**Comp 2322 Computer Networking**

**Homework Three**

**Due time: 11:59pm, March 11, 2024, Monday**

**Total marks: 10 points**

**Submission Requirements:**

You need to submit the homework to the blackboard via Learn@PolyU on or before the due time. Late submission will cause the marks to be deducted 25% per day.

**Questions:**

1. (4 points) Consider transferring an enormous file of *L* bytes from Host A to Host B. Answer the following questions:
   1. Assume an MSS of 880 bytes and the TCP sequence number field has 4 bytes. What is the maximum value of *L* such that TCP sequence numbers are not exhausted? (2 points)
   2. Assume that a total of 56 bytes of transport, network, and data-link header are added to each segment before the resulting packet is sent out over a 200 Mbps link. Ignore flow control and congestion control so A can pump out the segments back to back and continuously. For the *L* you obtain in (a), find how long it takes to transmit the file. (2 points)
2. (6 points) Consider the TCP timer management that TCP estimates the round-trip time and retransmission timeout interval. The formulas used to compute the round-trip time and retransmission time interval are given:

Suppose that the two measured *SampleRTT* values are 108 ms and 110 ms. Compute the *EstimatedRTT* after each of these *SampleRTT* values is obtained, using a value of α = 0.15 and assuming that the value of *EstimatedRTT* was 100 ms just before the first of these samples were obtained. Compute also the *DevRTT* after each sample is obtained, assuming a value of β = 0.25 and assuming the value of *DevRTT* was 6 ms just before the first of these samples was obtained. Last, compute the TCP *TimeoutInterval* after each of these samples is obtained.