CSE 322
Offline on NS2

Submitted By:
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Section: A2

Personalised Parameters:

- **Wireless MAC** : 802.11
- **Routing protocol** : AODV
- **Agent + Application** : TCP Reno + FTP
- **Node Positioning** : Random
- **Flow** : 1 Sink, Random Source

Short description:

MAC type:

The **802.11** family consists of a series of half-duplex over-the-air modulation techniques that use the same basic protocol. The 802.11 protocol family employs carrier-sense multiple access with collision avoidance whereby equipment listens to a channel for other users (including non 802.11 users) before transmitting each packet.

Routing protocol:

AODV (Ad-hoc On-demand Distance Vector) is a loop-free routing protocol for ad-hoc networks. It is designed to be self-starting in an environment of mobile nodes, withstanding a variety of network behaviors such as node mobility, link failures and packet losses. At each node, AODV maintains a routing table. The routing table entry for a destination contains three essential fields: a next hop node, a sequence number and a hop count. All packets destined to the destination are sent to the next hop node.
The sequence number acts as a form of time-stamping, and is a measure of the freshness of a route. The hop count represents the current distance to the destination node.
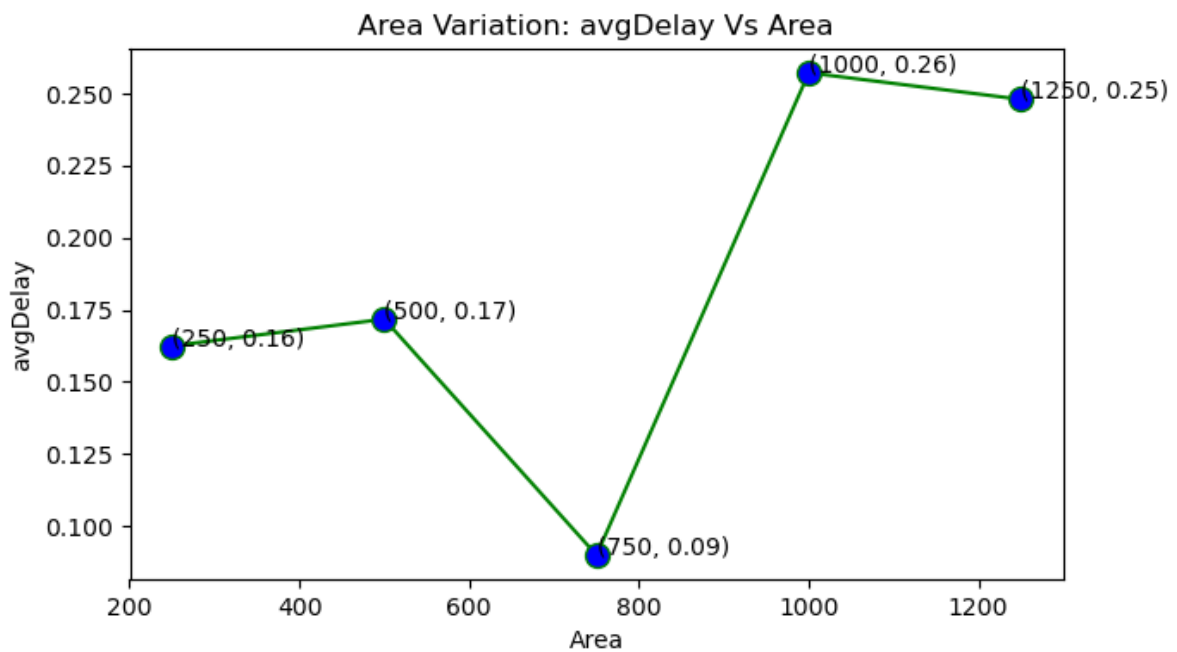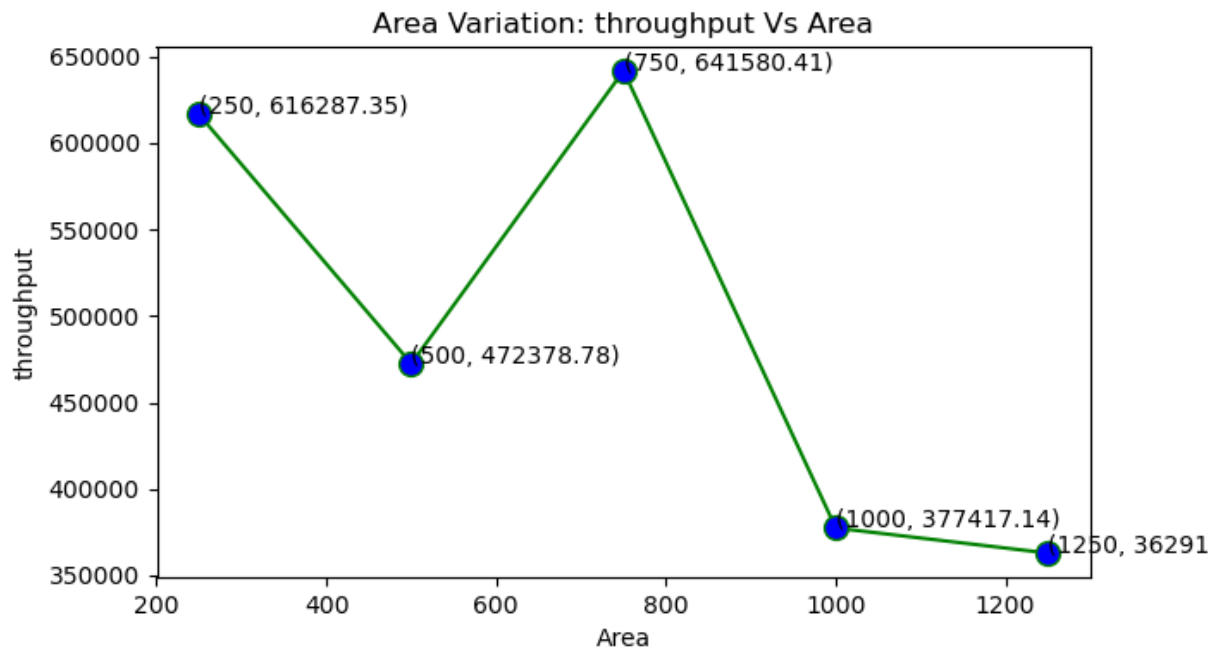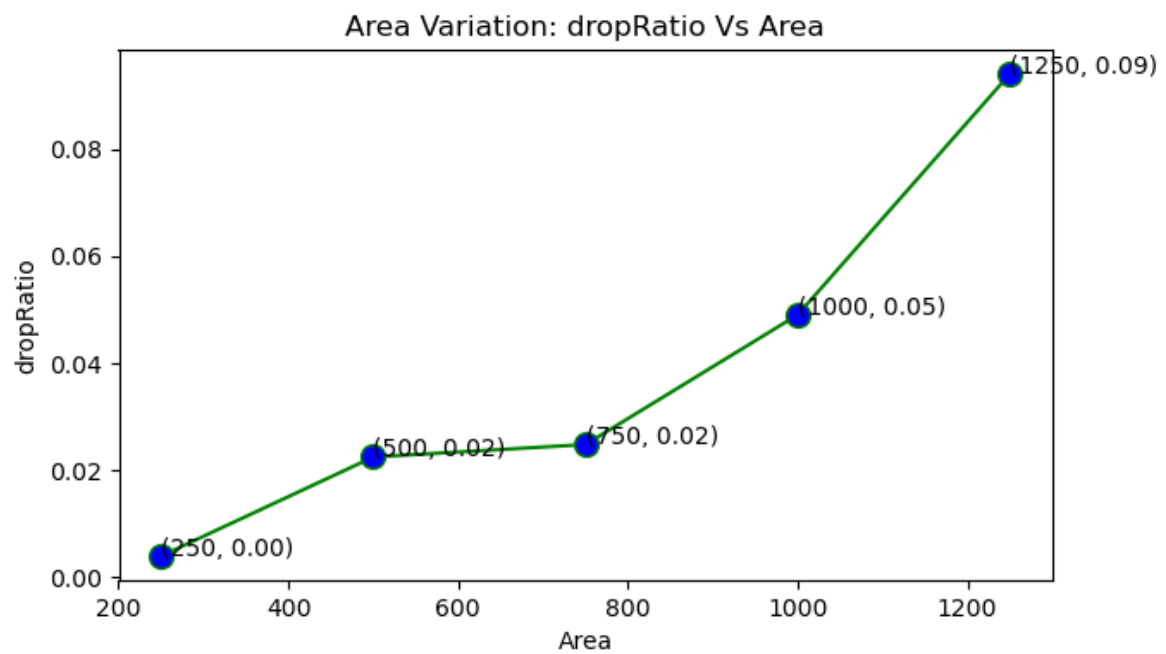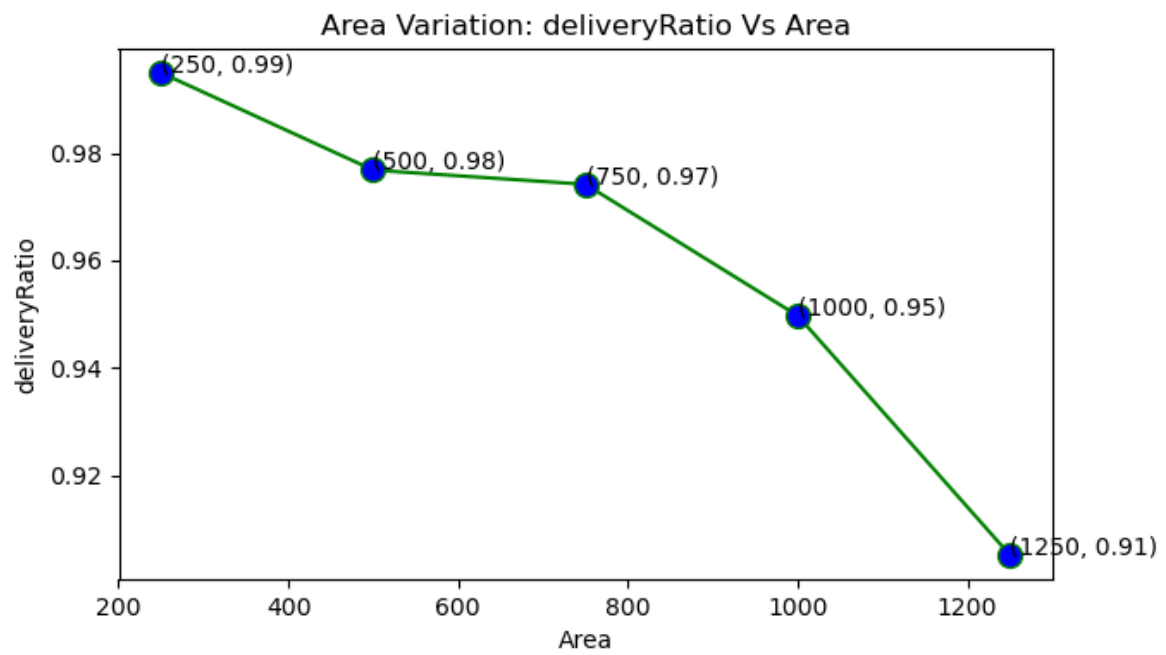
Agent Type:

