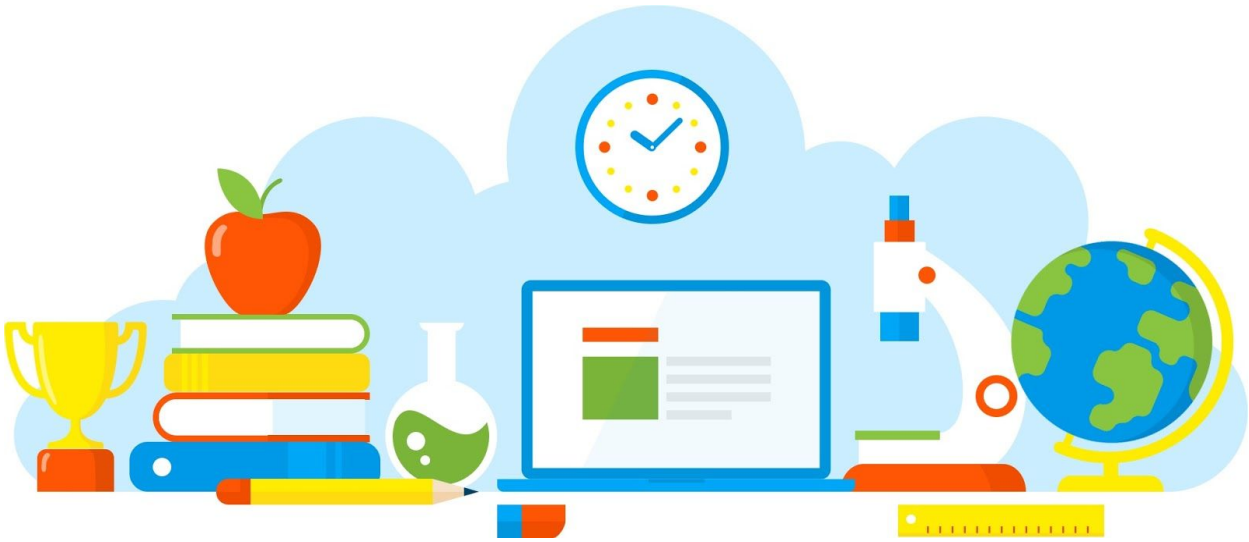

# Assignment Report

*This report contains work from **Assignment 5** of course CSN 361.*


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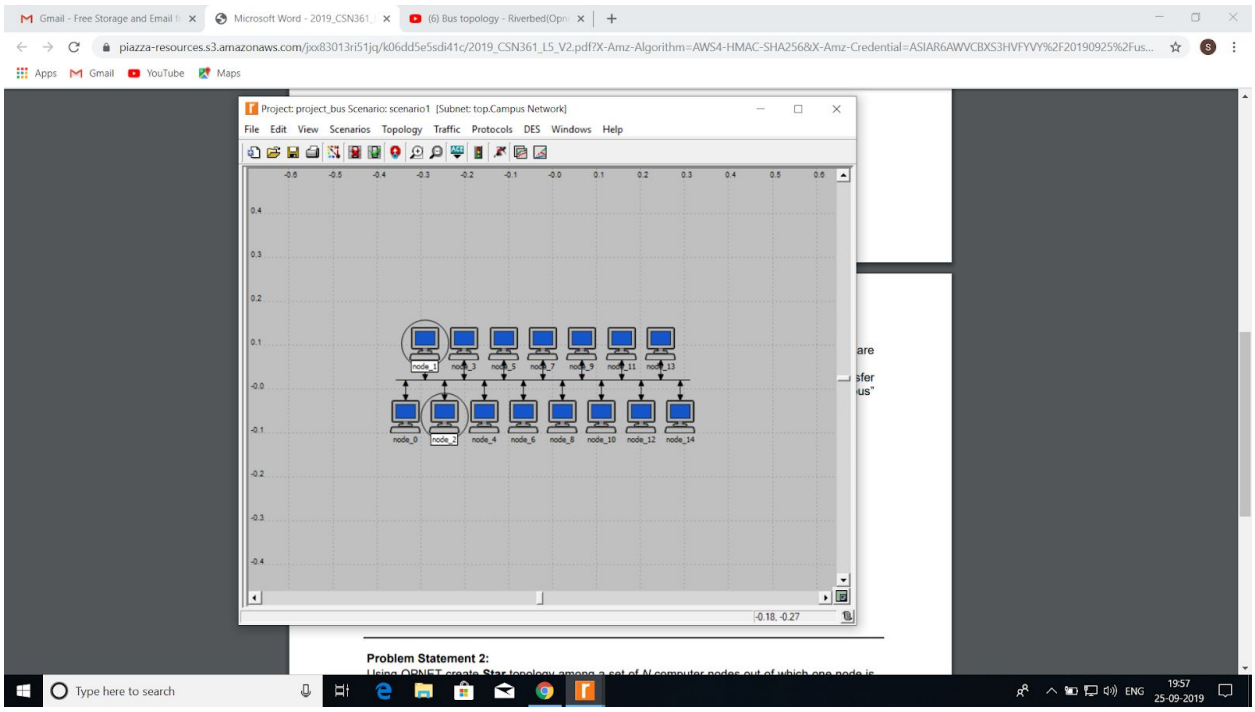
Class - CSE B.Tech. 3rd Year

