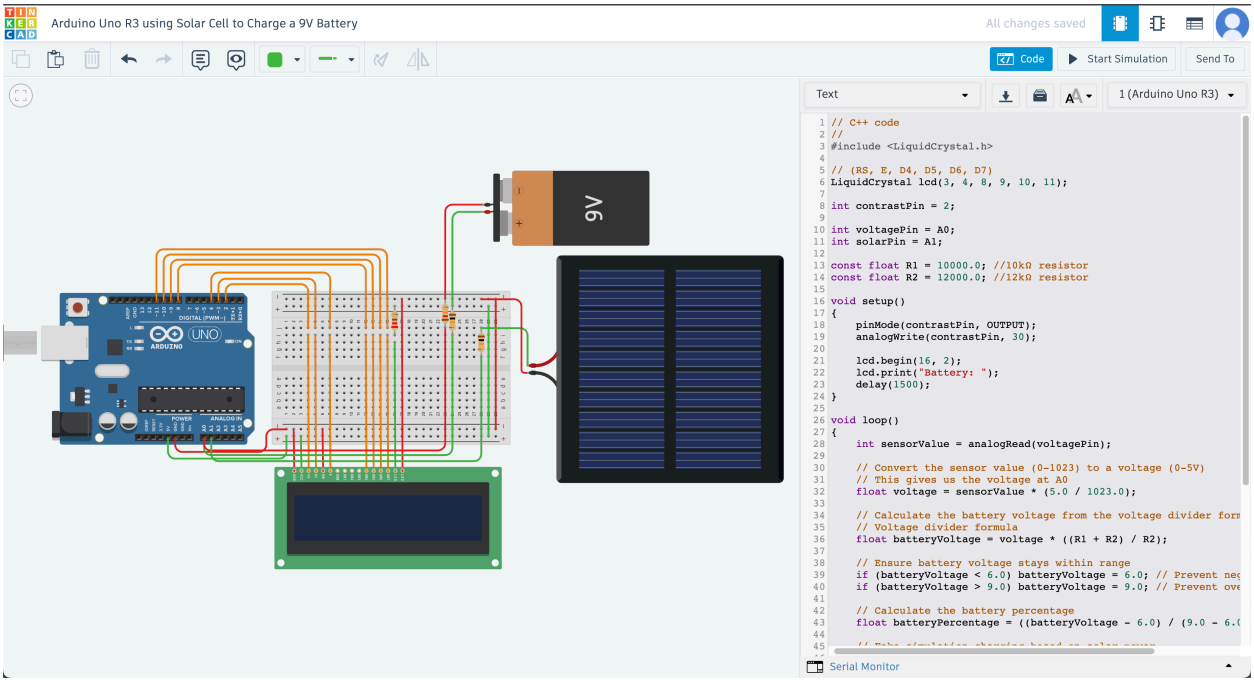
Arduino Uno R3 using Solar Cell to Charge a 9V Battery

Image:



Code:

```
// C++ code
//
#include <LiquidCrystal.h>

// (RS, E, D4, D5, D6, D7)
LiquidCrystal lcd(3, 4, 8, 9, 10, 11);

int contrastPin = 2;

int voltagePin = A0;
int solarPin = A1;

const float R1 = 10000.0; //10kΩ resistor
const float R2 = 12000.0; //12kΩ resistor

void setup()
{
	pinMode(contrastPin, OUTPUT);
	analogWrite(contrastPin, 30);

	lcd.begin(16, 2);
	lcd.print("Battery: ");
	delay(1500);
}
```

```
void loop()
{
	int sensorValue = analogRead(voltagePin);

	// Convert the sensor value (0-1023) to a voltage (0-5V)
	// This gives us the voltage at A0
	float voltage = sensorValue * (5.0 / 1023.0);

	// Calculate the battery voltage from the voltage divider formula
	// Voltage divider formula
	float batteryVoltage = voltage * ((R1 + R2) / R2);

	 // Ensure battery voltage stays within range
	if (batteryVoltage < 6.0) batteryVoltage = 6.0; // Prevent negative percentage
	if (batteryVoltage > 9.0) batteryVoltage = 9.0; // Prevent over 100%

	// Calculate the battery percentage
	float batteryPercentage = ((batteryVoltage - 6.0) / (9.0 - 6.0)) * 100.0;

	// Fake simulation charging based on solar power
	 int solarValue = analogRead(solarPin); // Read "sunlight" level
	 if (solarValue > 200) { // If sunlight is strong
		batteryPercentage += 0.1; // Charge slowly
	} else {
		batteryPercentage -= 0.05; // Discharge slowly
	}

	// Ensure percentage stays between 0 and 100
	if (batteryPercentage < 0) batteryPercentage = 0;
	if (batteryPercentage > 100) batteryPercentage = 100;

	lcd.setCursor(0, 1);
	lcd.print("      ");
	lcd.print(batteryPercentage);
	lcd.print("%");

	delay(1000);
}
```