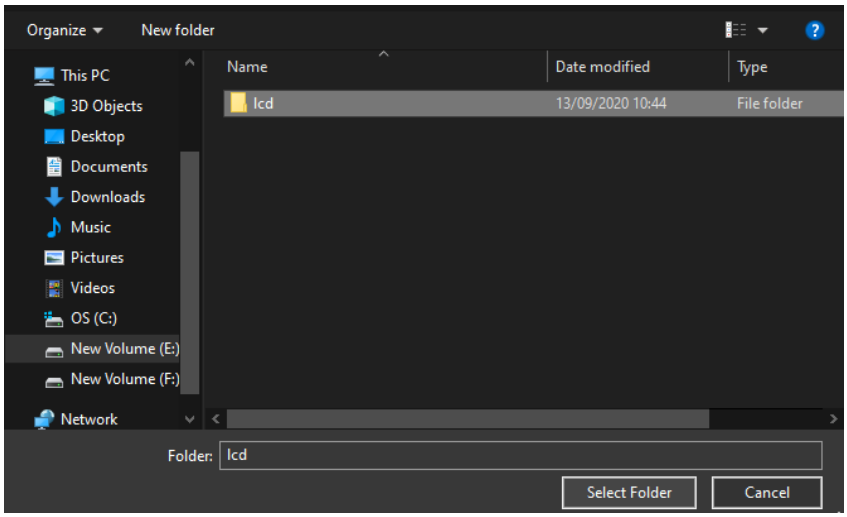


4) Go to **lcd>lcd>Debug>liblcd.a** and click “ok”




5)Go to Project properties and then **Toolchain>AVR/GNU C Compiler>Directories** and the extracted folder of the library and then save (ctrl+s)



6)Include the library in your project main file by the syntax **#include<avr/io.h>**

```
#include <avr/io.h>
#include "lcd.c"

int main(void)
{
    init_LCD();
    Go_to(1,5);
    LCD_write_string("Hello World!");
    /* Replace with y  void LCD_write_string(unsigned char *str)
    while (1)
    {
```

# HOW TO USE THE LIBRARY

Functions which can be used from this library are

1)**init_LCD();**

This function is used to initialize the LCD. Before starting send data to lcd, don't to forget to use this command. Otherwise, You can't display anything.

2) **LCD_write_string("string you want to display");**

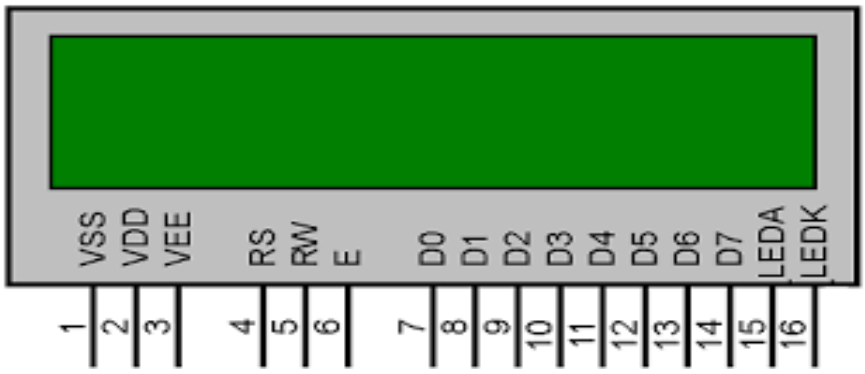
This function used to display the string of your choice. Use only string not other data types. If you want to use other data types, convert those data types in to a string using other functions like sprint, itoa, etc.

3) **Go_to(int row, int col);**

For example: Go_to(1,5);

Above example can be used to place the cursor in the first row second column and then you can write the string from that section.

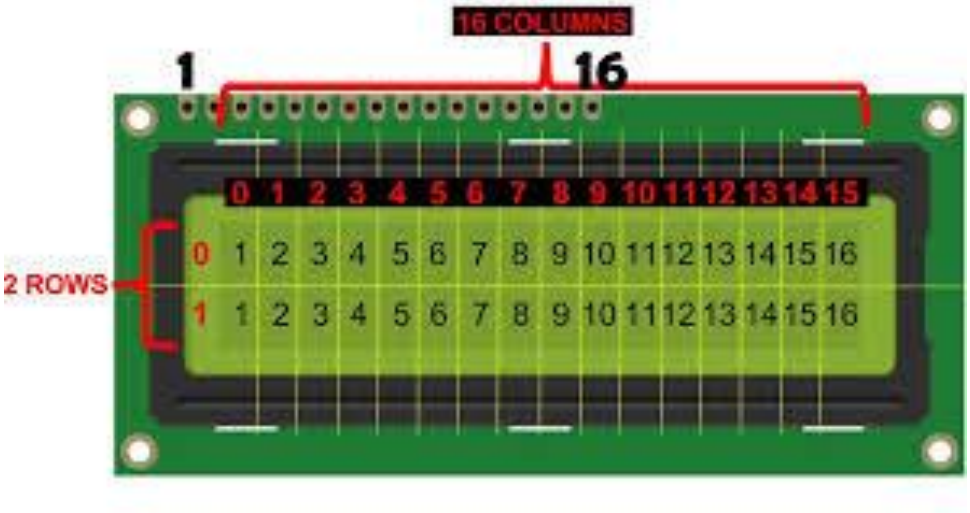
# PIN DIAGRAM:



Below table can be used to connect the lcd pins to the atmega16 pins.

| LCD PINS | ATMEGA16 PORTS |
|---|---|
| VSS | GND |
| VDD | +5V |
| VEE | CONTRAST ADJUST |
| RS | PC0 |
| RW | PC1 or GND |
| EN | PC2 |
| D0 | PB0 |
| D1 | PB1 |
| D2 | PB2 |
| D3 | PB3 |
| D4 | PB4 |
| D5 | PB5 |
| D6 | PB6 |
| D7 | PB7 |
| LEDA | LED +ve (remember to connect resistor) |
| LEDK | LED -ve |

# HOW TO IDENTIFY VALUE OF ROW AND COLUMN IN Go_to(row,col):

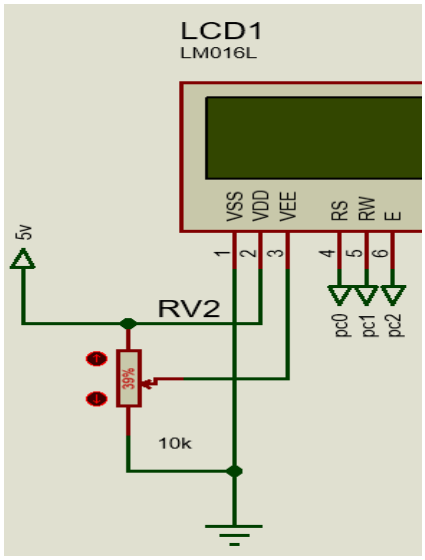



The above image can be used as a reference for the Go_to(row, col) function.

Row values = 1 or 2

Column values = 1 to 16

The below image can be used as a reference to adjust the contrast of the LCD display.


LCD1
LM016L
VSS
VDD
VEE
RS
RW
E
1
2
3
4
5
6
5v
RV2
39%
10k
pc0
pc1
pc2