# EXPERIMENT 1.2

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**Section/Group:** 626-B
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**Subject Name:** Internet of Things Lab
**Subject Code:** 21CSP-344

**Aim :** Design LCD interfacing on WOKWI or TinkerCad Simulation Platform.

**Objectives :**

1. Learn about IoT based simulations.
2. Testing and model in IoT based simulation platform.

**Hardware and Software :** WOWKI.

## Procedure:

1. Open the WOKWI or TinkerCad simulation platform in your web browser and create a new project.
2. Select the components needed for LCD interfacing, including an Arduino board, LCD module, and necessary resistors and wires. These components should be available in the platform's component library.
3. Place the Arduino board on the workspace and connect it to the power and ground rails.
4. Connect the LCD module to the Arduino board. Typically, the LCD module will have 16 pins. Connect the appropriate pins of the LCD module to the corresponding pins of the Arduino board. Refer to the datasheet or documentation of the LCD module for the pinout details.
5. Add the necessary resistors to the circuit. The LCD module usually requires a potentiometer or a series of resistors to control the contrast of the display. Connect these components according to the LCD module's datasheet.
6. Use jumper wires to establish the connections between the Arduino board, LCD module, and resistors. Pay attention to the pin configurations and ensure that the connections are correct.
7. Write a program for the Arduino to control the LCD module. Depending on your requirements, you can display text, numbers, or custom characters on the LCD. The programming language used in Arduino is based on C/C++. If you're new to Arduino programming, you can find plenty of examples and tutorials online.
8. Upload the program to the Arduino board using the simulation platform's interface. This will allow you to test the LCD interfacing circuit virtually.
9. Run the simulation to see the output on the LCD module. Make sure the connections and code are correct.

## Description:

**WOKWI :** Wokwi is an online Electronics simulator. You can use it to simulate Arduino, ESP32, STM32, and many other popular boards, parts and sensors. Wokwi compiles your code into a binary firmware, and then executes the binary firmware one instruction at a time, as a real microcontroller would .

**LCD:** A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers.

## Code:

```
// LCD1602 to Arduino Uno connection

#include <LiquidCrystal.h>
LiquidCrystal lcd(12, 11, 10, 9, 8, 7);

void setup() {
  lcd.begin(16, 2);
  lcd.print("21BCS2856");
  lcd.setCursor(0,1);
  lcd.print("Rohan Jaiswal!");
}

void loop() {
  // ...
}
```

## Output: