

This project demonstrates a simple home automation system using Arduino Uno and an LED, where the LED is controlled via serial commands. Since the HC-05 Bluetooth module is not available in Tinkercad, we simulate Bluetooth communication using the Serial Monitor.

The system allows turning the LED ON or OFF by sending '1' or '0' through the Serial Monitor. This simulates a Bluetooth-controlled device, making it a perfect practice project for beginners interested in embedded systems and IoT.

#### Features:

Uses Arduino Uno, LED, and a 220Ω resistor.

Serial Monitor used in place of HC-05 Bluetooth module.

Can be easily extended to real hardware using an actual HC-05 module.

Code written in standard Arduino C++.

#### Real-World Application:

Replace Serial Monitor with HC-05 module and control the system from a mobile app via Bluetooth.

This forms the foundation of a Bluetooth-based home automation setup.

#### Learning Outcome:

Understanding serial communication with Arduino.

Simulating Bluetooth communication without hardware.

Building clean circuit diagrams and uploading projects to GitHub.