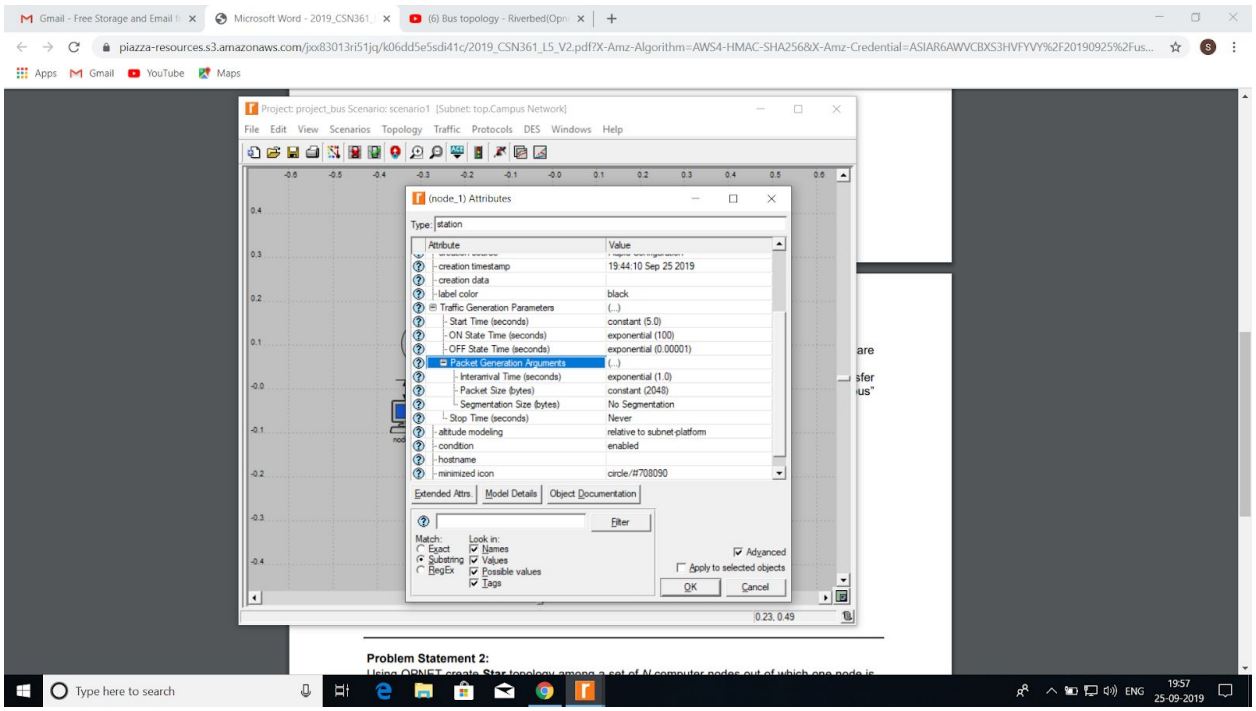
Submission Files - Repository Link

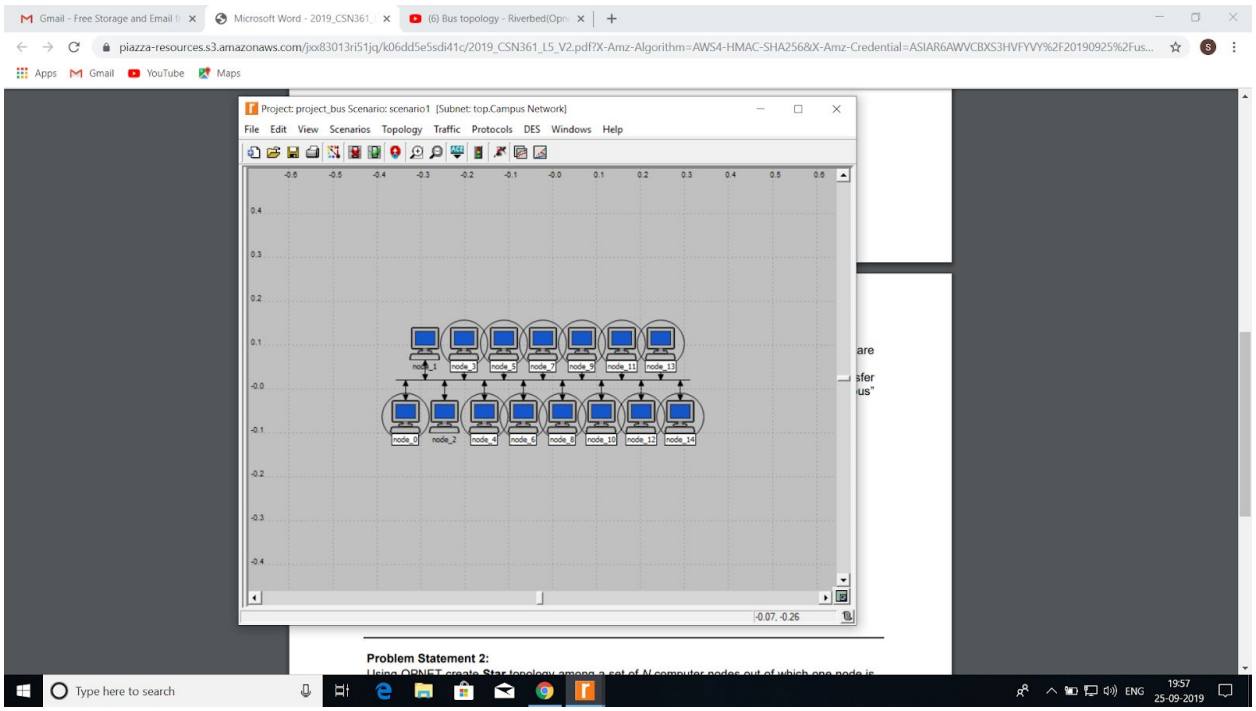
**QUESTION 1:** Using OPNET create Bus topology among a set of N computer nodes out of which two nodes are source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network scale as the “campus” of area 1km x 1km.

