

Advanced Embedded Systems

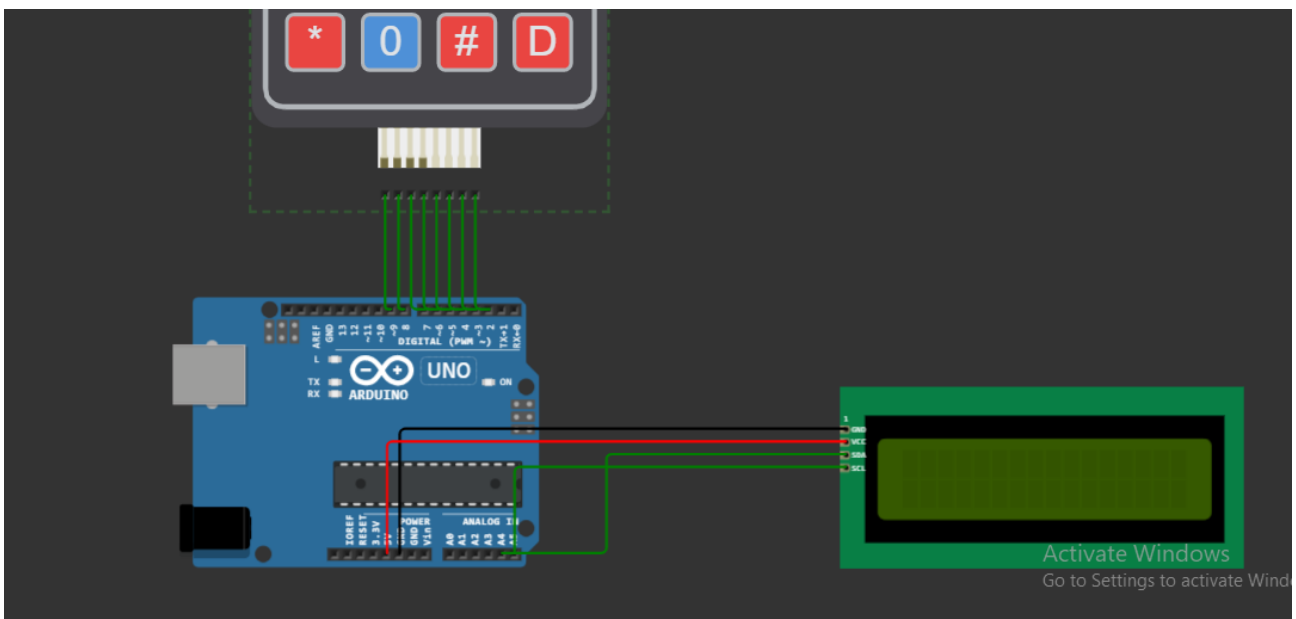
Mini Project

Aim: Using a LCD monitor and a 4 x 4 Keypad with Arduino.

Components:

- Arduino UNO (1x).
- USB 2.0 Cable Type A/B (1x).
- LCD I2C (16 rows, 2 columns) (1x).
- Keypad (4 x 4) (1x).
- Jump Wires (Male / Female) (12x)

Circuit Diagram:



Connections:

Groups	Pins	
	From	To
Arduino to Keypad	2	C4
	3	C3
	4	C2
	5	C1
	6	R4
	7	R3
	8	R2
	9	R1

Arduino to LCD	5V	V _{CC}
	GND	GND
	A4	SDA
	A5	SCL

Source Code:

```
#include <Keypad.h>
#include <LiquidCrystal_I2C.h>

const int row    = 4; // four rows
const int col    = 4; // four columns

char keys[row][col] = {
    {'1','2','3', 'A'},
    {'4','5','6', 'B'},
    {'7','8','9', 'C'},
    {'*','0','#', 'D'}
};

byte pin_rows[row] = {9, 8, 7, 6};    // connect to the row pinouts of
the keypad
byte pin_column[col] = {5, 4, 3, 2}; // connect to the column pinouts
of the keypad

Keypad keypad = Keypad(makeKeymap(keys), pin_rows,
pin_column, row, col );
LiquidCrystal_I2C lcd(0x27, 16, 2); // I2C address 0x27, 16 column
and 2 rows

int cursorColumn = 0;

void setup(){
    lcd.init(); // initialize the lcd
    lcd.backlight();
}

void loop(){
    char key = keypad.getKey();
```

```
if (key) {  
    lcd.setCursor(cursorColumn, 0); // move cursor to (cursorColumn,  
0)  
    lcd.print(key);                // print key at (cursorColumn, 0)  
  
    cursorColumn++;                // move cursor to next position  
    if(cursorColumn == 16) {      // if reaching limit, clear LCD  
        lcd.clear();  
        cursorColumn = 0;}}}
```

Note: The project link can be found [here](#).