

CS-342 Computer Networks Assignment 04

Group No. 61

Group Members:

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Application No. 01

Part 2.

Size of the packet chosen : 1.3 KB ($1.3 * 1024$ Bytes).

No of such packets chosen : 1000000

Comparing TCP Hybla, TCP Westwood+, and TCP YeAH-TCP Performances.

Around 1-2 mins were allotted for execution.

Plots of Congestion Window, Throughput, Goodput observed are mentioned below.

Q. How to run the q2.cc file?

- Put the q2.cc file in the scratch directory in the ns3.32 directory. Run the following command in ns3.32 directory to execute the file
\$./waf --run scratch/q2
- Firstly TCP-YeAH is started then after some time other 2 TCP flows are started.
- The following output is generated:

```
naman-ubuntu@naman-ubuntu:~/Downloads/ns-allinone-3.32/ns-3.32$ ./waf --run scratch/q2
Waf: Entering directory `/home/naman-ubuntu/Downloads/ns-allinone-3.32/ns-3.32/build'
[2702/2762] Compiling scratch/q2.cc
[2723/2762] Linking build/scratch/q2
Waf: Leaving directory `/home/naman-ubuntu/Downloads/ns-allinone-3.32/ns-3.32/build'
Build commands will be stored in build/compile_commands.json
'build' finished successfully (9.975s)
Establishing the connection's transfer rates
Concatenating H1 with R1
Concatenating H2 with R1
Concatenating H3 with R1
Concatenating H4 with R2
Concatenating H5 with R2
Concatenating H6 with R2
Concatenating R1 with R2

Installing connections in the network (Dumbbell Topology)

Assigning IP addresses
H1 address : 102.115.1.0
H2 address : 102.115.2.0
H3 address : 102.115.3.0
H4 address : 102.115.5.0
H5 address : 102.115.6.0
H6 address : 102.115.7.0
R1 address : 102.115.4.0

Establishing TCP YeAH-TCP Simulation

Establishing TCP Hybla Simulation

Establishing TCP Westwood+ Simulation

Running the flow monitor for analysing the code
Simulation Ended
naman-ubuntu@naman-ubuntu:~/Downloads/ns-allinone-3.32/ns-3.32$
```

Observations:

1. TCP HYBLA

TCP Hybla flow (102.115.2.1 -> 102.115.6.1)

Total Packet Loss : 90

Packet Lost due to Buffer Overflow : 0

Packet Lost due to Congestion : 90

Maximum throughput (in kbps) : 292.970529

Total Packets transmitted : 1000000

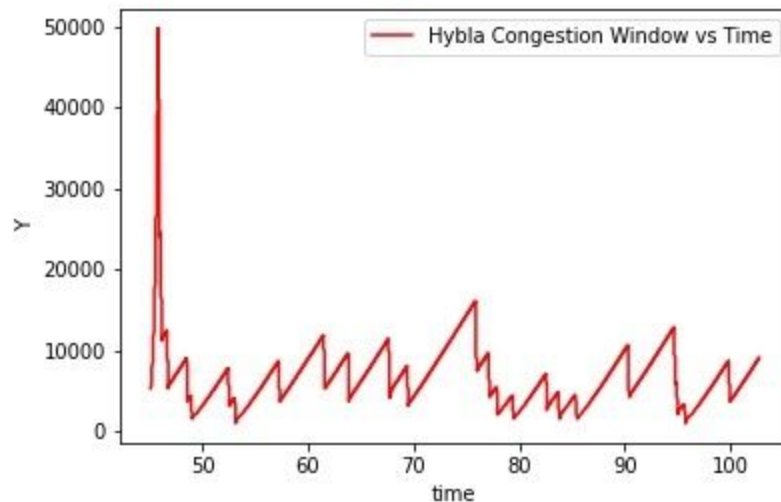
Packets Successfully Transferred : 999910

