



**KIIT, Deemed to be University  
School of Computer Engineering  
Sensors And Automation [EC28005]**

**EXPERIMENT -4**

**Aim:**

The aim is to demonstrate the integration of serial communication between an Arduino microcontroller and a 7-segment display, showcasing the potential applications and benefits of leveraging serial communication in driving dynamic information presentation on the display.

**Component/Software Used:**

<b>Component/Software</b>	<b>Specification</b>
Arduino Uno	-
Bread Board, Cables, Connecting Wires, Laptop/Computer, 7 Segment Display	-
Software(s) Used	Arduino IDE 2.2.1

**Theory:**

Serial communication in electronics involves the transfer of data one bit at a time through a communication channel or bus. It is a method of transmitting and receiving information between electronic devices, often using digital signals. Serial communication is widely used in various electronic systems to facilitate data exchange and control between devices.

## Principle of Working:

The working principle of serial communication involves the transmission and reception of data in a sequential manner. The communication typically occurs over a single channel or pair of wires and is synchronized to ensure the accurate exchange of information. Serial communication can utilize different protocols such as UART (Universal Asynchronous Receiver-Transmitter), SPI (Serial Peripheral Interface), or I2C (Inter-Integrated Circuit), each with its own specific characteristics and applications.

## Program:

```
#include <LiquidCrystal.h>

// initialize the library by associating any needed LCD interface pin
// with the arduino pin number it is connected to

const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;

LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

String entry;

void setup() {

    // set up the LCD's number of columns and rows:
    Serial.begin(9600);

    lcd.begin(16, 2); // Print a message to the LCD.

}

void loop() {

    if(Serial.available()) {

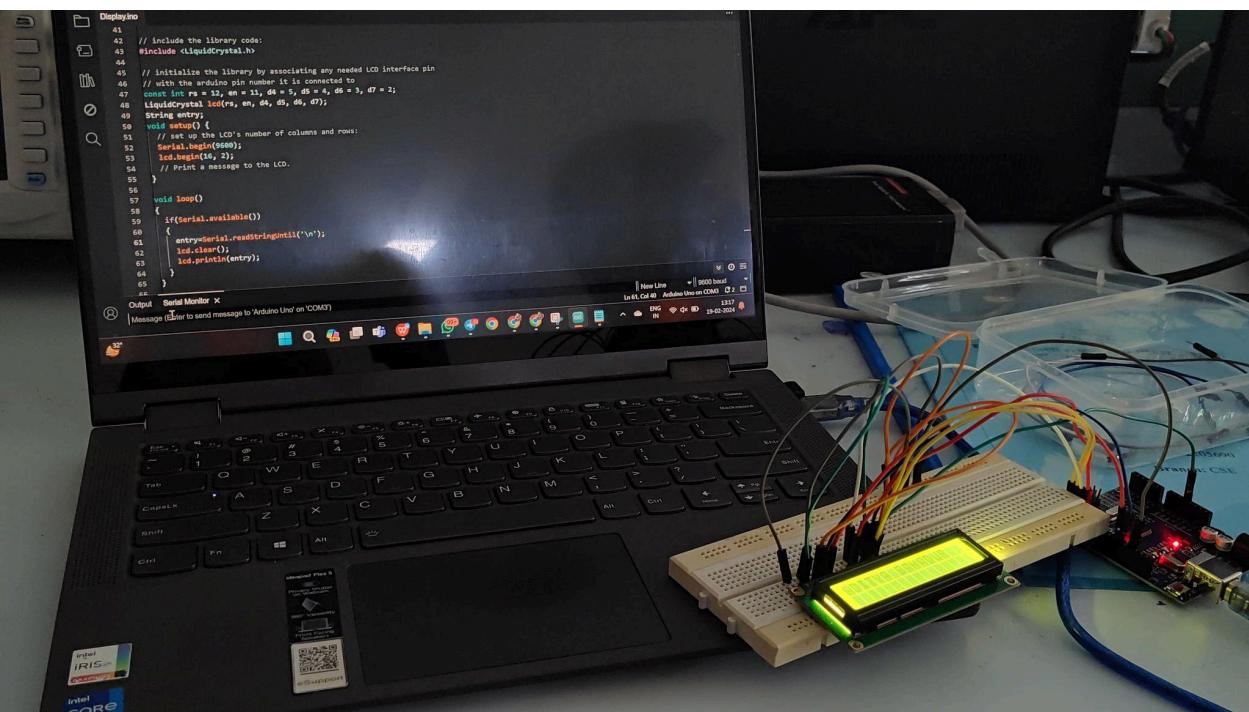
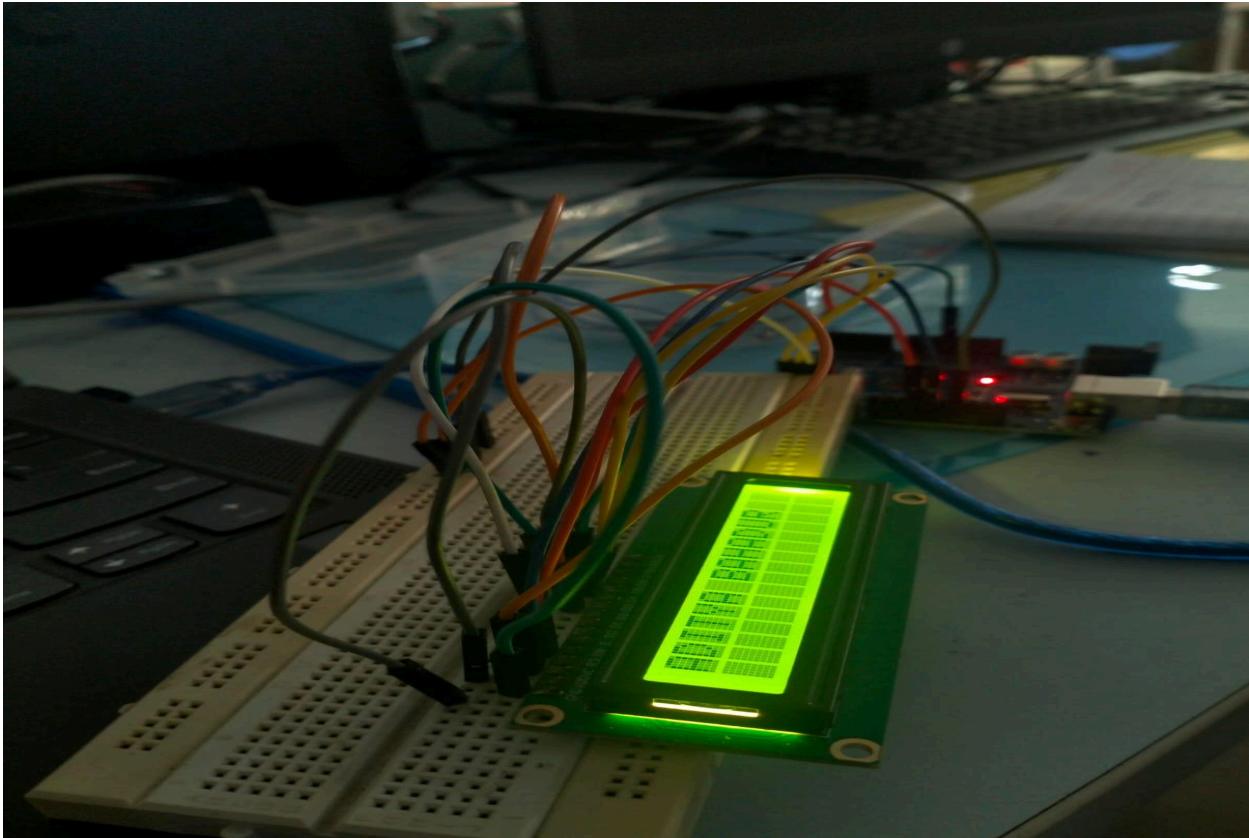
        entry=Serial.readStringUntil('\n');

        lcd.clear();

        lcd.println(entry);}

}
```

## Result picture:



## **Conclusion:**

In conclusion, serial communication plays a pivotal role in facilitating data exchange and control between electronic devices. By transmitting data one bit at a time, serial communication allows for synchronized and reliable information transfer over single channels or pairs of wires. The use of protocols such as UART, SPI, and I2C further enhances the versatility and efficiency of serial communication in various electronic systems. Additionally, in practical applications, the integration of serial communication enables dynamic control and real-time interaction between devices, as demonstrated by the utilization of an Arduino microcontroller and a 7-segment display. Overall, serial communication is a fundamental aspect of modern electronics, enabling seamless data exchange and synchronization between interconnected devices.

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