Experiment 2

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Subject Name:IOT Architecture and its Protocol Lab
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1. **Aim:** To Design LCD interfacing on WOKWI or Any other IoT SimulationPlatform.

2. **Requirements(Hardware/Software):**PC, Internet, Arduino Uno, Connection Cable, Arduino IDE, Tinker CAD, LCD, Resistor.

3. **Objective:**

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

4. **Procedure:**

i.Open browser and go to TinkerCAD and create a new project.
ii. Choose the necessary components from the library, including an Arduino board, an LCD module, resistors, and wires.
iii. Now connect 5V to VCC, GND to GND, A4 to SDA and A5 to SCL from Arduino UNO to LCD 16x2(I2C).
iv. In LCD select Type as PCF8574-based .
v. Now click on Code and select Text only.
vi. Now write the code given below.
vii. After this click on Start simulation: Execute the simulation to test theLCD display. Check for and correct any issues with connections or code.
viii. If the LCD does not display correctly, troubleshoot and adjust the wiring and code as needed. ix. Once all connections and programming are verified, observe the final output on the LCD to ensure everything works as intended.
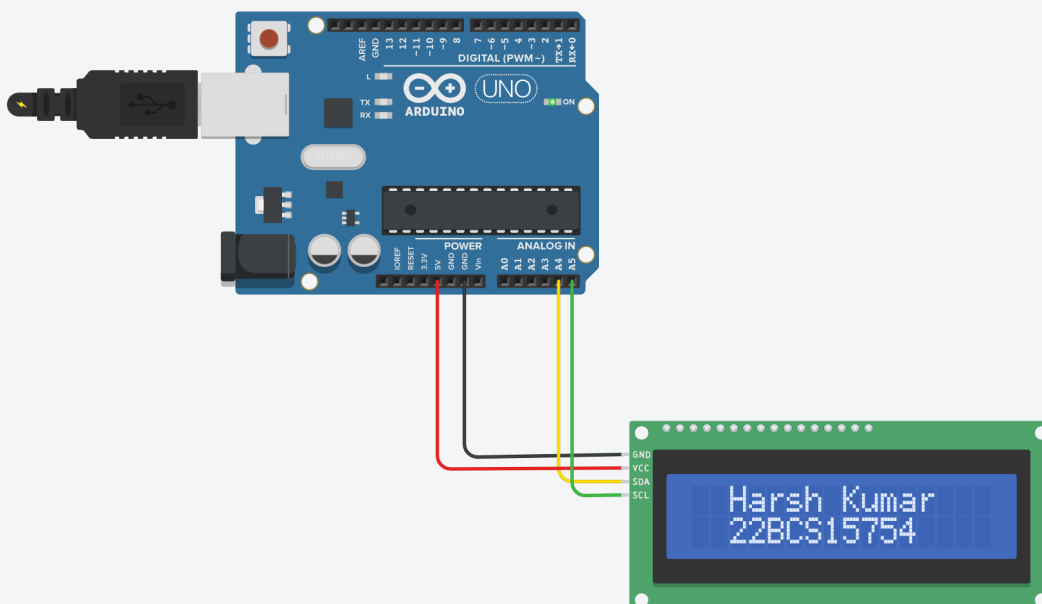
Code:

```cpp
#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x20, 16, 2);

void setup() {
  lcd.init();
  lcd.clear();
  lcd.backlight();
  lcd.setCursor(2, 0);
  lcd.print("Harsh Kumar");
  lcd.setCursor(2, 1);
  lcd.print("22BCS15754");
}

void loop() {
  // Empty loop as the display is static
}
```

5. **Result:** Successfully executed the experiment where I have connected the LCD with shown the output with the help of Arduino UNO.

6. Conclusion:

In this experiment, we got a hands-on experience on interfacing an LCDwith Arduino effectively. Carefully connecting the pins and set up thefoundation for communication between LCD and Arduino. After that Arduino's code dictates what appears on the display. This project not onlyenhances understanding of basic electronic components and coding but alsoserves as a practical introduction to building user interfaces for variousapplications. parts of the Arduino Uno, including the power USB, barrel jack, voltage regulator, crystal oscillator, analog pins, and the main microcontroller.