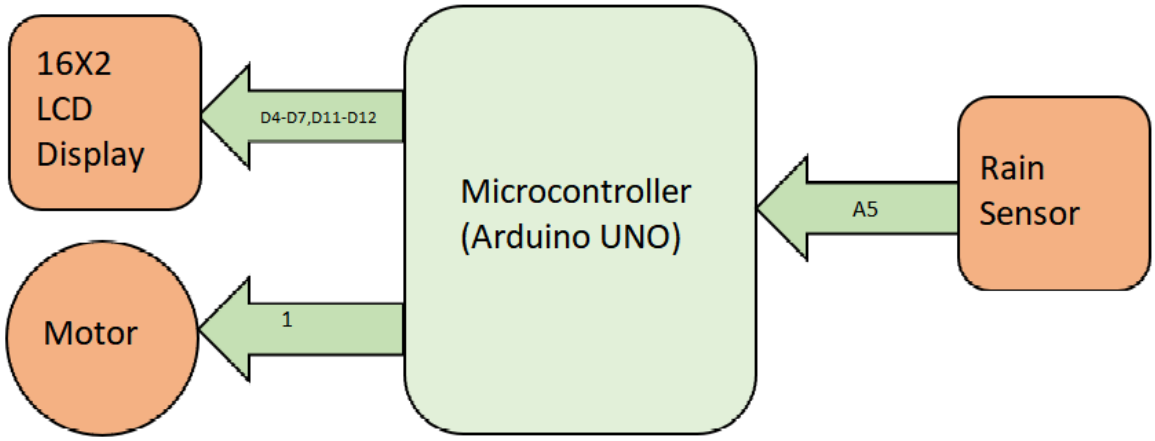
Motor Status using Rain sensor

Description:

In this project scenario, we are utilizing an Arduino Uno board to manage the operational state of a DC motor in response to a rain sensor. The rain sensor, in place of a tactile push button, detects the presence of rain and triggers the motor's functionality accordingly. The real-time status of the motor and the rain conditions are visually presented on an attached LCD display. To achieve this, the rain sensor is connected to a designated digital pin on the Arduino board, and the DC motor is connected to one of the analog output pins.

When the rain sensor detects rain, it sends a signal to the Arduino board, which interprets this input and sends a command to the motor to activate. Simultaneously, the LCD display updates to present the motor's status as "ON" and indicates that it's raining. This provides users with immediate feedback on both the motor's operational state and the environmental condition. The LCD display is promptly updated to show the motor's status as "OFF" and also indicates that there's no raining. We effectively demonstrate the integration of environmental input into the control system.

Block Diagram:



Input and Output:

Sl.no	Description	Name	Type	Data Direction	Specification	Remarks
1.	Rain sensor pin	RAIN1	INP	D1	Digital	Active high
2.	LCD RST	RS	OUT	D0	Digital	Active high
3.	LCD EN	EN	OUT	D0	Digital	Active high
4.	LCD DATA PIN	D4	OUT	D0	Digital	Active high
5.	LCD DATA PIN	D5	OUT	D0	Digital	Active high
6.	LCD DATA PIN	D6	OUT	D0	Digital	Active high
7.	LCD DATA PIN	D7	OUT	D0	Digital	Active high
8.	MOTOR	PD1	OUT	A0	Analog	Active high

Source Code:

```
#include <LiquidCrystal.h>
 const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);// LCD pins: RS, E, D4, D5, D6, D7
int rainSensorPin = A5;
int motorPin = 1;
int motorStatus = LOW;

void setup() {
  lcd.begin(16, 2); // Initialize the LCD
  pinMode(rainSensorPin, INPUT);
  pinMode(motorPin, OUTPUT);
}
void loop() {
  int rainStatus = digitalRead(rainSensorPin);

  if (rainStatus == HIGH) {
    motorStatus = HIGH;
    digitalWrite(motorPin, motorStatus);
    lcd.clear();
    lcd.print("Motor=ON");
    lcd.setCursor(0,1);
    lcd.print("raining");
  }
 else {
    motorStatus = LOW;
    digitalWrite(motorPin, motorStatus);
    lcd.clear();
    lcd.print("Motor=OFF");
    lcd.setCursor(0,1);
     lcd.print("Not raining");
    }
```

```
  delay(1000); // Delay for stability
}
```