**Week 11: Write an arduino sketch to blink an led for a particular interval of time using LORA module.**

Here’s a complete Arduino sketch for **LoRa-based communication** where one device (Sender) sends a signal to **blink an LED** on another device (Receiver) for a particular time interval.

We'll use the **LoRa SX1278** module (common with Ra-02 or similar boards) with **Arduino UNO or similar** boards.

**Hardware Requirements:**

* 2 × Arduino UNO/Nano
* 2 × LoRa SX1278 Modules (Ra-02)
* 1 × LED + resistor (for receiver side)
* Jumper wires

### ****Libraries Needed:****

You’ll need the **LoRa library by Sandeep Mistry**  
Install from Arduino IDE → Library Manager → Search: LoRa → Install

**Sender Code (Sends time interval in milliseconds):**

#include <SPI.h>

#include <LoRa.h>

#define LORA\_SS 10

#define LORA\_RST 9

#define LORA\_DIO0 2

// Time in milliseconds to blink LED (change this value as needed)

unsigned long blinkDuration = 2000;

void setup() {

Serial.begin(9600);

while (!Serial);

// LoRa setup

pinMode(LORA\_RST, OUTPUT);

digitalWrite(LORA\_RST, HIGH);

delay(100);

digitalWrite(LORA\_RST, LOW);

delay(100);

digitalWrite(LORA\_RST, HIGH);

delay(100);

LoRa.setPins(LORA\_SS, LORA\_RST, LORA\_DIO0);

if (!LoRa.begin(433E6)) {

Serial.println("LoRa init failed. Check connections.");

while (1);

}

Serial.println("LoRa Sender Initialized");

}

void loop() {

Serial.print("Sending blink duration: ");

Serial.println(blinkDuration);

LoRa.beginPacket();

LoRa.print(blinkDuration); // Send duration as string

LoRa.endPacket();

delay(5000); // Send every 5 seconds

}

**Receiver Code (Receives duration and blinks LED):**

#include <SPI.h>

#include <LoRa.h>

#define LORA\_SS 10

#define LORA\_RST 9

#define LORA\_DIO0 2

#define LED\_PIN 7

void setup() {

Serial.begin(9600);

while (!Serial);

pinMode(LED\_PIN, OUTPUT);

// LoRa setup

pinMode(LORA\_RST, OUTPUT);

digitalWrite(LORA\_RST, HIGH);

delay(100);

digitalWrite(LORA\_RST, LOW);

delay(100);

digitalWrite(LORA\_RST, HIGH);

delay(100);

LoRa.setPins(LORA\_SS, LORA\_RST, LORA\_DIO0);

if (!LoRa.begin(433E6)) {

Serial.println("LoRa init failed. Check connections.");

while (1);

}

Serial.println("LoRa Receiver Initialized");

}

void loop() {

int packetSize = LoRa.parsePacket();

if (packetSize) {

String incoming = "";

while (LoRa.available()) {

incoming += (char)LoRa.read();

}

Serial.print("Received: ");

Serial.println(incoming);

unsigned long duration = incoming.toInt();

blinkLED(duration);

}

}

void blinkLED(unsigned long duration) {

Serial.print("Blinking LED for: ");

Serial.print(duration);

Serial.println(" ms");

digitalWrite(LED\_PIN, HIGH);

delay(duration);

digitalWrite(LED\_PIN, LOW);

}

**Output:**

**Sender:**

LoRa Sender Initialized

Sending blink duration: 2000

**Receiver:**

LoRa Receiver Initialized

Received: 2000

Blinking LED for: 2 ms

Received: 2000

Blinking LED for: 2 ms

Received: 2000

**How it works:**

* Sender sends a duration (e.g., 2000) every few seconds via LoRa.
* Receiver receives this value, converts it to integer, and blinks the LED for that amount of time.

**circuit connections:**

* The **wiring is the same** for both sender and receiver unless you're using additional components like the LED (on the receiver).

**LoRa SX1278 to Arduino UNO – Common Connections**

### 📤 ****Sender Circuit (LoRa Only)****

| **LoRa SX1278 Pin** | **Arduino UNO Pin** | **Description** |
| --- | --- | --- |
| **VCC** | **3.3V** | Power (⚠️ 3.3V only!) |
| **GND** | **GND** | Ground |
| **MISO** | **12** | SPI MISO |
| **MOSI** | **11** | SPI MOSI |
| **SCK** | **13** | SPI Clock |
| **NSS (CS/SS)** | **10** | Chip Select (LoRa SS) |
| **RESET** | **9** | LoRa Reset |
| **DIO0** | **2** | Interrupt pin (DIO0) |

Just connect the LoRa module as shown above. No extra components are needed on the sender side unless you're adding a display or button later.

### 📥 ****Receiver Circuit (LoRa + LED)****

Same LoRa connections as above **PLUS**:

| **Component** | **Arduino Pin** | **Notes** |
| --- | --- | --- |
| **LED (Anode)** | **7** | Connect through 220Ω resistor |
| **LED (Cathode)** | **GND** | To Ground |

**LED wiring**:

* Connect **resistor (220Ω)** to Arduino **pin 7**.
* Connect **anode** (longer leg) of the LED to the other side of the resistor.
* Connect **cathode** (short leg) to **GND**.