# Circuit Documentation

## Summary

This circuit is designed to interface an Arduino UNO R3 with an 8x8 LED matrix, a KY-023 Dual Axis Joystick Module, and a buzzer. The Arduino serves as the central controller, managing inputs from the joystick and controlling the LED matrix and buzzer. The circuit is powered through the Arduino, which supplies power to the other components.

## Component List

### Arduino UNO R3

* **Description**: A microcontroller board based on the ATmega328P.
* **Pins**: A5, A4, A0, A1, A2, A3, VIM, GND, SCL, SDA, AREF, 5V, 3.3V, RESET, D0, D1, D2, D3 ~, D4, D5 ~, D6 ~, D7, D9 ~, D10 ~, D11 ~, D12, D13
* **Purpose**: Acts as the main controller for the circuit, processing inputs and controlling outputs.

### 8x8 LED Matrix

* **Description**: A display module consisting of 64 LEDs arranged in an 8x8 grid.
* **Pins**: vcc, DIN, clk, CS, Gnd, gnd, CLK
* **Purpose**: Displays visual patterns or information as controlled by the Arduino.

### KY-023 Dual Axis Joystick Module

* **Description**: A joystick module that provides analog output for X and Y axes and a digital output for a button press.
* **Pins**: GND, +5V, VRx, VRy, SW
* **Purpose**: Provides user input to control the circuit, such as navigating the LED matrix.

### Buzzer

* **Description**: An audio signaling device.
* **Pins**: +, -
* **Purpose**: Provides audio feedback or alerts as controlled by the Arduino.

## Wiring Details

### Arduino UNO R3

* **5V**: Connected to the CS pin of the 8x8 matrix and VRy pin of the joystick.
* **GND**: Connected to the clk pin of the 8x8 matrix, SW pin of the joystick, and - pin of the buzzer.
* **D11 ~**: Connected to the DIN pin of the 8x8 matrix.
* **D10 ~**: Connected to the Gnd pin of the 8x8 matrix.
* **D13**: Connected to the vcc pin of the 8x8 matrix.
* **A0**: Connected to the VRx pin of the joystick.
* **A1**: Connected to the +5V pin of the joystick.
* **D2**: Connected to the GND pin of the joystick.
* **D3 ~**: Connected to the + pin of the buzzer.

### 8x8 LED Matrix

* **CS**: Connected to the 5V pin of the Arduino.
* **clk**: Connected to the GND pin of the Arduino.
* **DIN**: Connected to the D11 ~ pin of the Arduino.
* **Gnd**: Connected to the D10 ~ pin of the Arduino.
* **vcc**: Connected to the D13 pin of the Arduino.

### KY-023 Dual Axis Joystick Module

* **VRy**: Connected to the 5V pin of the Arduino.
* **SW**: Connected to the GND pin of the Arduino.
* **VRx**: Connected to the A0 pin of the Arduino.
* **+5V**: Connected to the A1 pin of the Arduino.
* **GND**: Connected to the D2 pin of the Arduino.

### Buzzer

* **+**: Connected to the D3 ~ pin of the Arduino.
* **-**: Connected to the GND pin of the Arduino.

## Code Documentation

There is no embedded code provided for this circuit. The Arduino UNO R3 can be programmed using the Arduino IDE to control the 8x8 LED matrix, read inputs from the joystick, and activate the buzzer as needed.