TCP Reno is the extension of TCP Tahoe, and NewReno is the extension of TCP Reno. In Reno, when packet loss occurs, the sender reduces the cwnd by 50% along with the ssthresh value. This would allow the network to come out of the congestion state easily.
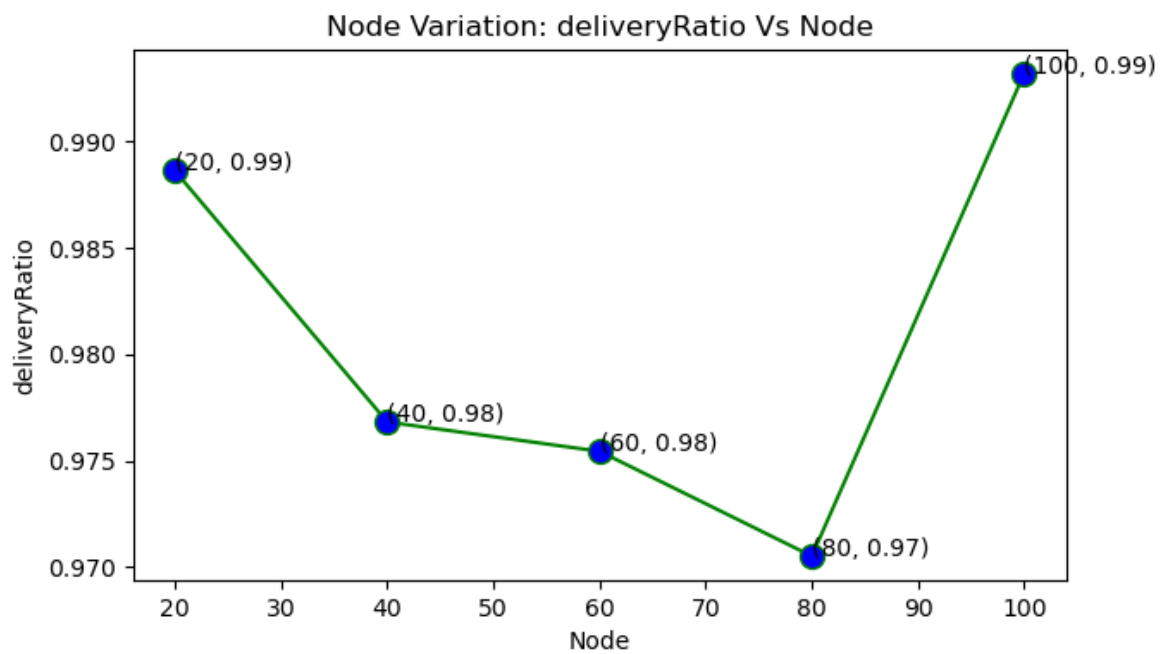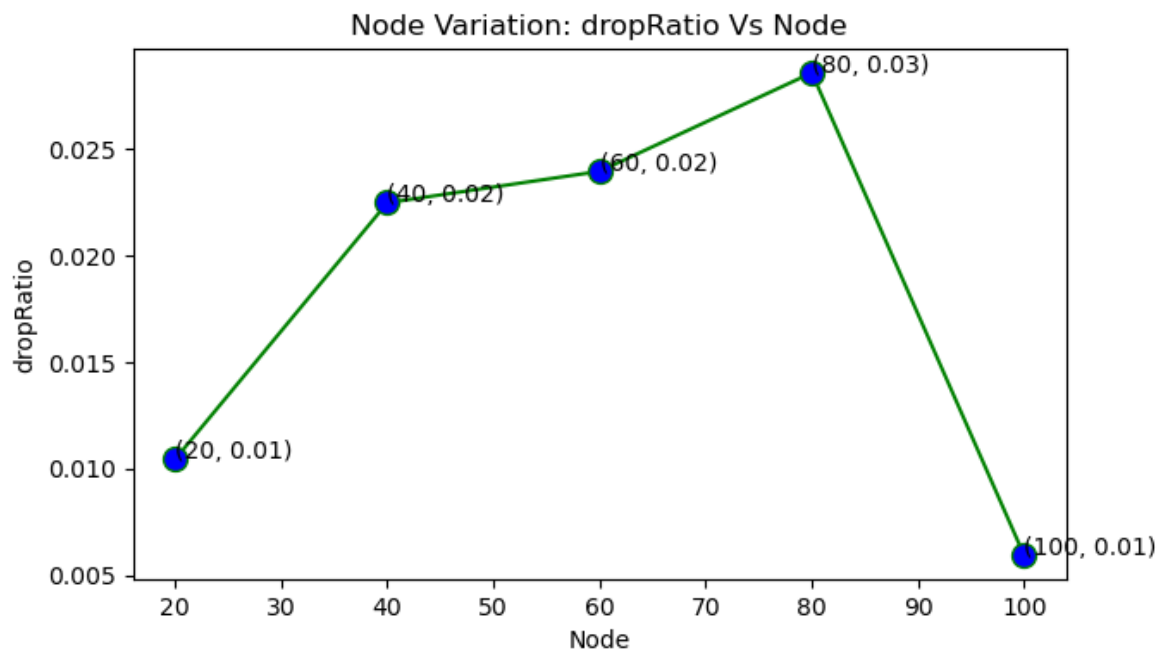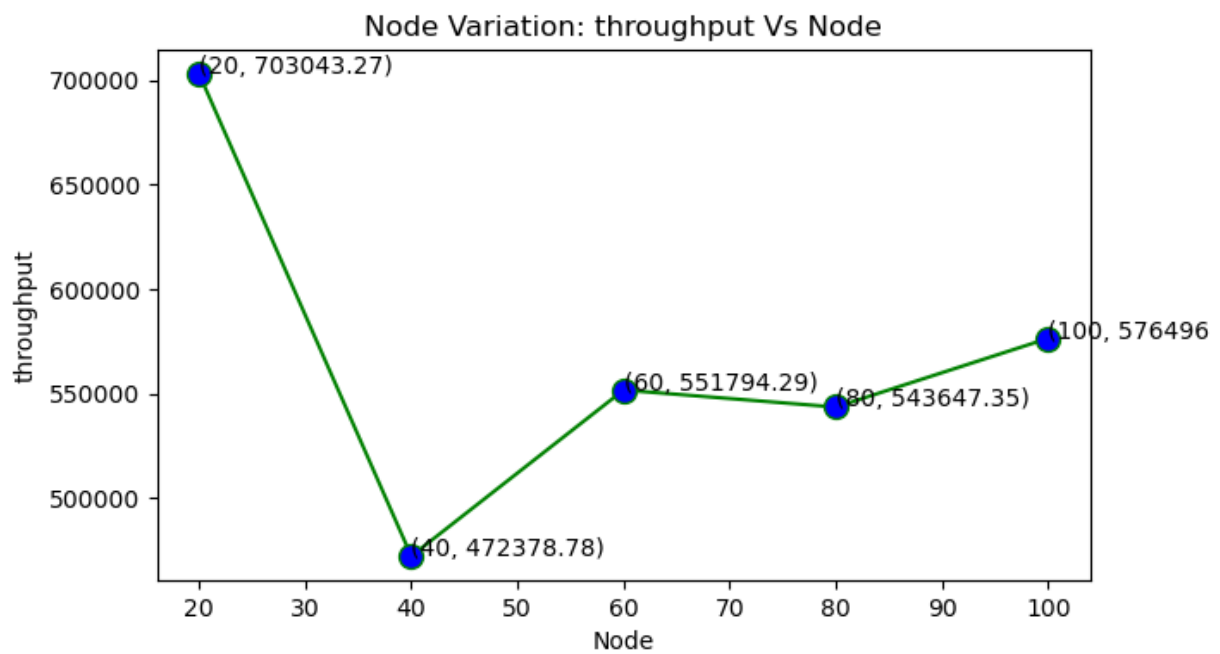
Application:

