Title: **Smart Roof Control Arduino Project**

Description:

The Smart Roof Control System is an intricately planned, cutting-edge, Arduino-based project that automates the rain protection of outdoor clothing and facilitates the effective use of collected rainwater for plant irrigation. This sophisticated system expertly integrates a rain sensor, servo motor, and submersible pump, creating a multifunctional solution that is both clever and responsive. At its core, the rain sensor continuously monitors for precipitation, sending immediate signals to the Arduino microcontroller upon detecting raindrops. The microcontroller then swiftly activates the servo motor, which operates a retractable roof mechanism to cover and protect clothes from getting wet. Concurrently, rainwater is efficiently collected in a storage reservoir, ready to be repurposed for irrigation. The submersible pump, controlled by the Arduino via a relay module, draws water from the reservoir and delivers it to plants, ensuring they receive adequate moisture. This environmentally responsible approach not only enhances convenience but also promotes sustainability by maximizing the utility of natural rainwater resources. Through its seamless integration of technology, the Smart Roof Control System exemplifies an intelligent and eco-friendly solution, improving both everyday life and environmental stewardship.

Functionalities:

1. Rain Detection and Roof Deployment:
   - Rain Sensor: The system is equipped with a rain sensor (rain meter) that detects the presence of raindrops.
   - Servo Motor: Upon detection of rain, the rain sensor sends a signal to the Arduino, which in turn activates a servo motor.
   - Automated Roof: The servo motor controls the movement of a roof mechanism. When rain is detected, the roof automatically extends over the area where clothes are hung, protecting them from getting wet.

2. Rainwater Collection and Plant Irrigation:
   - Water Collection: Rainwater is collected and stored in a reservoir.
   - Submersible Pump: The system includes a submersible pump controlled by the Arduino.
   - Automatic Watering: The stored rainwater is used to irrigate plants. The Arduino can be programmed to pump water to the plants at specific intervals or based on soil moisture levels (if a soil moisture sensor is integrated).

Components:

Serial	Component Name	Cost
1	Arduino UNO	1050
2	Servo Motor	250
3	Rain Meter	100
4	Breadboard	100
5	Submersible Pump	160
6	Jumper Wire	50
	Total	1710

Diagram: