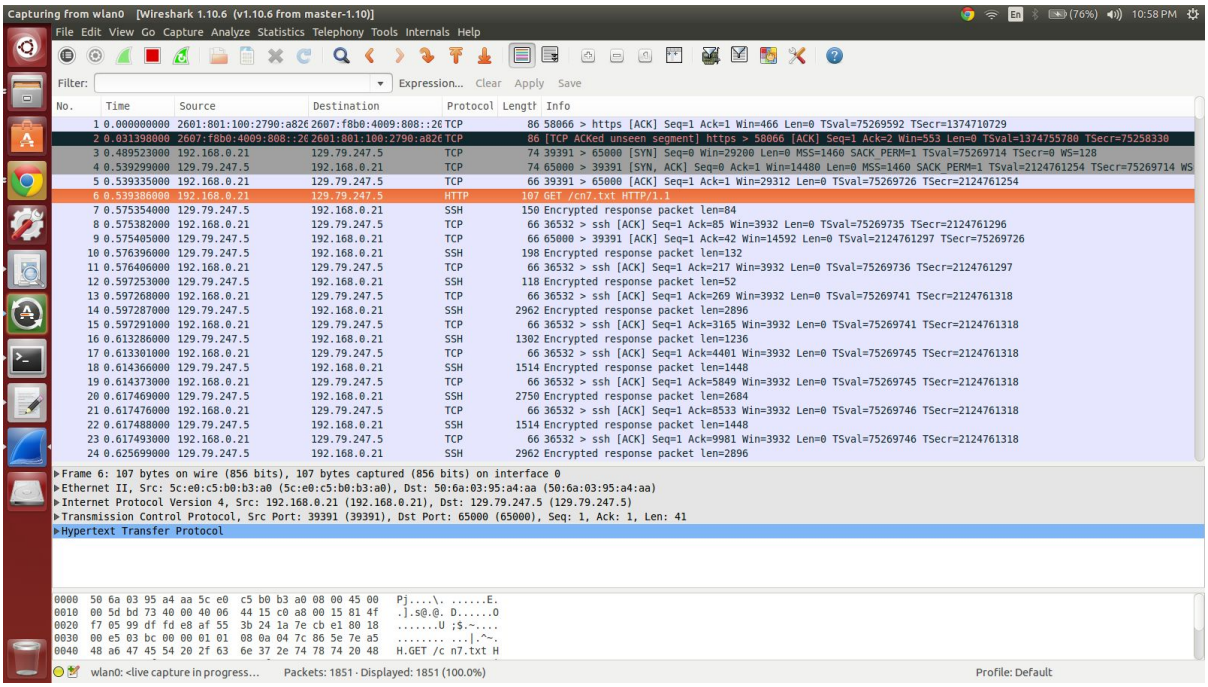
COMPUTER NETWORKS

In a non persistent connection below are time taken for HTTP response

SIZE	Time(seconds)
1.3 mb	2
2.1 mb	4
4.2 mb	11
5.7 MB	13
7.9 mb	17
9.4 mb	21

SIZE	Time(seconds)
1.3 mb	2
2.1 mb	4
4.2 mb	9
5.7 MB	12
7.9 mb	17
9.4 mb	20

As we can see as the the size of the file increases there is considerable improvement in non persistent connections. This is because in non persistent connections, the TCP connections are kept open. However, in non persistent connection, the TCP connection will be closed after each request response cycle. Hence in non persistent connection, there will be 2 RTTs extra for each request response cycle which are redundant compared to persistent connection. Hence persistent connections are efficient compared to non persistent connections to serve multiple consecutive requests.



For 1.3 MB file, I observed that time taken in both non persistent and persistent connections are same in terms of seconds. There might be minor differences in terms of micro and milli seconds. The time taken in persistent and non persistent is almost same as the time required for serving the request in both of them will be same. Only in persistent connection, if connection is already open then it 2 RTTS will not be needed.

MULTITHREADING

In non persistent connections

SIZE	Time(seconds)
1.3 mb	3
2.1 mb	5
4.2 mb	9
5.7 MB	12
7.9 mb	17
9.4 mb	31

In persistent connections

SIZE	Time(seconds)
1.3 mb	2
2.1 mb	4
4.2 mb	8
5.7 MB	12
7.9 mb	25
9.4 mb	31

Compared to single threaded TCP server he multithreaded TCP server sometimes takes more time. This is because the OS will have allocate resource for like CPU time etc for threads to execute. Hence they might be a delay.

When it comes to persistent and non persistent in multithreaded TCP server, we can observer that persistent connections are served faster than non persistent connections. As there connection will be open in persistent connection, there will be overhead involved to open connections whereas in persistent connections 2 RTTS will be wasted to open the connection.

In UPD, however, I could not observe any packet loss even when 10 MB file was transferred. This might be because silo.soic.indiana.edu has 100 Mbps switched ethernet. Hence the probability of congestion is very less. Hence there will be no packet loss.