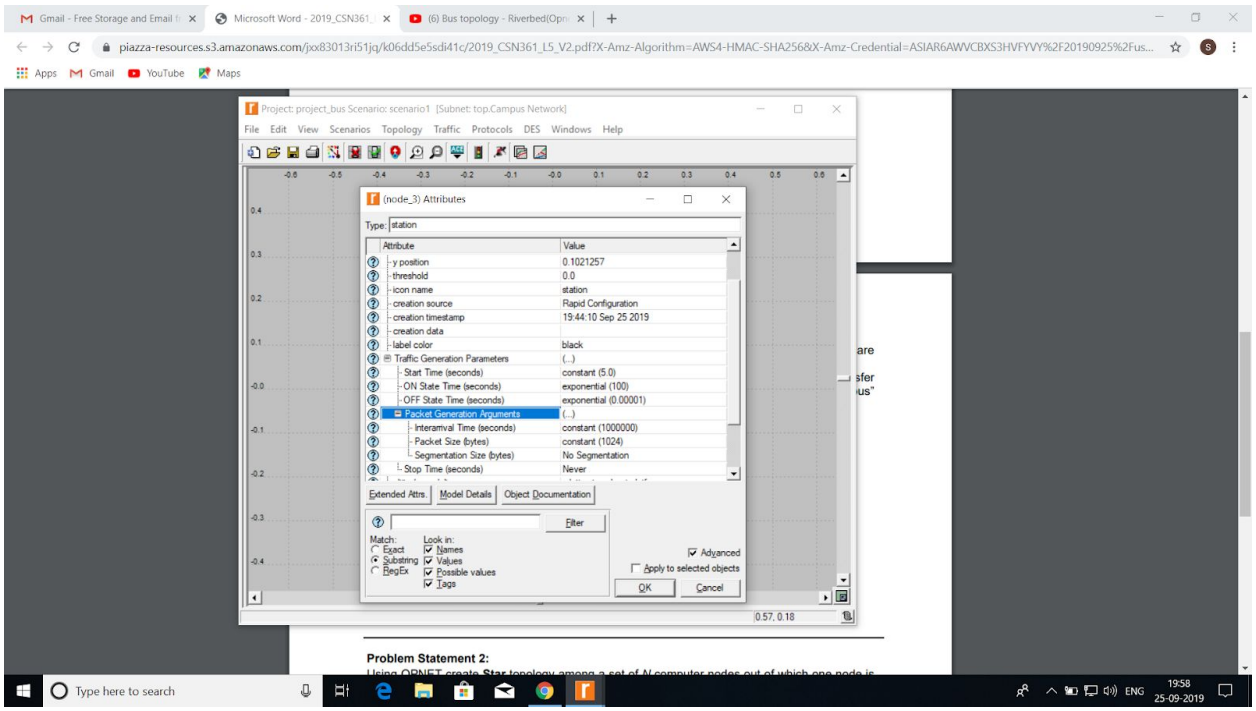
**SOLUTION:**

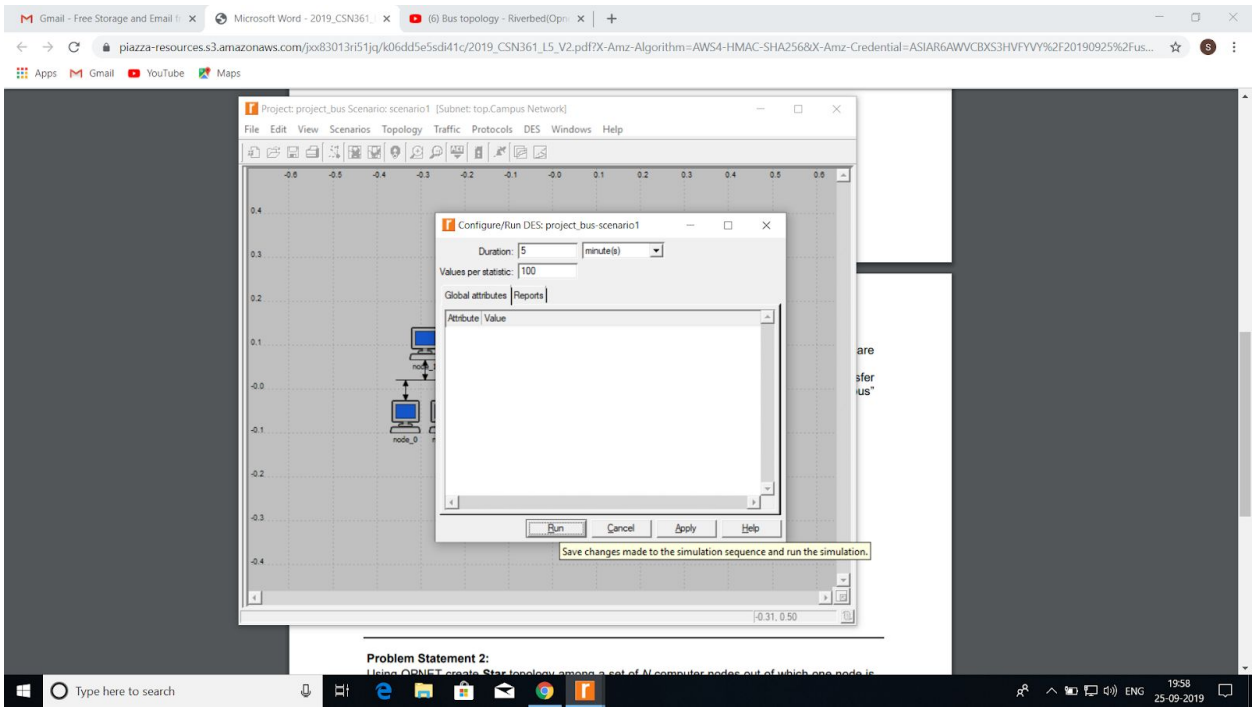
Here I have used N = 15 for the simulation, Node1 and Node2 as source and others as sink, with the settings and results as shown below:

