

Radio Modem Design

November 17th

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Pseudocode

Startup

```
Set BAUD rate (9600)
Detect modem
    Search for connected modem
    If a modem is detected
        Connect modem
        If modem is successfully connected
            Enter Idle state
    If no modem detected
        Display dialogue alerting the user.
```

Idle

```
If the program receives an Enquiry(Rx ENQ)
    Enter acknowledge state.
If the user selects START (bid for line) from menu
    send an Enquiry(TX ENQ)
    Enter Choose File state.
```

Choose File

```
Open file choosing dialogue to allow user to choose a file
    If the file is successfully uploaded
        Parse through file and store number of bytes in global.
        Enter Bid for Line state
    If the file doesn't upload successfully
```

Cancel bidding for line
Return to Idle state

Bid for Line

Send a bid for the line
If an acknowledgment(Rx ACK) is received
 Enter Create Frames state
If a Timeout is received(TOR)
 Enter Link Reset state

Link Reset

If receive enquiry (Rx ENQ)
 Go to acknowledge state
If completes timeout (Rx TOS)
 Return to idle state

Send

If data is sent(Tx Data)
 Enter Confirm Transmission state
If End-Of-Transmission, Timeout, or an X number of frames is sent(Tx EOT, Tx TOS)
 Enter Link Reset state

Create frames

Open the selected file for reading
 If successfully opened
 Start parsing through the file
 Add SYN and STX to frame
 If the number of remaining bytes is larger than or equal to 512
 Create frame (512 characters)
 Subtract 512 from number of bytes left in file to send
 If the number of remaining bytes is less than 512
 Create a frame with the remaining data
 Stuff the rest of the frame
 Add CRC to frame
 Go to send state

Confirm Transmission

If an acknowledge is received (Rx ACK)
 Enter Create Frame state for the next frame
If send timeout (Tx TOS)
 Enter Retransmit state

Retransmit

- Loop 3 times
 - Attempt to send again
 - If acknowledgment is received (Rx ACK)
 - Enter Send state
 - If no acknowledgment sent
 - Loop again (up to 3 times)
- If loop runs 3 times without success
 - Go to Link Reset

Acknowledge

- If transmission acknowledge (Tx ACK)
 - Enter Receive state
- If the device is unable to send an acknowledgment
 - Send a timeout(Tx TOR)
 - Return to Idle state

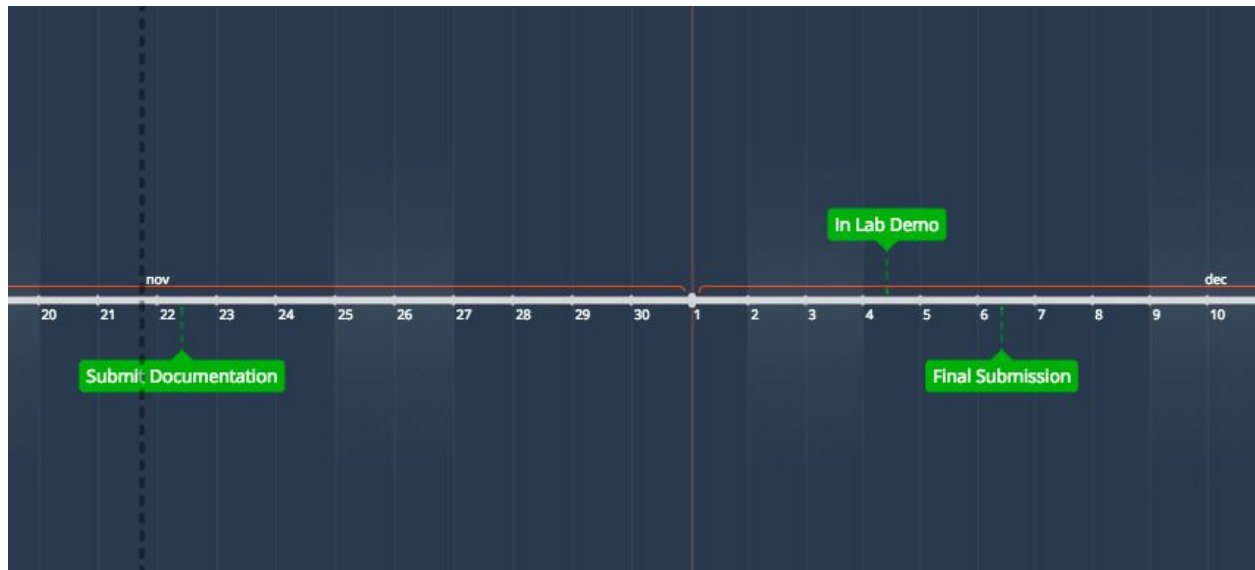
Receive

- If data is received (Rx Data)
 - Do error detection
 - Parse Frame
- If EOT/timeout on receiver end/RVI
 - Return to idle

Parse Frame

- Extract data from frame and save
- Once done
 - Enter Receive state

Timelines



Submit Documentation

Wednesday, November 22nd (9:30am)

Includes this document containing completed Diagram, Pseudocode, Timelines, and Task Breakdown.

In Lab Test

Monday, December 6th (9:30am)

Implementation must be fully functioning and able to be demonstrated by this date. Program will be showed in lab to receive grade.

Last Submission

Wednesday, December 6th (9:30am)

This is the largest of the 3 milestone dates. It includes submitting all previously mentioned design work, the source code, the program executable, and a Technical Report.

All of the above items are to be submitted in a zip folder by the due date.

Task Breakdowns

This section includes a table containing each task and its respective member, due date, and status.

Task	Member	Prefered completion time	Due Date	Status
Complete this document.	All	November 20	November 22	Started
Finish STD	Angus, Will, Vafa	November 20	November 22	Finished
Finish Timeline	Mac	November 18	November 22	Finished
Design & implement GUI	Will	December 1	December 4	Not ready
Determine timeouts	Protocol Committee	?	December 4	Started
In Lab Demo	All	N/A	December 4	Not ready
Technical Report	All	December 3	December 6	Not ready
All Design Work	Angus	December 3	December 6	Started
C++ Source and Executable	All	December 2	December 6	Not ready
Finish Pseudocode	Mac, Vafa	November 20	November 22	Finish
Implement functions	All		December 4	Not started

State Transition Diagram(s)

