456 Protocol

1. What is the 456 Protocol?

(Ans) 456 Protocol is an arbitrary communication protocol the Embedded Lab class adopts for the labs which include platform-to-platform(s) communications.

2. What is the basic feature of 456 Protocol?

(Ans) In the 456 Protocol, any message in communication is comprised of multiple bytes, and these bytes include some head-bytes followed by the message bytes. Therefore when a message is transmitted, the additional head-bytes should precede the message itself.

3. What are the head-bytes in the 456 Protocol?

(Ans) There are 5 head bytes and their purposes are listed below.

Head	Contents	Purpose
Byte		
1 st Byte	"4"	This is Preamble which indicates some data present over the communication
		system.
2 nd Byte "5" This is Sync byte for t		This is Sync byte for the receiver should catch even though it may miss the
		preamble, and if this Sync byte is not correct in the receiver, the receiver assumes
		that the message is sent from Mars or Moon (not from the class), and ignores it.
3 rd Bye "6" This indicates our Embedded class Group. If this byte		This indicates our Embedded class Group. If this byte is not correct in the
		receiver, the receiver assumes that the message is sent from another class, and
		ignores it.
4 th Byte	Any ASCII	This serves as the Source ID of the message. If the receive knows and expects a
	character	message from a known ID, then the following message may be directed for the
		receiver; otherwise, it's not from someone the receiver expects.
5 th Byte	Any ASCII	This serves as the Destination ID of the message. If the receiver's ID is the
	character	same as this 5 th Byte, then finally the following message is for it to receive and
		display.

4. Can you show an example when one platform (whose ID is, for example, A) sends a message of "Hi Tom" to another platform (Whose ID is B)?

(Ans) In a pseudo-code, this is message transmission complied with the 456 Protocol:

Send "456ABHi Tom"

5. Can you tell how the receiver handles the stream of data and knows and extracts the message? (Ans) In a pseudo-code, this is the receiver would do:

Read data stream and save as M			
Check if M(1) = "5" and M(2) =" 6"	; Check the Sync and Group Byte from the message M		
	; here we ignore $M(0)$ preamble		
Check if M(3)="A"	; from a known transmitter		
Check if M(4) ="B"	; this is for the receiver		
If all yes, extract M(5 – end) as D			
Display "A" (the Source) and D on the LCD screen.			