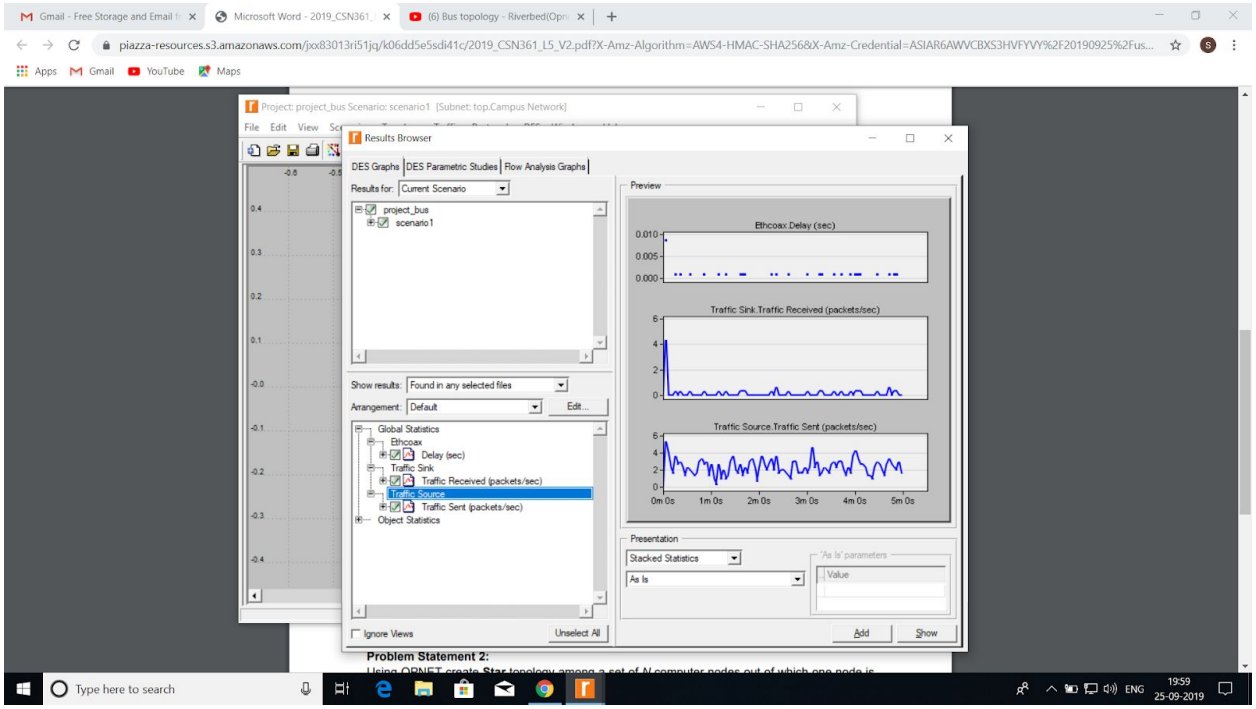


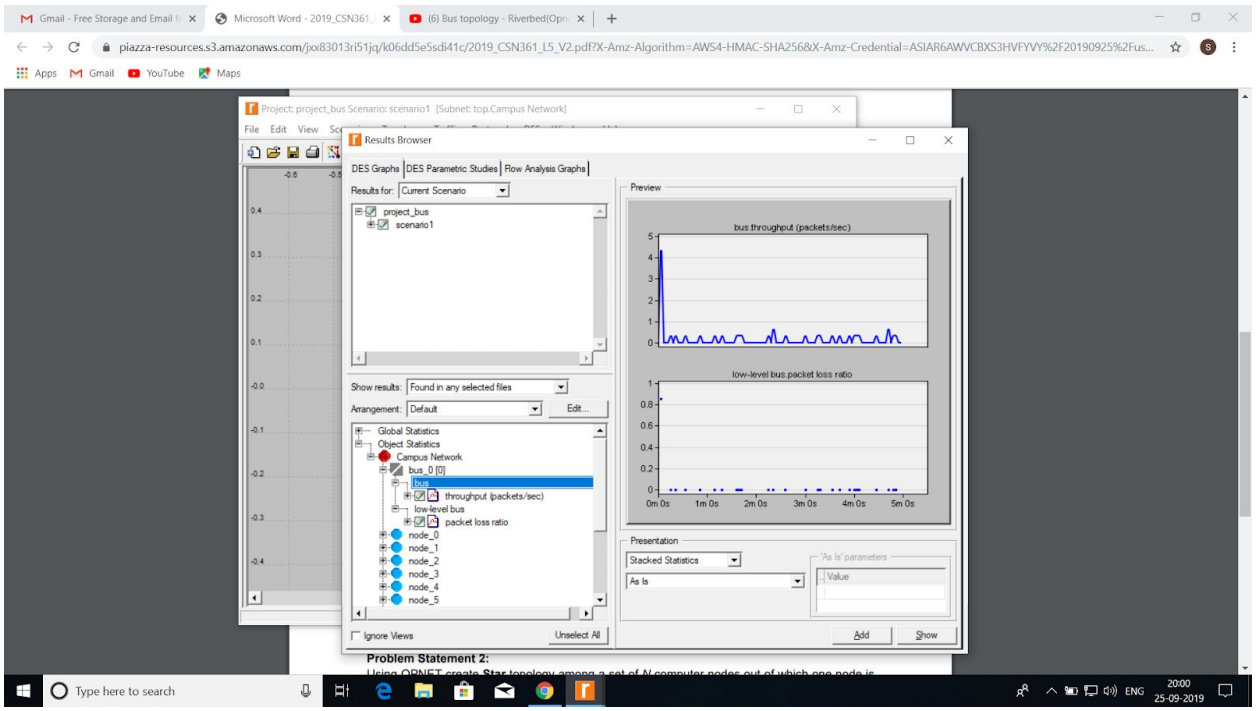

Project: project_bus Scenario: scenario1 [Subnet: top.Campus Network]
File Edit View Scenarios Topology Traffic Protocols DES Windows Help
(node_1) Attributes
Type: station
Attribute
Value
creation timestamp
19:44:10 Sep 25 2019
creation data
label color
black
Traffic Generation Parameters
Start Time (seconds)
constant (5.0)
ON State Time (seconds)
exponential (100)
OFF State Time (seconds)
exponential (0.00001)
Packet Generation Arguments
Interarrival Time (seconds)
exponential (1.0)
Packet Size (bytes)
constant (2048)
Segmentation Size (bytes)
No Segmentation
Stop Time (seconds)
Never
altitude modeling
relative to subnet platform
condition
enabled
hostname
minimized icon
circle/#708090
Extended Attrs.
Model Details
Object Documentation
Filter
Match:
Exact
Substring
RegEx
Look in:
Names
Values
Possible values
Tags
Advanced
Apply to selected objects
OK
Cancel
0.23, 0.49
Problem Statement 2:
Type here to search
ENG
19:57
25-09-2019

