CS432 – Network Modeling and Simulation

Assignment 2

Due Date: June 26, 2024

Please read the instructions before attempting to solve the assignment. Complete and upload the assignment within the due date of submission. No assignment will be accepted after the due date through email.

Instructions:

- Assignment solution must be typed.
- Apply/perform all the steps.
- Be specific and to-the-point.
- Copy from other students or any other source will be marked as ZERO.
- Screenshots of assignment solution will not be accepted.

Question 1 **(3 + 3 + 4 = 10 Marks)**

Recall the concepts of token bucket studied in the course. The token bucket is implemented with a token generation rate (*r*) of 45,000 tokens per second and bucket size (*b*) of 300,000 tokens. Assuming the packet size is 1500 bytes, determine each of the following and also provide all steps of calculations:

i. Burst size (the number of packets that can be instantaneously sent into the network)
ii. Long-term average rate (the rate at which data/packets can enter the network)
iii. The maximum number of packets that can enter the network in any interval of time of length 20 seconds

Question 2 **(05 Marks)**

Suppose at a tea café 60 customers arrive every hour and on average a customer spends 20 minutes in the café, what is the average seating occupancy at the café at any given time? Also, provide all steps of calculations.