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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.