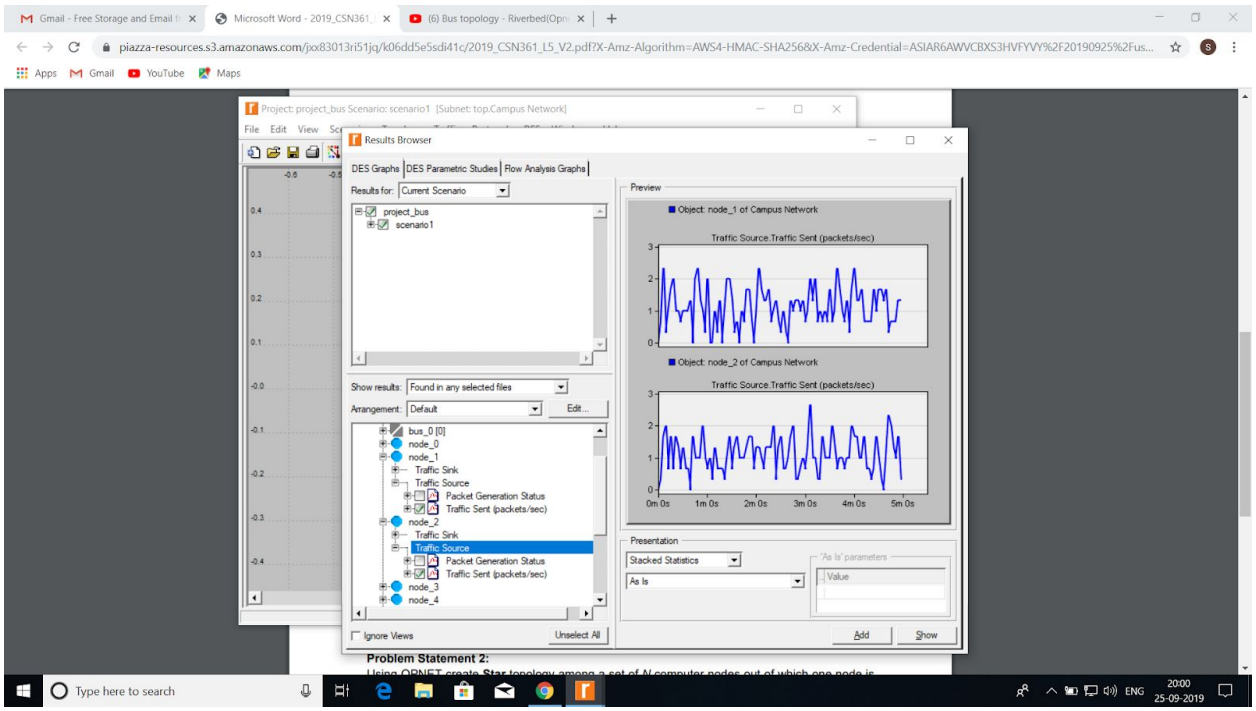

Project: project_bus Scenario: scenario1 [Subnet: top.Campus Network]
File Edit View Scenarios Topology Traffic Protocols DES Windows Help
-0.07, -0.26
Problem Statement 2:
Type here to search
ENG
19:57
25-09-2019

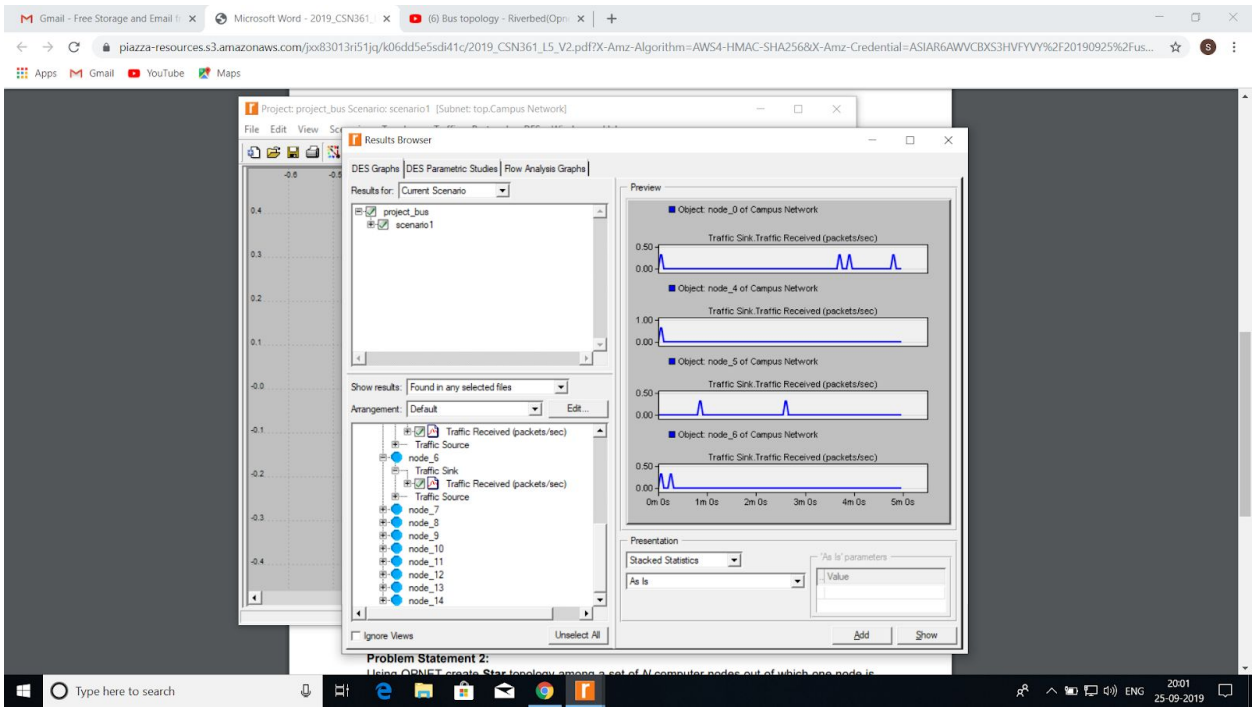

piazza-resources.s3.amazonaws.com/jxx83013ri51jq/k06dd5e5sdi41c/2019_CSN361_L5_V2.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=ASIAR6AWVCBXS3HVFYVY%2F20190925%2Fus...
Project: project_bus Scenario: scenario1 [Subnet: top.Campus Network]
File Edit View Scenarios Topology Traffic Protocols DES Windows Help
(node_3) Attributes
Type: station
Attribute
Value
y position
0.1021257
threshold
0.0
icon name
station
creation source
Rapid Configuration
creation timestamp
19:44:10 Sep 25 2019
creation data
label color
black
Traffic Generation Parameters
Start Time (seconds)
constant (5.0)
ON State Time (seconds)
exponential (100)
OFF State Time (seconds)
exponential (0.00001)
Packet Generation Arguments
Interarrival Time (seconds)
constant (1000000)
Packet Size (bytes)
constant (1024)
Segmentation Size (bytes)
No Segmentation
Stop Time (seconds)
Never
Extended Attrs.
Model Details
Object Documentation
Filter
Match:
Exact
Substring
RegEx
Look in:
Names
Values
Possible values
Tags
Advanced
Apply to selected objects
OK
Cancel
0.57, 0.18
Problem Statement 2:
Type here to search
ENG
19:58
25-09-2019


piazza-resources.s3.amazonaws.com/jxx83013ri51jq/k06dd5e5sdi41c/2019_CSN361_L5_V2.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=ASIAR6AWVCBXS3HVFYVY%2F20190925%2Fus...
Project: project_bus Scenario: scenario1 [Subnet: top.Campus Network]
File Edit View Scenarios Topology Traffic Protocols DES Windows Help
Configure/Run DES: project_bus-scenario1
Duration: 5
minute(s)
Values per statistic: 100
Global attributes
Reports
Attribute
Value
Run
Cancel
Apply
Help
Save changes made to the simulation sequence and run the simulation.
-0.31, 0.50
Problem Statement 2:
Type here to search
ENG
19:58
25-09-2019


Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for: Current Scenario
project_bus
scenario1
Preview
Ethcoax.Delay (sec)
Traffic Sink.Traffic Received (packets/sec)
Traffic Source.Traffic Sent (packets/sec)
Show results: Found in any selected files
Arrangement: Default
Edit...
Global Statistics
Ethcoax
Delay (sec)
Traffic Sink
Traffic Received (packets/sec)
Traffic Source
Traffic Sent (packets/sec)
Object Statistics
Presentation
Stacked Statistics
As Is
Ignore Views
Unselect All
Add
Show
Problem Statement 2:

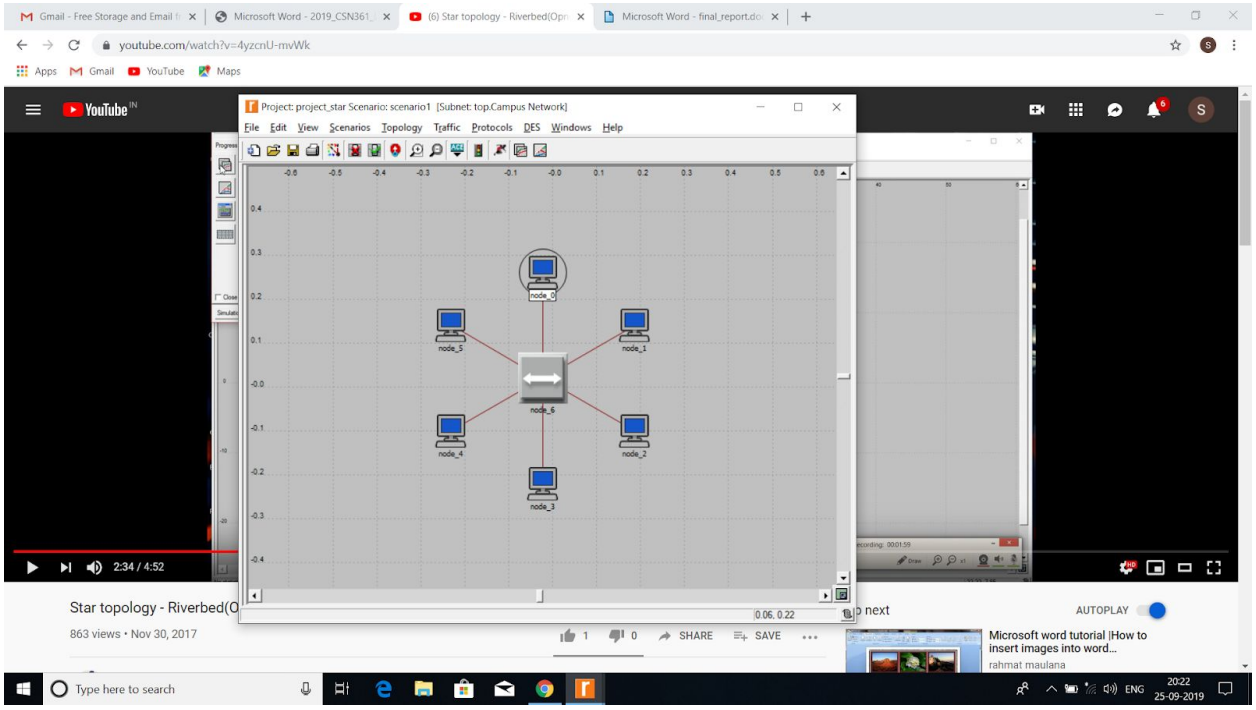

Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for: Current Scenario
project_bus
scenario1
Preview
bus.throughput (packets/sec)
low-level bus.packet loss ratio
Show results: Found in any selected files
Arrangement: Default
Edit...
Global Statistics
Object Statistics
Campus Network
bus_0 [0]
bus
throughput (packets/sec)
low-level bus
packet loss ratio
node_0
node_1
node_2
node_3
node_4
node_5
Presentation
Stacked Statistics
As Is
Ignore Views
Unselect All
Add
Show
Problem Statement 2:

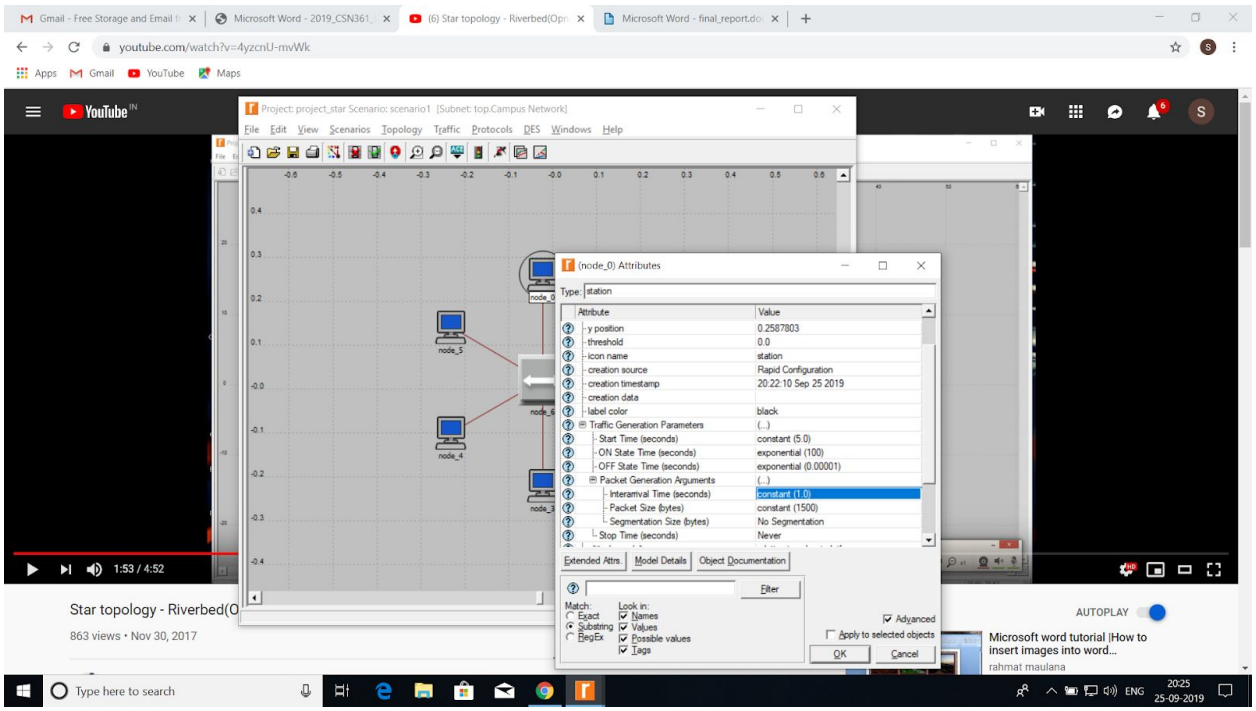

Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for: Current Scenario
project_bus
scenario1
Show results: Found in any selected files
Arrangement: Default
Edit...
bus_0 [0]
node_0
node_1
Traffic Sink
Traffic Source
Packet Generation Status
Traffic Sent (packets/sec)
node_2
node_3
node_4
Ignore Views
Unselect All
Preview
Object: node_1 of Campus Network
Traffic Source.Traffic Sent (packets/sec)
Object: node_2 of Campus Network
Presentation
Stacked Statistics
As Is
Add
Show
Problem Statement 2:

