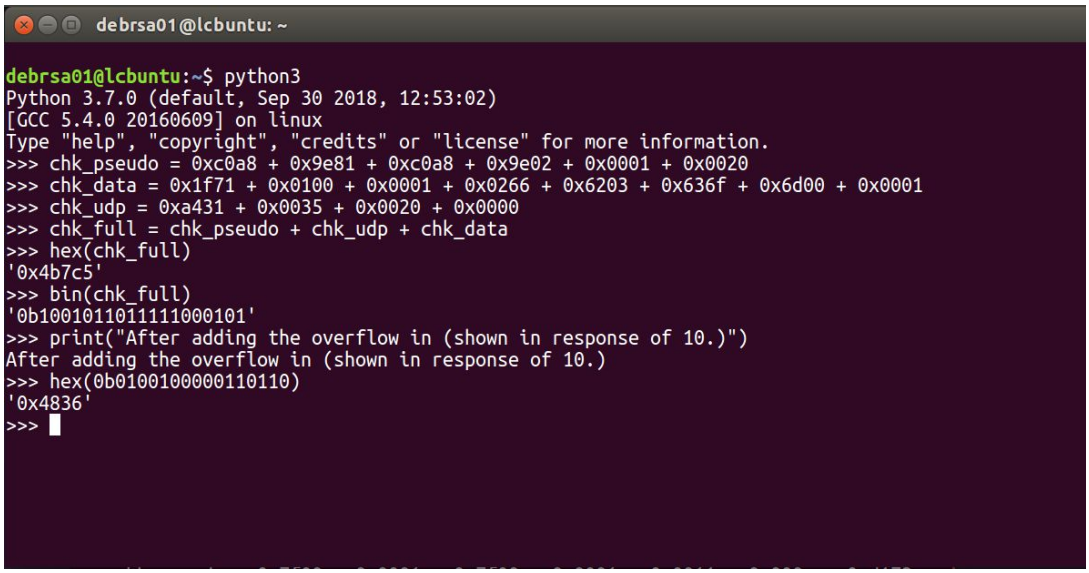
Sage deBrum

HW#5

1. The source and destination port numbers are important in a transport layer protocol in order to indicate which sockets that segments need to be delivered to.
2. The difference between UDP sockets and TCP sockets is that different TCP segments that arrive from different source IP addresses or source port numbers will go to different sockets (with the exception of a TCP segment carrying the original connection-establishment request).
3. Error detection is the act of finding errors in packets; error correction is restoring a packet to its original, uncorrupted state (i.e. fixing errors in it).
UDP provides error detection (via checksums) but does not support error correction.
4. It would be necessary to have multiple checksums at different layers of the TCP/IP stack. Even if a packet needs to be resent regardless of when the corruption occurs on its path, for the sake of diagnosis of issues along the path of a packet, it is useful to have checksums to monitor possible corruption at every layer.
5. QUIC seems to be a beneficial protocol, given that it was developed in order to provide security and reduce congestion, shipping on top of UDP. At the moment it is not used much outside of Google but, given the size of Google, the usage is likely to increase soon enough.
6. The source IP address is 192.168.158.129
7. The destination IP address is 192.168.158.2
8.The length of the datagram would be 20.
9. According to wireshark, be 06 would be the checksum of the packet. Given the scope that wireshark operates in, be 06 would not be the actual checksum calculated.
10.



100 10110111 11000101
overflow left8 right8

add the 100 on the right

1011011111000101
+ 100
_____
1011011111001001

now to flip bits

0100100000110110
now we do a hex(0b0100100000110110)
and get the value of: 0x4836 for the checksum value