

Advanced Embedded

Systems Mini Project

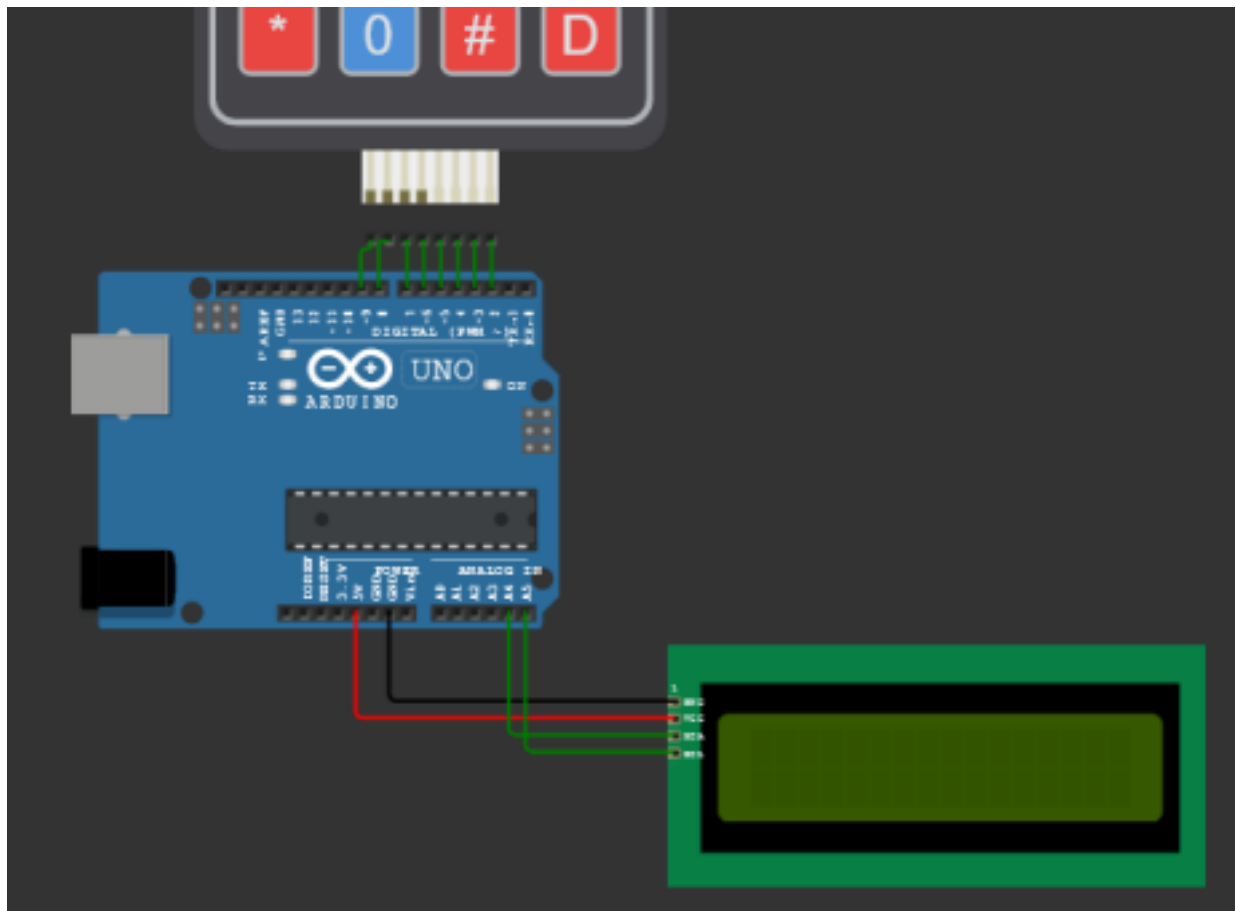
Aim: Using a LCD monitor and a 4 x 4 Keypad with Arduino.

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).

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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

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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 COLUMN = 4; // four columns

char keyMap[ROW][COLUMN] = {
```

```
{'1','2','3', 'A'},  
{'4','5','6', 'B'},  
{'7','8','9', 'C'},  
{'*','0','#', 'D'}  
};
```

```
byte pinRows[ROW] = {9, 8, 7, 6};    // connect to the row pinouts of the keypad  
byte pinColumns[COLUMN] = {5, 4, 3, 2}; // connect to the column pinouts of the  
keypad
```

```
Keypad keypad = Keypad(makeKeymap(keyMap), pinRows, pinColumns, ROW,  
COLUMN);  
LiquidCrystal_I2C lcdDisplay(0x27, 16, 2); // I2C address 0x27, 16 column and 2 rows
```

```
int cursorColumn = 0;  
int cursorRow = 0;
```

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

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

```
    if (key) {
```

```
        lcdDisplay.setCursor(cursorColumn, cursorRow);  
        lcdDisplay.print(key);  
        cursorColumn++;
```

```
        if(cursorColumn == 16) {  
            cursorColumn = 0;
```

```
    cursorRow = 1;

}

if(cursorRow == 1 && cursorColumn == 5) {
    lcdDisplay.clear();
    cursorColumn = 0;
    cursorRow = 0;
}

}

}
```

Project Link :- <https://wokwi.com/projects/327925191937098322>