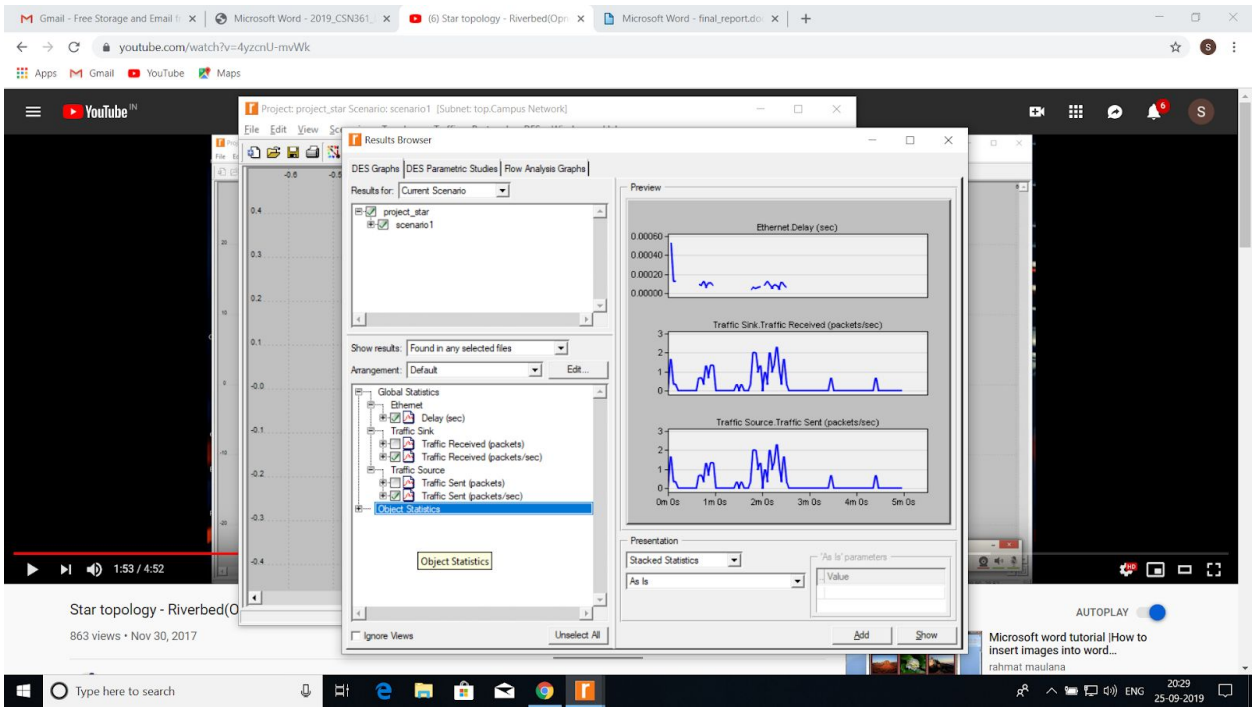

Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for: Current Scenario
project_bus
scenario1
Show results: Found in any selected files
Arrangement: Default
Edit...
Traffic Received (packets/sec)
Traffic Source
node_6
Traffic Sink
node_7
node_8
node_9
node_10
node_11
node_12
node_13
node_14
Ignore Views
Unselect All
Preview
Object: node_0 of Campus Network
Traffic Sink.Traffic Received (packets/sec)
Object: node_4 of Campus Network
Object: node_5 of Campus Network
Object: node_6 of Campus Network
Presentation
Stacked Statistics
As Is
Add
Show
Problem Statement 2:

**QUESTION 2:** Using OPNET create Star topology among a set of N computer nodes out of which one node is source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network scale as the “campus” of area 1km x 1km.

**SOLUTION:** Here I have used N = 6 for the Star Topology, with Node0 as the source and rest as sink. Other settings and results are shown below:




youtube.com/watch?v=4yzcnU-mvWk
Project: project_star Scenario: scenario1 [Subnet: top.Campus Network]
(node_0) Attributes
Type: station
Extended Attrs
Model Details
Object Documentation
Filter
OK
Cancel
1:53 / 4:52
Star topology - Riverbed(O
863 views • Nov 30, 2017
AUTOPLAY
Microsoft word tutorial |How to insert images into word...
rahmat maulana
Type here to search
ENG
20:25
25-09-2019