FTP (File Transfer Protocol) is a network protocol for transmitting files between computers over Transmission Control Protocol/Internet Protocol (TCP/IP) connections. Within the TCP/IP suite, FTP is considered an application layer protocol.

Generated Graphs:

Area Variation: throughput Vs Area

Area Variation: avgDelay Vs Area

Area Variation: deliveryRatio Vs Area

(250, 0.99)
(500, 0.98)
(750, 0.97)
(1000, 0.95)
(1250, 0.91)

Area Variation: dropRatio Vs Area

(1250, 0.09)
(1000, 0.05)
(500, 0.02)
(750, 0.02)
(250, 0.00)

Node Variation: dropRatio Vs Node

Node Variation: deliveryRatio Vs Node

Node Variation: avgDelay Vs Node

Node Variation: throughput Vs Node

Flow Variation: dropRatio Vs Flow

(30, 0.03)
(20, 0.02)
(40, 0.01)
(10, 0.01)
(50, 0.01)

Flow Variation: deliveryRatio Vs Flow

(10, 0.99)
(50, 0.99)
(40, 0.99)
(20, 0.98)
(30, 0.97)

Flow Variation: avgDelay Vs Flow

(10, 0.49)
(50, 0.35)
(30, 0.24)
(20, 0.17)
(40, 0.15)

avgDelay

Flow

Flow Variation: throughput Vs Flow

(40, 609087.35)
(50, 585005.7
(30, 571350.20)
(20, 472378.78)
(10, 368571.28)

