

ECE 466 Lab 2a

Xin Chen
1004391865

Part1. Programing with Datagram Sockets and with Files

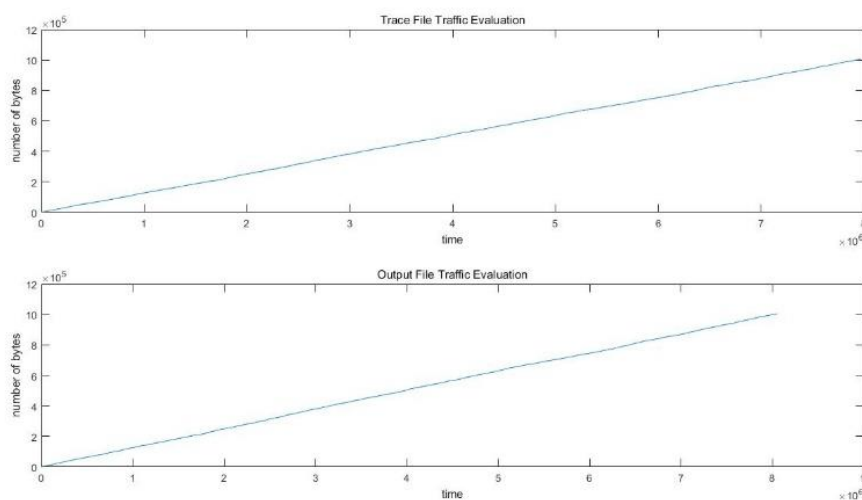
Exercise 1.2 Reading and Writing data from a file

Average size of the following frame types:

- I frames: 183776 bytes
- P frames: 111412 bytes
- B frames: 36093 bytes

Part2. Traffic Generators

Exercise 2.3 Evaluation



Plot1. The above graph shows the cumulative arrivals of the trace file and the bottom graph show the cumulative arrivals of the output file with respect to time

There is nothing to improve for the accuracy of the traffic generator. From the output file traffic evaluation plot, it almost has the same total arrival packets as in the trace file, and the trend of trace file and output file is similar.

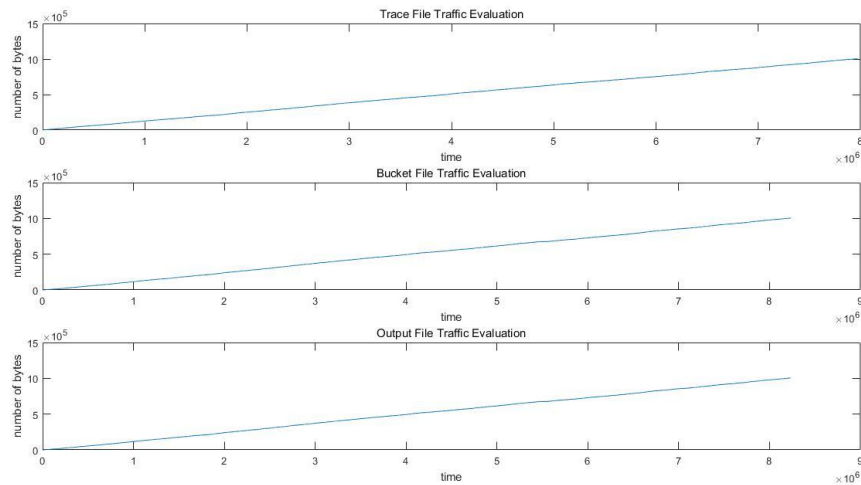
While in the trace file, some of the packets only transmit in 2us, which is almost impossible, because the UDP set up time is even longer than 2us, packet will not able to send within 2us. The output file plot will show more time on receiving these packets.

Exercise 2.4 Account for Packet Losses

There aren't any traffic losses in the transmissions. Because both sender and the receiver are on the same machine, which is very unlikely to have traffic losses.