youtube.com/watch?v=4yzcnU-mvWk
Project: project_star Scenario: scenario1 [Subnet: top.Campus Network]
Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Results for: Current Scenario
project_star
scenario1
Show results: Found in any selected files
Arrangement: Default
Edit...
Global Statistics
Ethernet
Delay (sec)
Traffic Sink
Traffic Received (packets)
Traffic Received (packets/sec)
Traffic Source
Traffic Sent (packets)
Traffic Sent (packets/sec)
Object Statistics
Preview
Ethernet.Delay (sec)
Traffic Sink.Traffic Received (packets/sec)
Traffic Source.Traffic Sent (packets/sec)
Presentation
Stacked Statistics
As Is
Ignore Views
Unselect All
Add
Show
1:53 / 4:52
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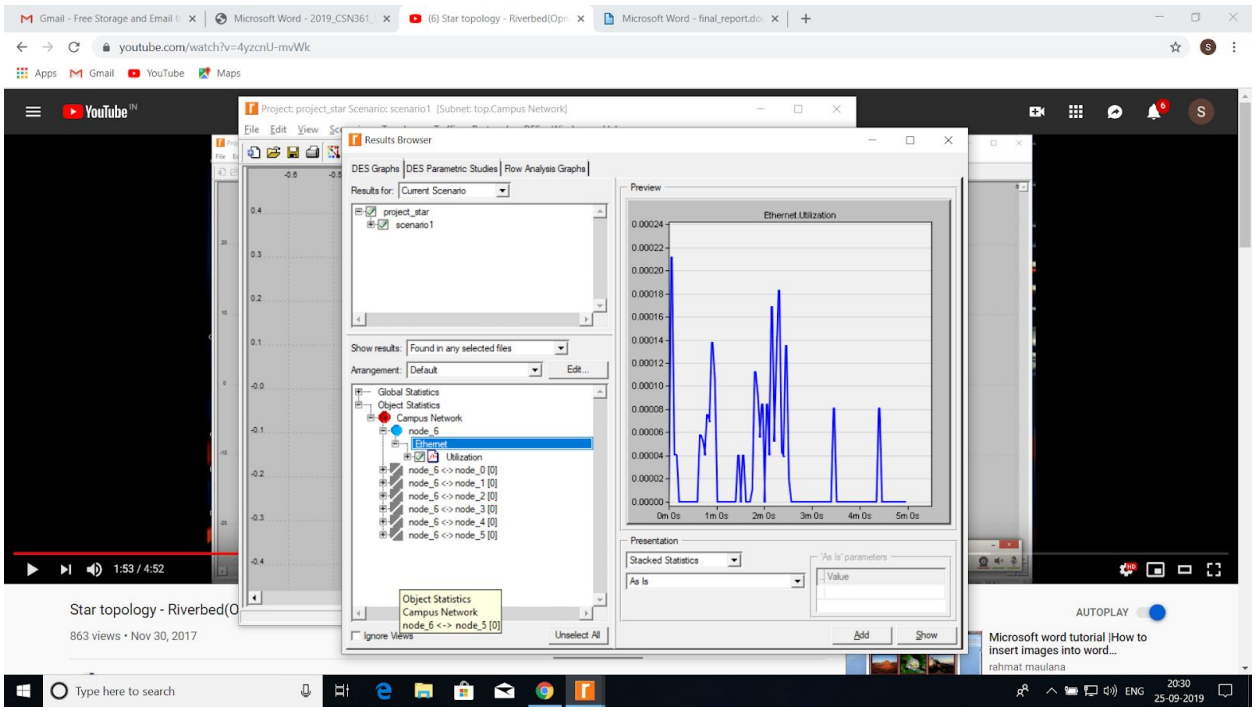
rahmat maulana
Type here to search
ENG
20:29
25-09-2019


youtube.com/watch?v=4yzcnU-mvWk
Project: project_star Scenario: scenario1 [Subnet: top.Campus Network]
Results Browser
DES Graphs
DES Parametric Studies
Flow Analysis Graphs
Ethernet Utilization
Global Statistics
Object Statistics
Campus Network
node_6
Ethernet
Utilization
Star topology - Riverbed(O
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AUTOPLAY
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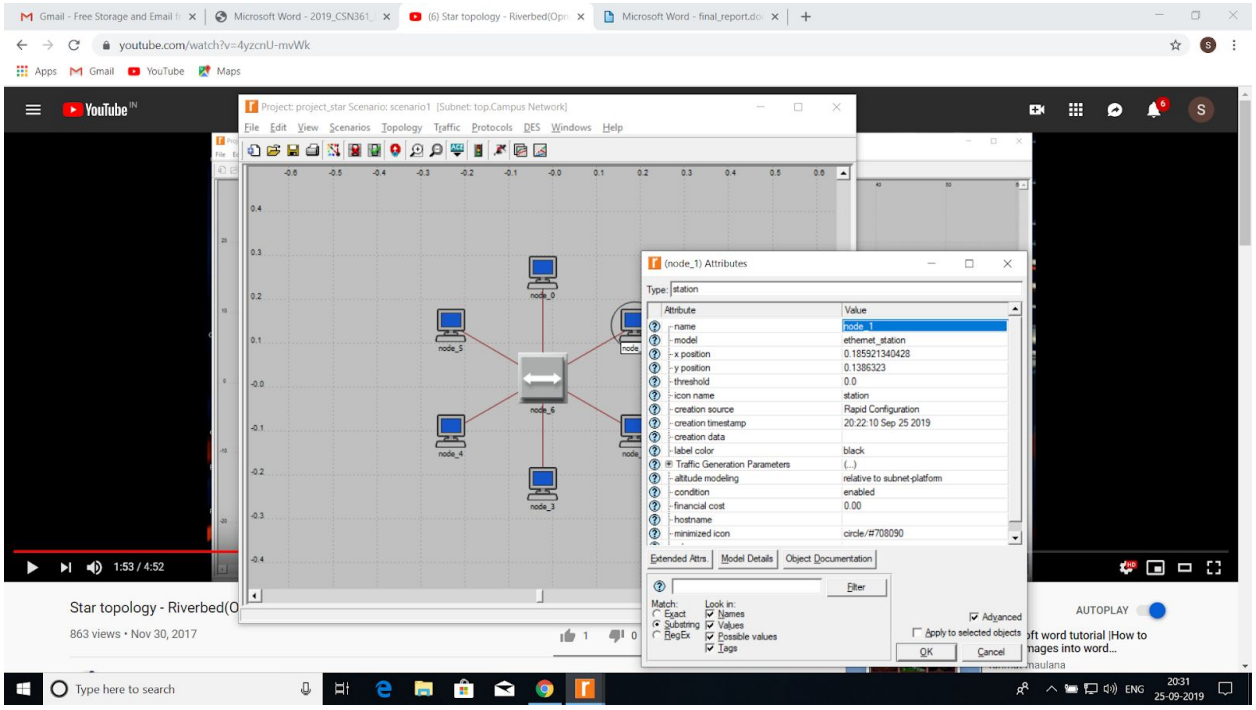
rahmat maulana
Type here to search
ENG
20:30
25-09-2019


youtube.com/watch?v=4yzcnU-mvWk
Project: project_star Scenario: scenario1 [Subnet: top.Campus Network]
(node_1) Attributes
Type: station
Attribute
Value
name
node_1
model
ethernet_station
x position
0.185921340428
y position
0.1386323
threshold
0.0
icon name
station
creation source
Rapid Configuration
creation timestamp
20:22:10 Sep 25 2019
label color
black
altitude modeling
relative to subnet-platform
condition
enabled
financial cost
0.00
hostname
minimized icon
circle/#708090
Extended Attrs
Model Details
Object Documentation
Filter
OK
Cancel
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ENG
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