Percentage of packet loss (total) : 0.009000

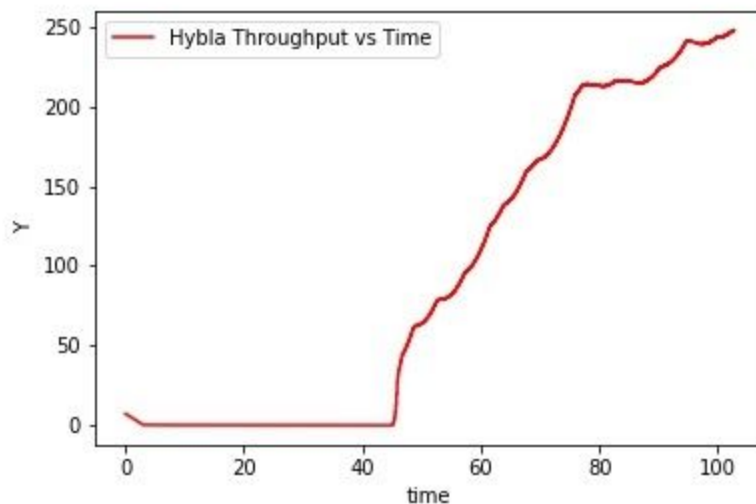
Percentage of packet loss (due to Buffer Overflow) : 0.000000

Percentage of packet loss (due to Congestion) : 0.009000

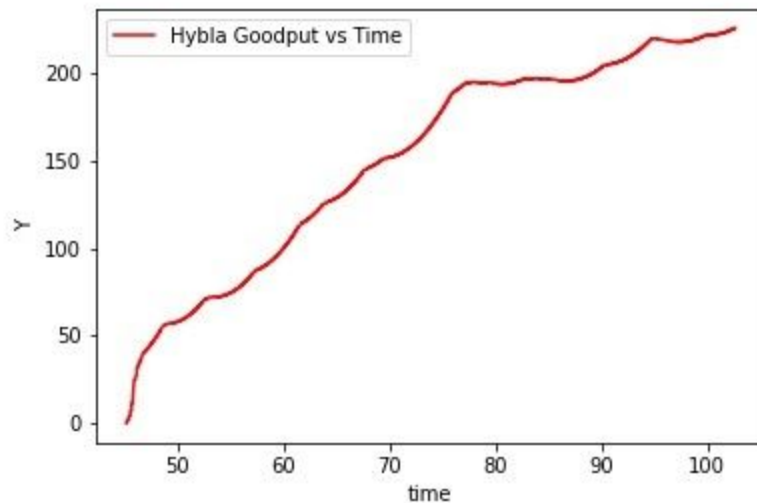
A. Congestion Window v/s Time



B. ThroughPut v/s Time



C. GoodPut v/s Time



2. TCP WestWood+

TCP Westwood+ flow (102.115.3.1 -> 102.115.7.1)

Total Packet Loss : 85

Packet Lost due to Buffer Overflow : 0

Packet Lost due to Congestion : 85

Maximum throughput (in kbps) : 286.093917

Total Packets transmitted : 1000000

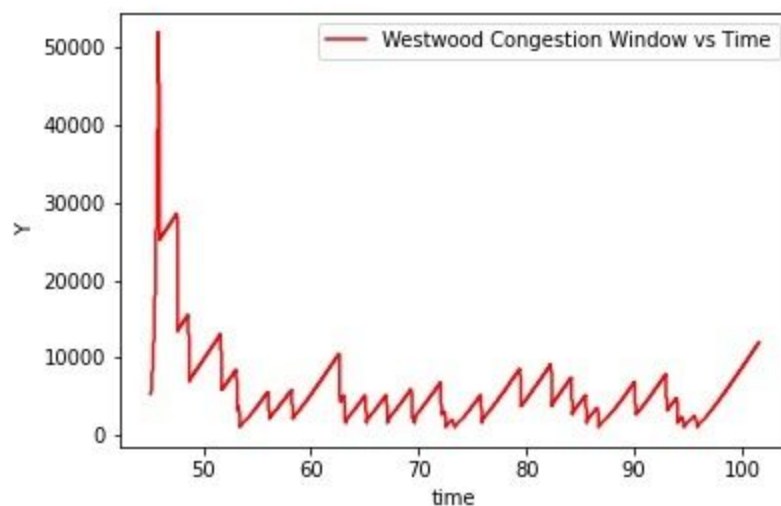
Packets Successfully Transferred : 999915

Percentage of packet loss (total) : 0.008500

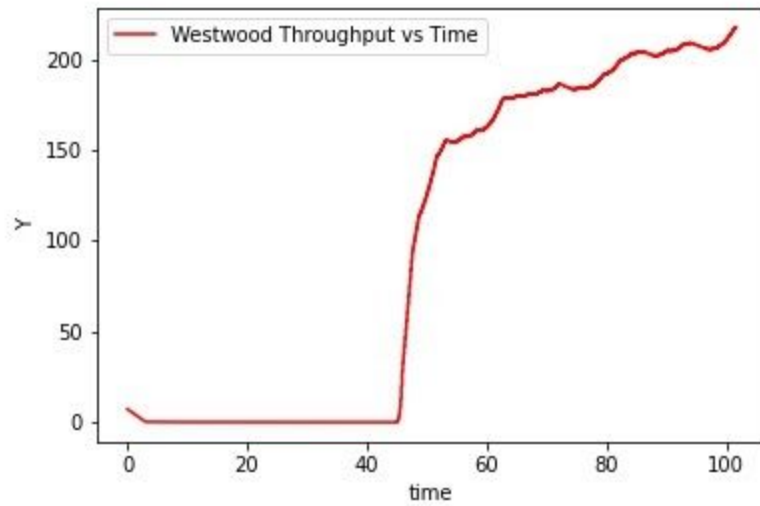
Percentage of packet loss (due to Buffer Overflow) : 0.000000

Percentage of packet loss (due to Congestion) : 0.008500

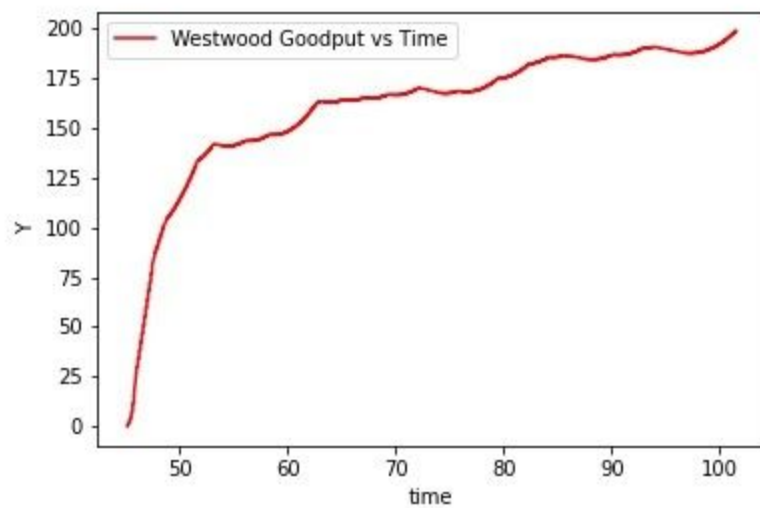
A. Congestion Window v/s Time



B. ThroughPut v/s Time



C. GoodPut v/s Time



3. TCP YeAH-TCP

TCP Yeah flow (102.115.1.1 -> 102.115.5.1)

