Nuevo Foundation Workshop

Sun follower project

**Difficulty: Intermediate**

**I. Introduction**

* **A. Project Overview**
  + Brief explanation of what a sun follower (solar tracker) is and its purpose.
  + Story or use for this workshop
  + Overview of the project goals and components.
* **B. Importance of Solar Energy**
  + Discuss the benefits of using solar energy.
  + Explain how solar tracking can increase energy efficiency.

**II. Materials Needed**

* **A. Hardware Components**
  + 4 Light Dependent Resistors (LDR)
  + 2 Servo Motors (SG90)
  + Arduino Nano Board
  + Breadboard and Jumper Wires
  + Power Supply (battery or USB cable)
  + Base and Frame for Mounting Components
  + Solar cells (optional)
* **B. Software**
  + Arduino IDE

**III. Understanding the Components (could be an appendix)**

* **A. Light Dependent Resistors (LDR)**
  + How LDRs work and their role in the project.
* **B. Servo Motors**
  + Explanation of servo motors and their functionality.
* **C. Arduino Nano**
  + Introduction to Arduino Nano and its capabilities.
* **D. Solar Cells**
  + Basic principles of solar cells and energy harvesting.

**IV. Building the Circuit**

* **A. Setting Up the Breadboard**
  + Placement of Arduino Nano, LDRs, and connections.
* **B. Connecting the Servo Motors**
  + Wiring the servo motors to the Arduino Nano.
* **C. Integrating Solar Cells (optional)**
  + Connecting the solar cells to the circuit.

**V. Coding in Arduino IDE**

* **A. Introduction to Arduino IDE**
  + Overview of the software and basic functionality.
* **B. Writing the Code**
  + Step-by-step guide to writing the code for the sun follower.
  + Explanation of each part of the code.
* **C. Uploading the Code**
  + How to upload the code to the Arduino Nano.

**VI. Testing and Calibration (optional calibration)**

* **A. Initial Testing**
  + Powering up the system and observing the initial behavior.
* **B. Calibration of LDRs**
  + Adjusting the sensitivity of the LDRs.
* **C. Fine-Tuning the Servos**
  + Ensuring the servo motors respond correctly to light changes.

**VII. Extensions**

* **A. Project Extensions**
  + Ideas for further development and enhancements.
  + Adding features like data logging, remote monitoring, etc.
  + Added stand alone feature.

**VIII. Conclusion**

* **A. Recap of the Project**
  + Summary of what was learned and achieved.
* **B. Encouragement to Explore Further**
  + Motivating students to explore more projects in renewable energy and engineering.