Course Name: Internet Of Things Lab **Course code:** 21CSP-344

Date of Performance 24/08/2023

Experiment1.3

Aim: Design LCD interfacing on WOKWI or TinkerCad Simulation Platform

Objectives:

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

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Components Used:

Tinker Cad Simulation, Arduino Uno

Description:

Autodesk Tinkercad is a web-based software for 3D design, electronics, and coding. It provides a simple and intuitive interface for designing and creating models, which can be used for a variety of purposes, including prototyping, product design, and educational purposes. To demonstrate the simulation platform, let's start with a simple example. Suppose we want to design a simple circuit that consists of a battery, a resistor, and an LED. Here are the steps to follow:

1. Open Tinkercad in your web browser and create a new project.
2. Select the "Circuits" option from the left-hand side toolbar.
3. Drag and drop a battery, a resistor, and an LED from the component library onto the workspace.
4. Connect the battery, resistor, and LED using wires. You can do this by clicking on the component's pins and dragging a wire to the other component's pin.
5. Once you have connected all the components, click on the "Start Simulation" button in the top-right corner of the screen.
6. A new window will open showing the circuit simulation. You can see the current flowing through the circuit, the voltage across each component, and other relevant parameters.
7. You can also change the values of the components and see how they affect the circuit's behavior. For example, you can change the resistance of the resistor and see how it affects the brightness of the LED.

In addition to circuit simulation, Tinkercad also supports simulation for 3D models. You can design a 3D model and simulate its behavior under different conditions, such as stress or temperature changes. Overall, Autodesk Tinkercad Simulation Platform provides a powerful tool for designing, testing, and simulating a wide range of models, from circuits to 3D designs. Its user-friendly interface and intuitive features make it an ideal

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platform for both novice and experienced designers.

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Programming and Simulation

To program the Arduino,

1. Click on Code
2. You can choose Blocks or Blocks+Text or Text*. For beginners, it is recommended to use Blocks + Text.
   a. This allows you to see the C++ code generated corresponding to your blocks.
   b. You can copy this code later into Arduino IDE to program the real Arduino, rather than having to write it from scratch.
   c. You can also download the code as an Arduino-compatible .ino file. 3. You can code by selecting the blocks and connecting them appropriately. 4. You can start the simulation by clicking Start Simulation.

CODE:

```
#include <LiquidCrystal.h>

LiquidCrystal lcd(12, 11, 10, 9, 8, 7);

void setup() {
  lcd.begin(16, 2);
  // you can now interact with the LCD, e.g.:
  lcd.print("Nishant Kumar");
  lcd.setCursor (0, 1);
  lcd.print("21BCS3402");
}

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

Output :

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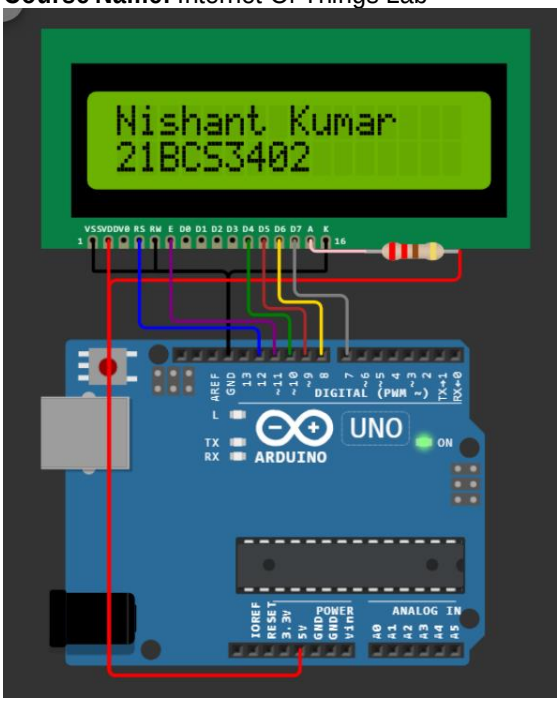

Learning Outcomes :

- How WOKWI works .
- Different functional pins of Arduino .
- LCD Display .