Advanced Embedded Systems

Roll No : 12

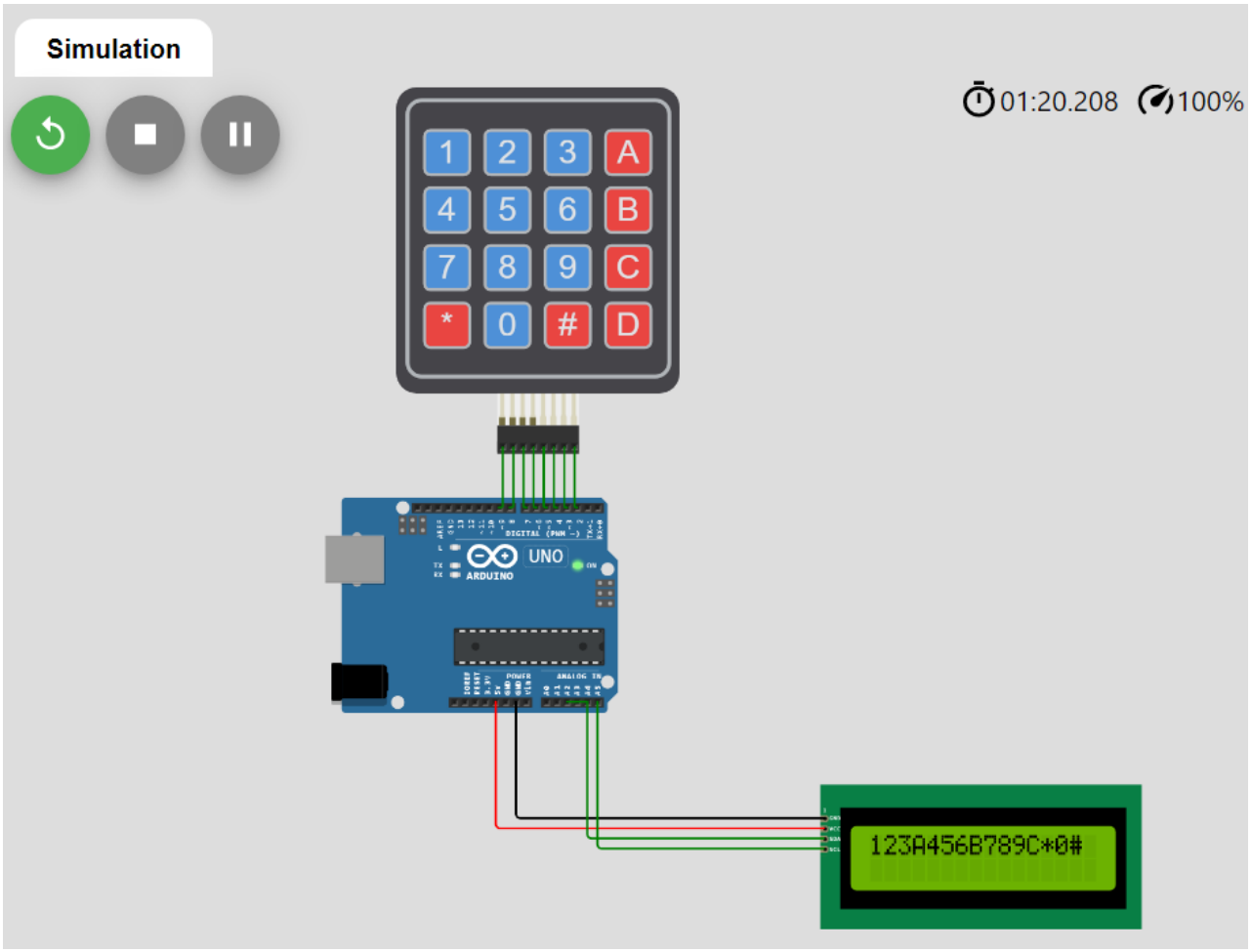
Mini Project

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 row
pinouts of the keypad

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


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

LiquidCrystal_I2C lcdDisplay(0x27, 16, 2); // I2C address 0x27, 16
column and 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;
    }
  }
}
```

Note: The project link can be found here .