Rohan Patel

February 3rd 2023

CSS343 B

Assignment 2: Router

**Discussion Report:**

This report is based on the performance and implementation of my router program.

**TABLES:**

**Figure 1: Router Statistics in Terms of Priority**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Statistics*** | ***Mean*** | ***Standard Deviation*** | ***Min*** | ***Max*** |
| Priority 3 | 1.14 | 38.15 | 0 | 7.33 |
| Priority 2 | 635.09 | 10.98 | 11.5 | 792.67 |
| Priority 1 | 1411.37 | 26.44 | 1005.67 | 1778 |
| All Priorities | 501.93 | 11.01 | 0 | 1778 |

**Note:** The stats in this table were averaged from 3 different program runs.

**Figure 2: Router Score**

|  |  |
| --- | --- |
| **Router Score:** | 822619.33 |

**Note:** The stats in this table were averaged from 3 different program runs.

**DISCUSSION:**

This is an explanation of decisions made when implementing the program and discussion of outcomes of the program.

**Reasoning Behind The Priority Evaluation:**

Priorities are defined through a function in the program. The packet consist of the length and TOS of the packet which I am using to determine the priority. I have split the priority into 3 levels, to ensure high priority packets with a higher TOS and lower packet sizes are passed through the packet first.

To determine whether a packet is a priority of 3, 2, or 1: I have created a point system which will be determined by the TOS and the length of the packet. The TOS is divided into 3 sections where a packet with more than 170 TOS will be given 30 points, or if the packet TOS is between 170-85 it will be given 20 points, or if the packet has less than 85 TOS it will be given 10 points. After adding any three of these point totals I check the length of the packet and assign a point total. I have divided the length of a packet the same way as the TOS, but the packet with the least length out of the three sections will be given 30, and then 20 for the medium length, and 10 for the packet with the least length. After I count up the points I divided the max points a packet can get by 3 and determine if a packet should get the highest priority which is greater than 40, between 40 and 20 being 2nd priority , and under 20 points resulting in a priority of 1 being set to that packet.

**Explaining the router stats:**

In Figure 1 we can examine the average stats that were produced from running the program 3 times. The stats for priority are what stand out from Figure 1 because priority 3 is considered to be at the top of the queue when the program is dequeuing compared to priority 2 and 1 which have much higher average time in the router which is justifiable because of a lower TOS or having a larger packet length. What also stands out is the standard deviation of priority 3 being higher than the rest of the priorities which tells us the time it takes for a priority 3 packet to go through the packet fluctuates a lot depending on what’s already in the packet compared to the lower standard deviations average of all the priorities. The Average time for any prioritized packet was considered to be closest to the average time of packets with a priority 2 with the data being close to the mean with a standard deviation of 11.01. The routers Max time took place for a packet within priority 3 and the max time took place for a packet inside priority 1 which make sense as priority 3 is being dequeued first and 1 is being dequeued last. Finally the average router score which can be found in figure 2 tells us we have a high router score of 822619.33.