Week#12 – Starting from April 11 – 2016

Program to analyse Protocol Data Units (PDU)

Why this experiment?

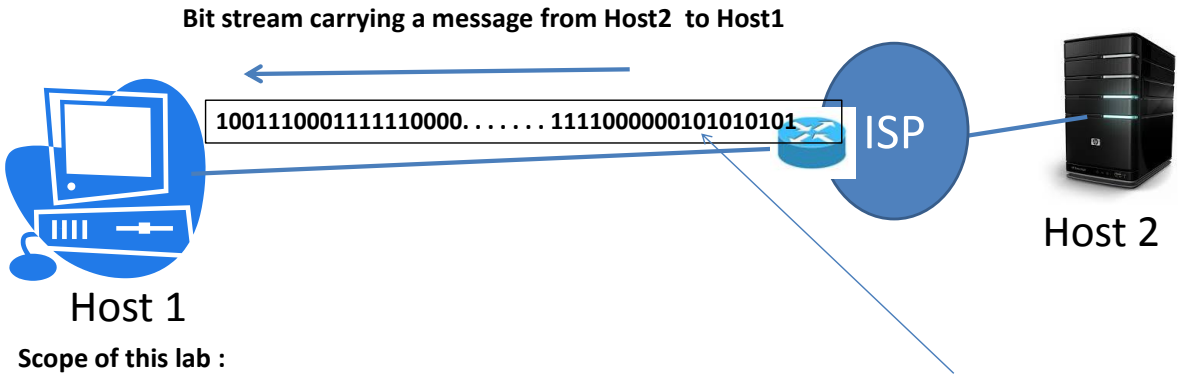
- To get a feel of how the code has to be written to implement protocol at every layer of protocol stack.

Preamble :

Refer the simple scenario shown below :

- a message is sent from Host 2 to Host 1
- What comes out of the Host2, after passing through all the protocol layers, is the bit stream comprising the headers of all the 5 layers.
- This bit stream enters the Network Interface Card of the receiving Host 1.
- Now, the first step, is to ***interpret*** the stream to decide what needs to be done***. (Interpreting is the first step in any protocol analysis)***

In this lab, you will write a code to interpret the bit stream.



Scope of this lab :
Write a program (in any language) to Interpret the IP PDU and TCP PDU in this bit stream

Scope:

Assume that Link layer present in NIC has already analysed the stream and passed it on to the IP layer.

The code you need to write is only to interpret

1) IP
2) TCP

Test input to the program :

- Following Bit stream [400 bits]
    - carrying 20 bytes of IP PDU+20 bytes of TCP PDU+10 Bytes of upper layer dummy Data

LSByte

01000101000000000000001000011101000000011100110101000000000000001000000000000110
00000000000000001100000010101000000000010110011010000000011101111111010100001100
00010000000111110000000001010000111101010011001001100100101100100110010010110010
01101011101001100101010010010010010100000001100000011100110100010000000000000000
11111111111111111111111111111111111111111111111111111111111111111111111111111111

MS Byte

- ***This bit pattern is also available in the attached file : PDUStreamIP-TCP.doc***

Expected output for this test input

1) Following IP PDU

Version	4
Header Length -bytes	20
Service	0
Total length	541
Identification	461
Flag	02
Offset	0
Time to live	128
Protocol	6
Header checksum	0
Source IP address	192.168.1.102
Destination IP address	128.119.245.12

2) Following TCP PDU

Source Port	4127
Destination port	80
Sequence number	1
Acknowledgement number	1
Header Length (bytes)	20
Flags	24
Receive window	64240

Checksum (Hex)	0X39a2
Urgent Pointer	0
Data (Octet Decimal)	255 255 255 255 255 255 255 255 255 255

Language to be used (Any language)

How to go about ?

Very simple !

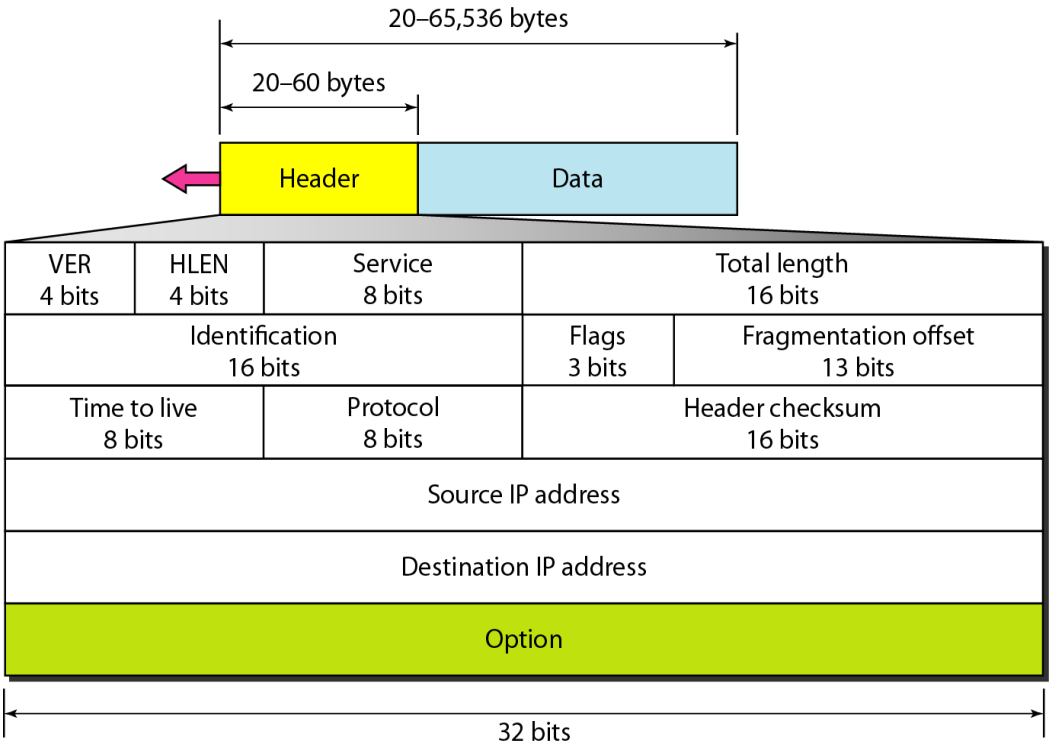
As per the prescription of the Header format shown below, select the required number of bits from the bit stream for each field find out the value of the field and display.

Special note

You are allowed to work in a team (2 members / team

Header formats including the length of each field

IP



TCP