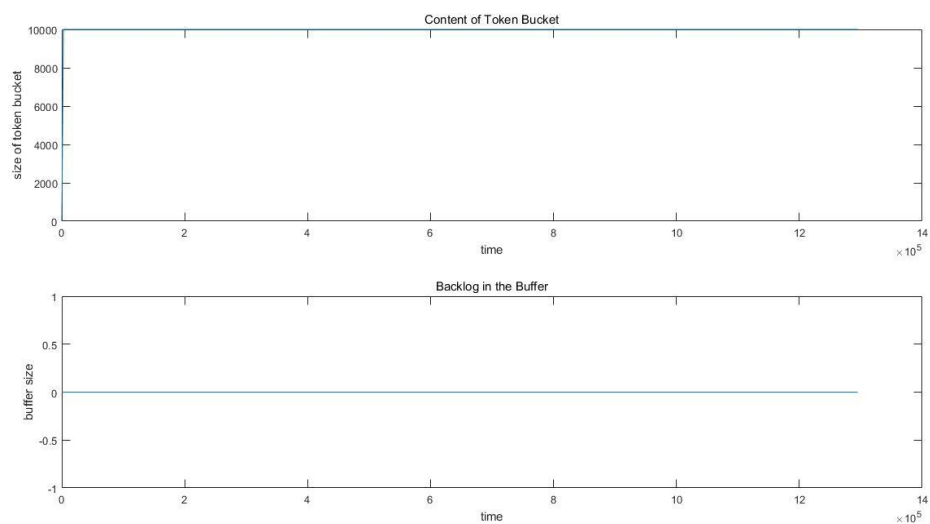
Part3. Token Bucket Traffic Shaper

Exercise 3.2 Evaluate the Reference Implementation for the Poisson Traffic File



Plot2. The cumulative arrival function as a function of time of the data of the trace file, the arrivals at the token bucket and the arrivals at the traffic sink respectively for Poisson Traffic trace file

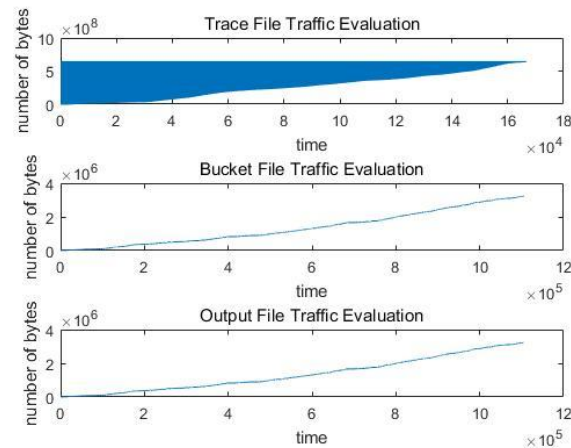
The cumulative number of bytes in trace file and arrivals at token bucket and traffic sink has similar trend. There almost no traffic losses as the transmission happened in the same machine and the transmission is stable along the network.



Plot3. The content of the token bucket and the backlog in the Buffer as function of time

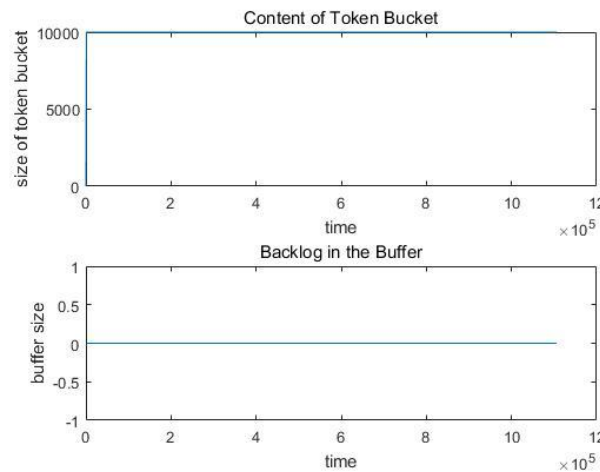
The content of the token bucket always has the value of 10000 and the backlog in the buffer is always 0. This is because the implementation of Token Bucket is missing the methods of updating the token bucket value and the amount of backlog.