Total Packet Loss : 99

Packet Lost due to Buffer Overflow : 0

Packet Lost due to Congestion : 99

Maximum throughput (in kbps) : 856.937894

Total Packets transmitted : 1000000

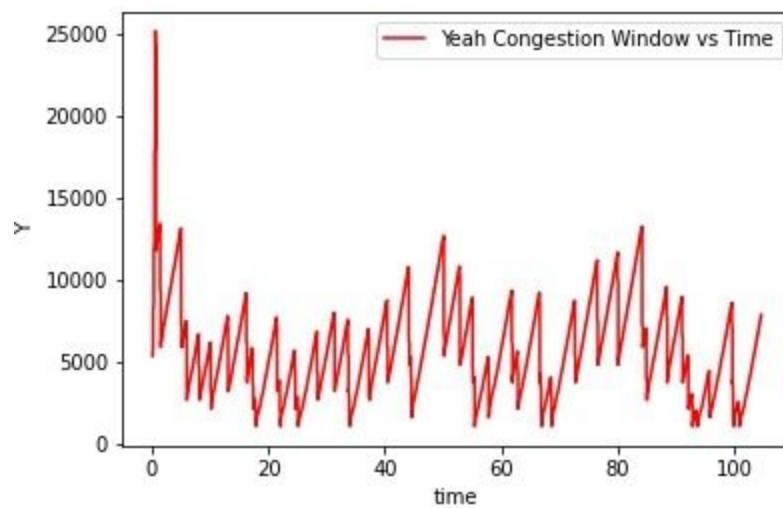
Packets Successfully Transferred : 999901

Percentage of packet loss (total) : 0.009900

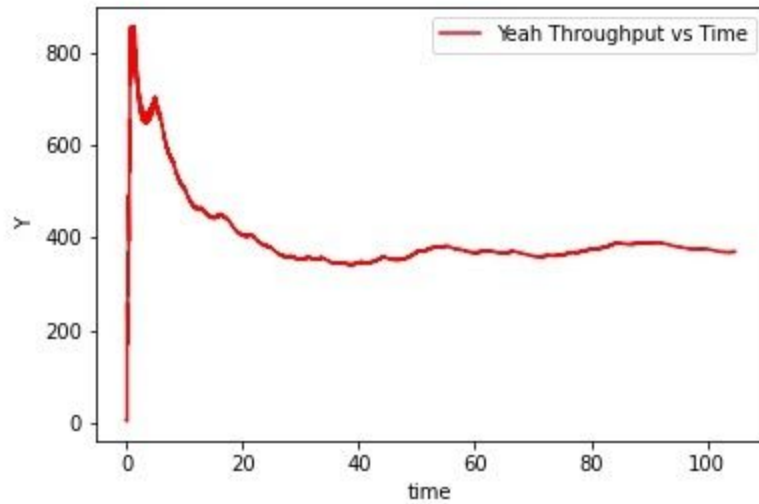
Percentage of packet loss (due to Buffer Overflow) : 0.000000

Percentage of packet loss (due to Congestion) : 0.009900

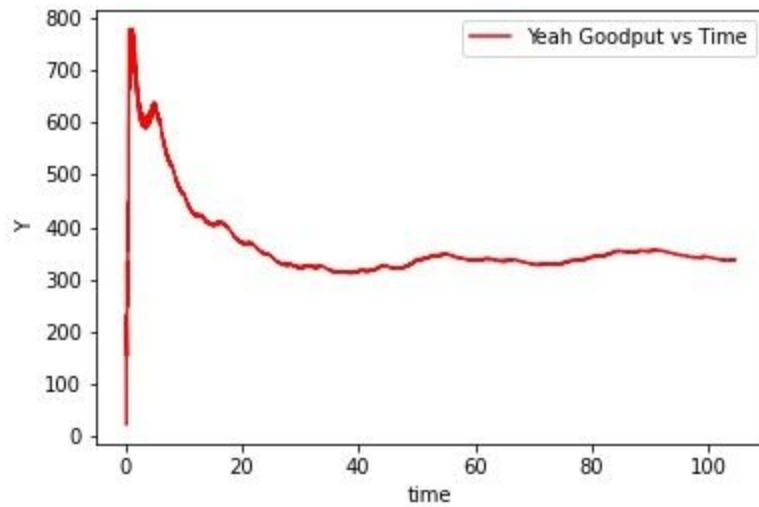
A. Congestion Window v/s Time



B. ThroughPut v/s Time



C. GoodPut v/s Time



PART 3

- Congestion losses and the Goodput data for each of the flows are given along with the document for each of the parts.
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