

CMPE245
Sept. 7

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Note: 1^o Homework (RF module & RF Work-in-Progress)

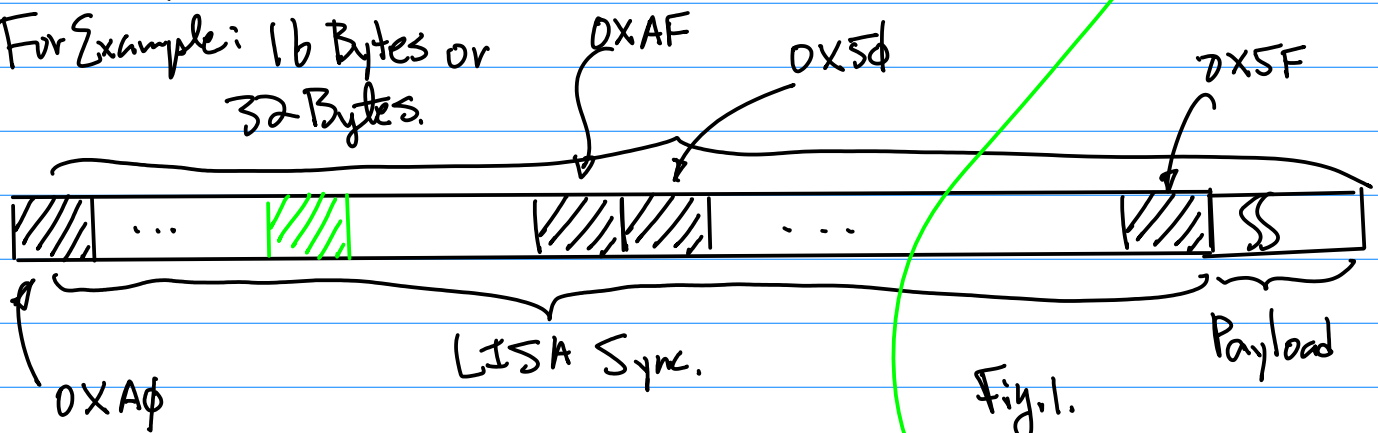
Due today Inspection in Class.

Homework (1st) Due A Week from Today. Write C/C++, OR Python to Implement LISA Algorithm (Phase I)

Such that:

1^o Console Input from user to Select No. of Bytes for Synchronization.

For Example: 16 Bytes or 32 Bytes.



2^o Note in the future (Phase II)

We would like to Extend this Implementation to Allow a Single Byte (as "Green" in Fig. 1. Matching to the LISA Sync Field to Establish Synchronization.

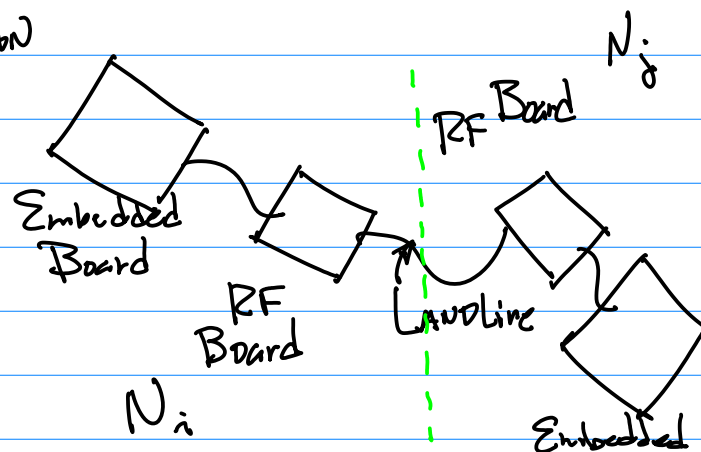
3^o Payload: First Name + Last Name + 4 Digits ID + CMPE245 + SJSU

Print the Payload message.

Note: Python Implementation on Jetson NANO, OR R-Pie 3 B+ or 4, you can do the same.

Note: This homework is for Laptop Based Implementation.

Based on the Homework (Today, RF Board) we will continue with "Landline" Testing Capability.



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Example: Ref from the Class
github, ID: 2018F-104 ~

Observation 1: The Minimum Number of Bytes to establish Synchronization is 1. Therefore $1/32$ Bytes for the Sync. \rightarrow Confidence Level/Index η

$$\eta = \frac{\text{No. of Bytes to Establish Sync.}}{\text{Total Number of Bytes (32)}} \dots (1).$$

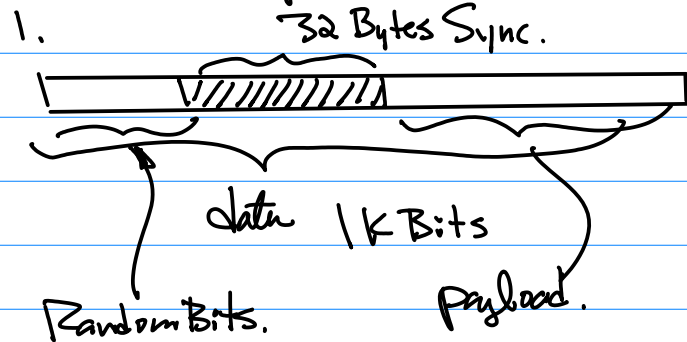
Note: In Software Defined Radio, We can Change η (Confidence Level) to trade the quality for Speed if it is allowed.

In Cognitive Radio Design, we would like to have this Ability.

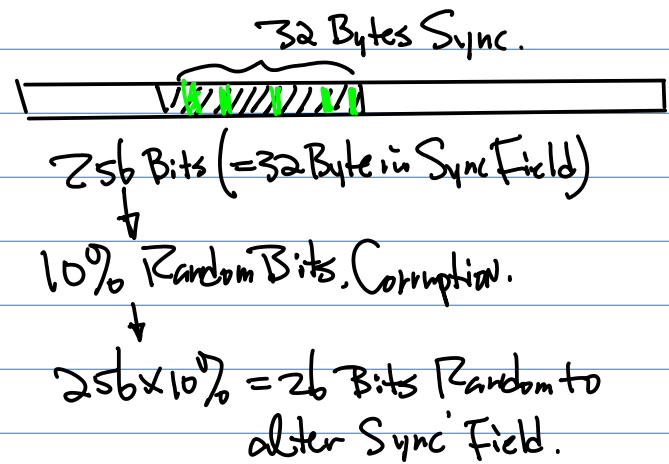
Observation 2: "LINEAR" Characteristics is from the fact LISA Index is defined from D to F with Linear increment. And "Invariant"

Characteristic is due to the fact the ID Index, e.g. Ranging from D to F will allow the Algorithm to pin point to the Beginning of the payload.

2018F-105 ~
Example: Homework ON LISA from the Class github.



2. Sync Field is Corrupted.



Generate Random Bits. (26 bits).
Use "XOR" Bitwise at Any Arbitrary Location within the Sync Field.

3. User Input for the No. of Bytes (as Confidence Level), then the Code will parse the input file with the Confidence Level to Establish Synchronization.