Embedded Systems

Lab 4: Multi-Hop Bluetooth Chat

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Goals of Lab 4

- Communication using Bluetooth
  - Task 1: One-to-one connection between two nodes
  - Task 2: Multi-hop communication to a base station
Bluetooth on BTnut

- Application
  - RFCOMM
  - Connection Manager
  - Multi-Hop
  - RPC
  - L2CAP
    - L2CAP connectionless
  - Link Manager Protocol
  - Audio
  - Baseband
  - Bluetooth Radio
Bluetooth on BTnut

Translation between Bits and RF Signals (e.g. frequency hopping, modulation and demodulation, etc.)
Bluetooth on BTnut

Packet Structure
Defines addressing scheme, packet format, timing and power control, etc.
Bluetooth on BTnut

Link Establishment
The setup and maintenance of links between two devices.
Bluetooth on BTnut

Logical Link Control and Adaption Protocol
Provides an abstract interface between user data and communication link.
Bluetooth on BTnut

- Basic L2CAP header
  - Length
  - Channel ID

- Information payload

Basic information frame (B-frame)

L2CAP connectionless

- L2CAP
- Link Manager Protocol
- Audio
- Baseband
- Bluetooth Radio
Bluetooth on BTnut

- Application Programming Interface (API)
  - RFCOMM
  - Connection Manager
  - Multi-Hop
  - RPC

- L2CAP connectionless

- Link Manager Protocol
- Audio
- Baseband
- Bluetooth Radio

**Task 1:**
- send_msg(...) 
- receive_msg(...) 

**Task 2:**
- chat(...) 

Notes

- Compile and upload: `make btnode3 upload`

- Base Station Bluetooth MAC address:
  
  00:04:3F:00:01:03

  // address of the base station

  ```
  bt_addr_t sink_addr =
  {0x03, 0x01, 0x00, 0x3F, 0x04, 0x00};
  ```