Advanced Embedded Systems

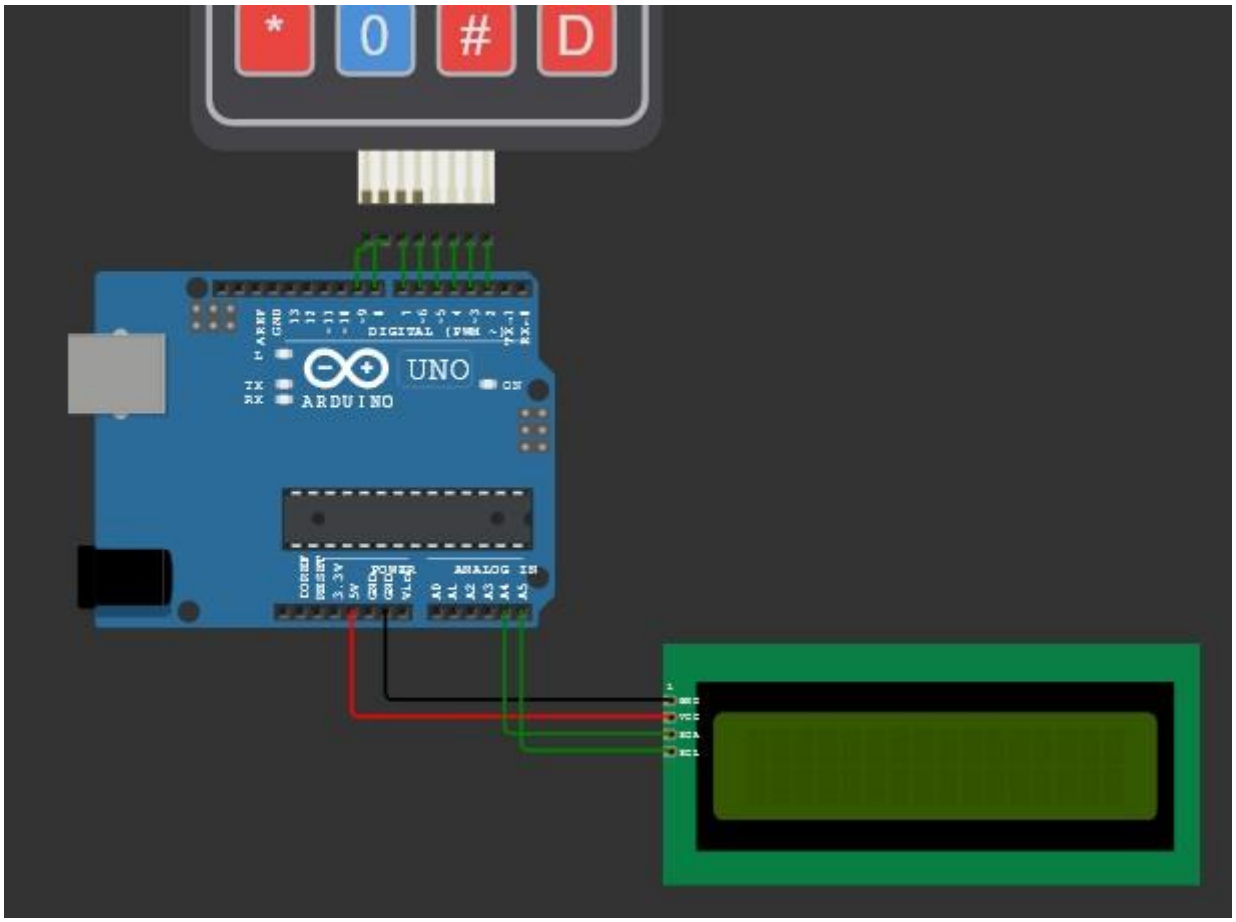
Mini Project

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_COUNT          = 4; // four rows const int

COLUMN_COUNT = 4; // four columns


char keyMap[ROW_COUNT][COLUMN_COUNT] = {

    {'1','2','3', 'A'},

    {'4','5','6', 'B'},

    {'7','8','9', 'C'},

    {'*','0','#', 'D'}

};


byte pinRows[ROW_COUNT] = {9, 8, 7, 6};                    // connect to the rowpinouts
of the keypad

byte pinColumns[COLUMN_COUNT] = {5, 4, 3, 2}; // connect to the columnpinouts of the keypad


Keypad keypad = Keypad(makekeyMap(keyMap), pinRows, pinColumns,ROW_COUNT,
COLUMN_COUNT);
```

```
LiquidCrystal_I2C lcdDisplay(0x27, 16, 2); // I2C address 0x27, 16 columnand 2 rows

int cursorColumn = 0;

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

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

   if (key) {
      lcdDisplay.setCursor(cursorColumn, 0); // move cursor to(cursorColumn, 0)
      lcdDisplay.print(key);                                    // print key at
(cursorColumn, 0)

      cursorColumn +;                          // move cursor to next position if(cursorColumn
      = 16) {                                  // if all columns are used, clear the
lcd
         lcdDisplay.clear();cursorColumn = 0;
      }
   }
```

```
}
```