Bluetooth Controlled LED Project

Bluetooth Controlled LED using Arduino

Bluetooth Controlled LED project demonstrates wireless control of an electronic device using Arduino microcontroller and Bluetooth communication. In this project, the Arduino UNO acts as the main controller, while the HC-05 Bluetooth module provides wireless serial communication between a mobile phone and the Arduino board. Bluetooth technology operates on short-range radio frequency communication and is widely used in embedded systems for wireless control applications.

The HC-05 Bluetooth module works on serial communication protocol. It receives data transmitted from a mobile phone through a Bluetooth terminal application. The received data is sent to the Arduino through Software Serial communication. Based on the received command, the Arduino processes the input and controls the output device accordingly. When a specific character (such as '1') is received, the Arduino turns ON the LED, and when another character (such as '0') is received, the Arduino turns OFF the LED.

Components Required

- Arduino UNO
- HC-05 Bluetooth module
- LED
- Jumper wires

Connections

HC-05	Arduino
TXD	Pin 2
RXD	Pin 3 *(via voltage divider)*
VCC	5V
GND	GND

Arduino	LED
Pin 13	LED +
GND	LED –

Mobile App

"Bluetooth Terminal"

- 1 → LED ON
- 0 → LED OFF

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