Exercise 3.3 Evaluate the Reference Implementation for the Ethernet and Video Trace Files



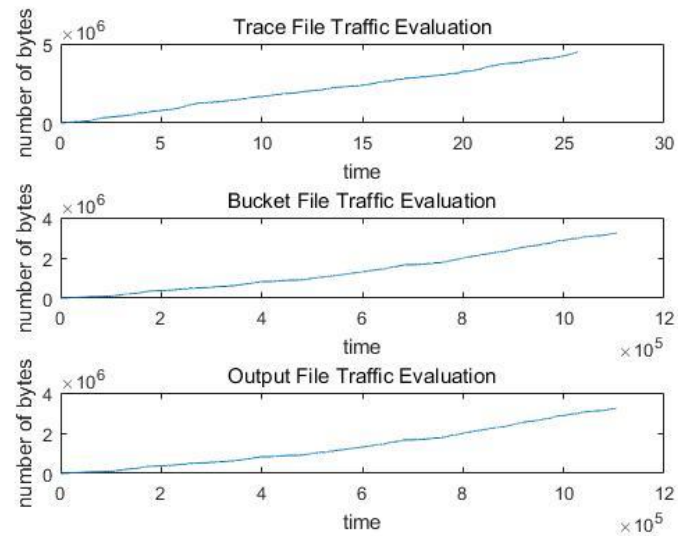
Plot4. The cumulative arrival function as a function of time of the data of the trace file, the arrivals at the token bucket and the arrivals at the traffic sink respectively for video traffic trace file

From the above three graphs, it shows that there is not much different between the traffic transmission. The transmission happened in the same machine so there are no packet losses. As the size of a video frame may exceed the maximum size of a datagram, so we choose maximum bytes for a packet be 1024 bytes. If a packet is greater than 1024 bytes, we will fragment the packet to transmit.



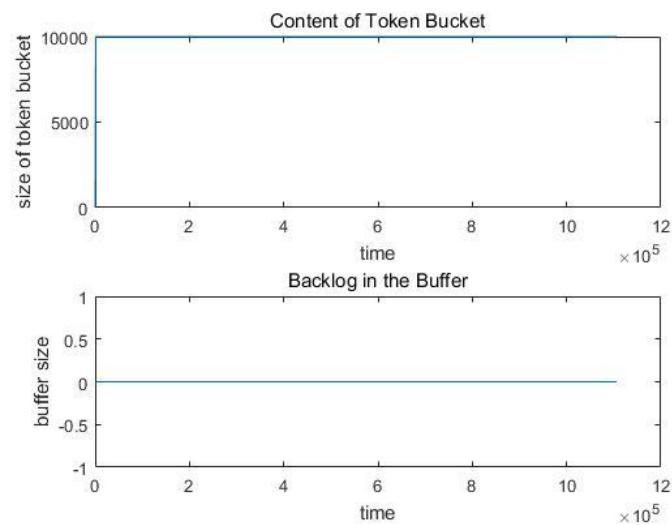
Plot5. The content of the token bucket and the backlog in the Buffer as function of time

The content of the token bucket always has the value of 10000 and the backlog in the buffer is always 0. This is because the implementation of Token Bucket is missing the methods of updating the token bucket value and the amount of backlog.



Plot6. The cumulative arrival function as a function of time of the data of the trace file, the arrivals at the token bucket and the arrivals at the traffic sink respectively for ethernet traffic trace file

From the above three graphs, three lines of traffic packet bytes transmission is closely the same. The transmission happened in the same machine so there are no packet losses.



Plot7. The content of the token bucket and the backlog in the Buffer as function of time

The content of the token bucket always has the value of 10000 and the backlog in the buffer is always 0. This is because the implementation of Token Bucket is missing the methods of updating the token bucket value and the amount of backlog.