Submission Deadline: January 30, 2023, Monday, 11:59 PM

Personalised Parameters:
See this Google Sheet to know your parameters.

Wireless MAC Type:
- Wireless 802.15.4
- Wireless 802.11

Routing Protocol:
- DSDV
- AODV
- DSR

Agent + Application:
- UDP + Exponential Traffic
- UDP + CBR Traffic
- TCP Reno + FTP
- TCP Tahoe + Telnet,

Node Positioning:
- Random (Randomly place nodes anywhere with area)
- Grid (Place nodes in a grid. You can choose the number of rows and columns yourself)

Flow:
- Random Source Destination (For each flow, choose a random source and a destination. Careful not to choose same node as source and destination)
- 1 Source, Random Sink (except source itself) (Choose a random source X, then for each flow choose X as source, and any other node as destination)
- 1 Sink, Random Source (Choose a random sink X, then for each flow choose X as destination, and any other node as source)

Parameters:
Queue: Droptail, max size 50 *(Using Queue/DropTail/PriQueue with DSR may cause segmentation fault. In that case you can use CMUPriQueue instead.)*
Antenna: Omni Directional
Speed of nodes: Uniform random between 1m/s and 5m/s for each node.
Propagation Model: Two Ray Ground Propagation Model

With your personalised parameters and global parameters fixed, vary the parameters below.

Baseline Parameters: (while varying one parameter, keep other parameters fixed like below)

- Area Size: 500m x 500m
- Number of Nodes: 40
- Number of flows: 20

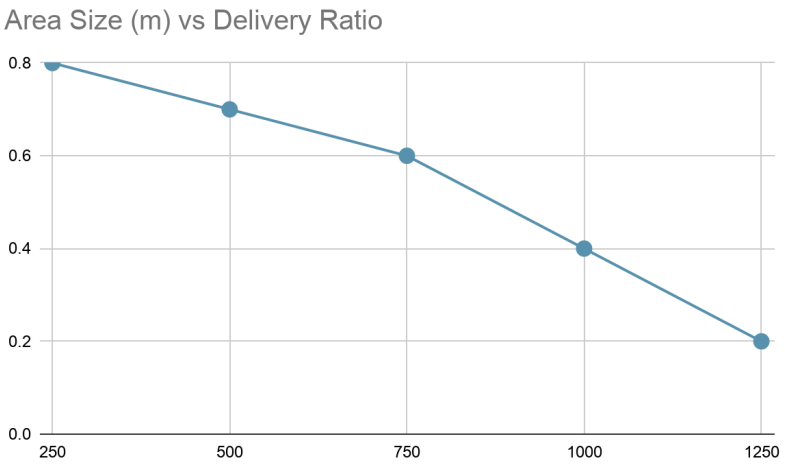
Vary parameters:

- Area Size: 250m x 250m, 500m x 500m, 750m x 750m, 1000m x 1000m, 1250m x 1250m
- Number of Nodes: 20, 40, 60, 80, 100
- Number of flows: 10, 20, 30, 40, 50

Metrics:
For each of the varying parameters, plot 4 graph showing,

- Network throughput
- End-to-end delay
- Packet delivery ratio (total # of packets delivered to end destination / total # of packets sent)
- Packet drop ratio (total # of packets dropped / total # of packets sent)

For example:
Say, for varying area sizes, keep other params fixed as mentioned in baseline. Find 4 metrics for each of the values of area size. Plot each metric in a separate graph. You will get 4 graphs for varying area size. One of them is the Delivery ratio. It may look like this. **Clearly mention the x-axis, y-axis, x-ticks and y-ticks.**



The total number of graphs will be 3 x 4 = 12.

Report:

- Write short descriptions of your MAC type, Routing protocol, Agent Type, Application.
- Include all the 12 graphs.
- Write short observations on the results you got.

Submission:

- Code (exclude the trace files, nam files). Include only the source files (.tcl, .sh, .awk, .py, .ipynb or others)
- Report as pdf.
- Put all of these in a zip file
- Name it as your student id (1805xxx.zip)
- Submit

Marks Distribution:

Basic Simulation and configs	4
Vary area size + graph	4
Vary number of nodes + graph	4
Vary number of flows + graph	4
Report	4
Total	**20**

Appendix A: List of graphs

Graph No.	x-axis	y-axis	Fixed Param Values		
			Area-size	Number of nodes	Number of flows
1	Area Size ● 250m x 250m ● 500m x 500m ● 750m x 750m ● 1000m x 1000m ● 1250m x 1250m	Network throughput	-	40	20
2		End-to-end Delay	-	40	20
3		Packet delivery ratio	-	40	20
4		Packet drop ratio	-	40	20
5	Number of nodes ● 20 ● 40 ● 60 ● 80 ● 100	Network throughput	500m x 500m	-	20
6		End-to-end Delay	500m x 500m	-	20
7		Packet delivery ratio	500m x 500m	-	20
8		Packet drop ratio	500m x 500m	-	20
9	Number of flows ● 10 ● 20 ● 30 ● 40 ● 50	Network throughput	500m x 500m	40	-
10		End-to-end Delay	500m x 500m	40	-
11		Packet delivery ratio	500m x 500m	40	-
12		Packet drop ratio	500m x 500m	40	-