



# Project Demo-I

**CSE350 : Digital Electronics and Pulse Techniques**

**Project Title (SL 2): - Game Development Using Arduino**

<b>Group No: 06 ; Section: 4B</b> <b>Fall 2025</b>	
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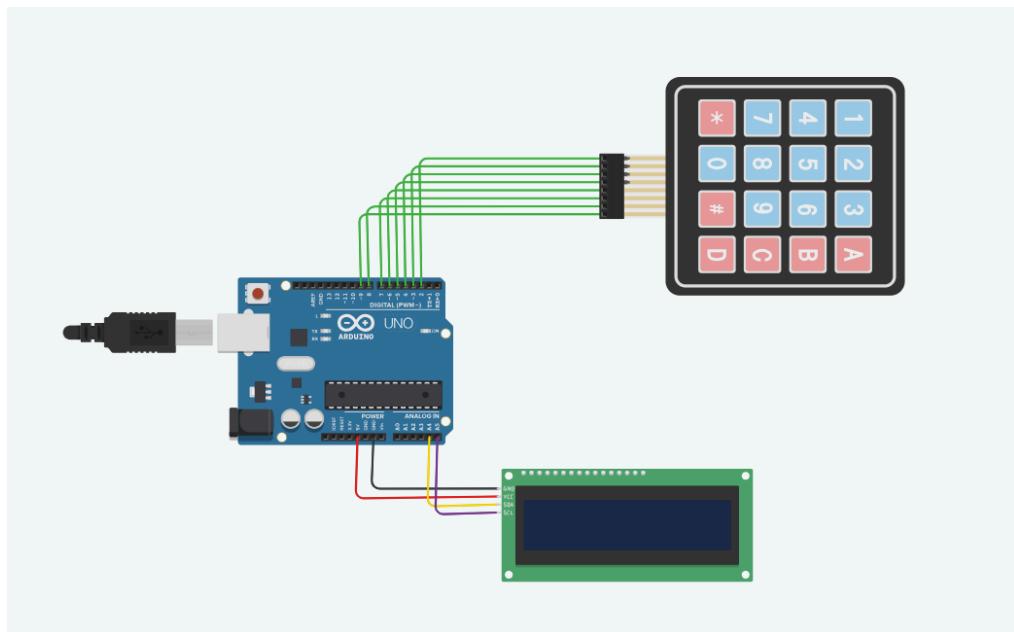
## **TIC-TAC-TOE Game Implementation Using Arduino**

### **Abstract:**

The following report presents the design and development of an interactive two-player Tic-Tac-Toe game using Arduino. Basically, this project aims to combine the hardware components with logical programming to create an engaging, standalone digital gaming system. The setup consists of a digital display that visually represents the  $3 \times 3$  game grid and provides a real-time feedback along with a keypad interface that allows players to input their moves alternately as “X” or “O” in the game. Basically, the system’s logic is implemented through the Arduino IDE which handles player turns, validates inputs, detects win or draw conditions and resets the game upon completion. Once a player successfully aligns three identical symbols in a row, column or diagonal or when the grid is filled without a winner, the game concludes with the appropriate result displayed like Win, Lose or Tie.

However, this project demonstrates the effective integration of hardware and software in digital systems which illustrates how a user interaction can be captured through analog inputs and processed into digital signals. Not only in gaming but also the same principles can be applied to a wide range of real world applications which require user input and automated control such as access control systems, vending machines or elevator floor selectors etc.

### **Circuit Implementation using Tinkercad:**



Here the following image shows the TIC-TAC-TOE circuit implementation with the help of Arduino Uno.

### **List of Components:**

The components required for this system are as follows:

1. Arduino Uno R3
2. 20 Character 4 Line LCD Display Module
3. 12C LCD Display Adapter
4. 4x4 Keypad
5. Jumper Wires

### **Components Ordered :**

	Male to Female Jumper Wires 20 Pcs 20cm x1	BDT 55
	Male to Male Jumper Wires 20 Pcs 20cm x1	BDT 55
	Arduino Uno R3 x1	BDT 988
	20x4 Character LCD Blue Backlight x1	BDT 349
Subtotal		BDT 1,447
Shipping		BDT 55
Have a promo code?		
Total (tax excl.)		BDT 1,502

The following image shows the receipt of components that have been ordered.

## **Process Description:**

1. Connect Keypad pins 1-8 to D2-D9 of the Arduino
2. Attach the 12C module to the LCD Display
3. Make the following connections to the LCD with 12C converter and Arduino:
  - a. SDA Pin to A4 Pin
  - b. SCL Pin to A5 Pin
  - c. VCC to 5V
  - d. GND Pin to GND
4. Connect Arduino Uno to a Computer and implement the game instruction Sketch using Arduino IDE.