throughput

Flow
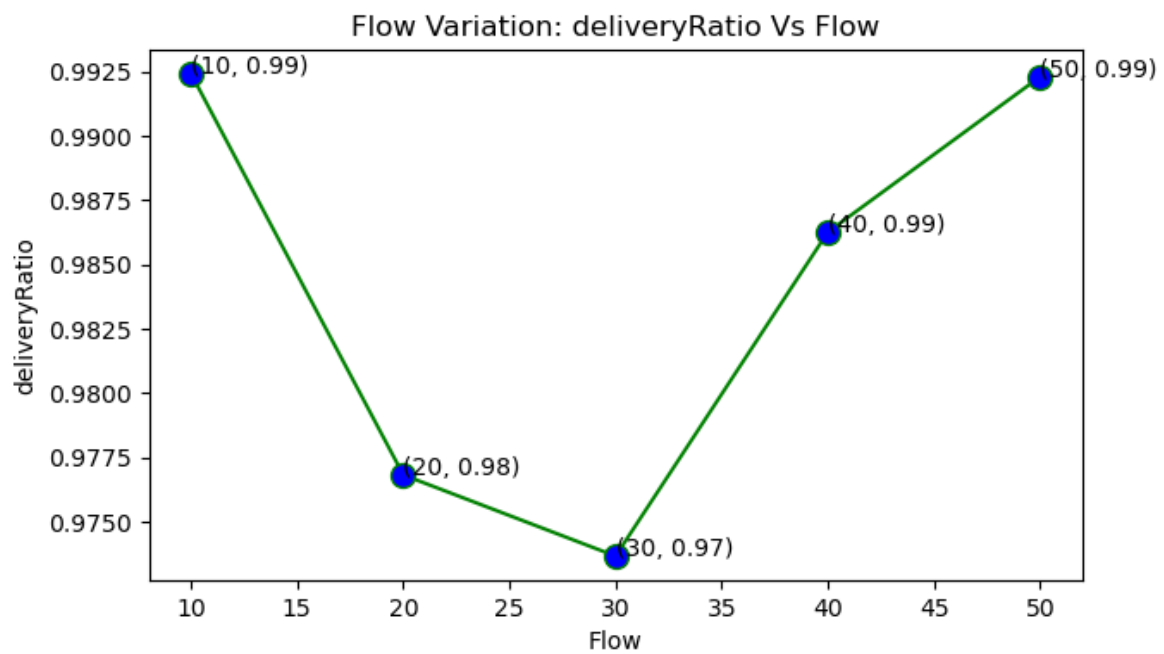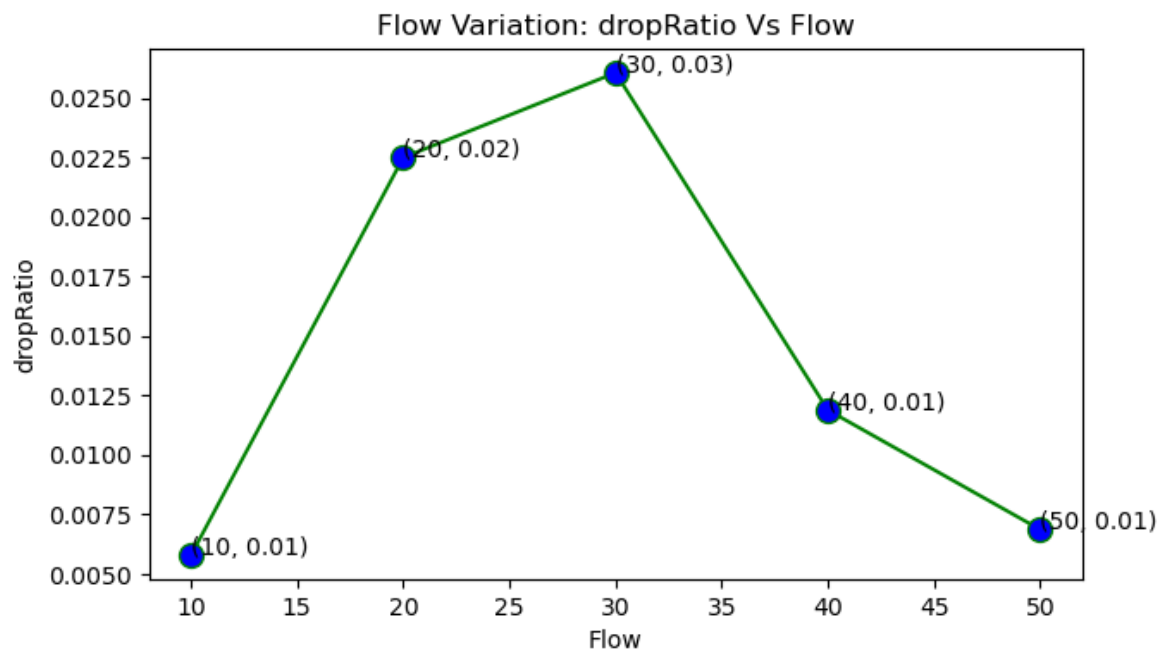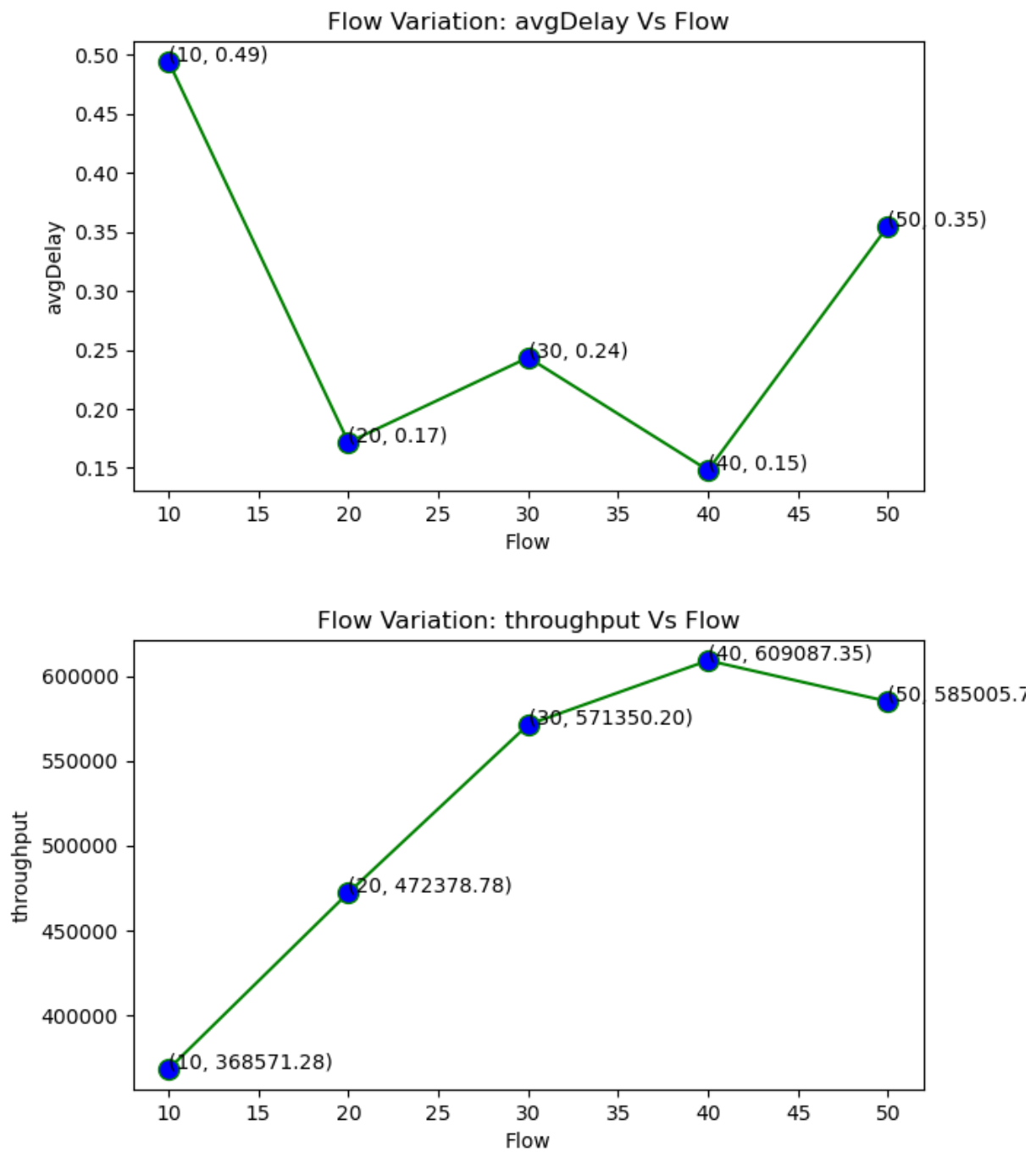
Observations:

Area Variation:
- For area=750*750 throughput is maximum
- For area=500*500 avgDelay is local maximum, and continue to decrease until the area reaches to 800*800, again reaches to global maximum in 1000*1000.
- For area=250*250 delivery ratio is maximum, and then decreases gradually.
- For area=250*250 drop ratio is minimum and increases gradually.

Node Variation:
- throughput maximum for 20 nodes, minimum for 40; then decreases gradually.
- For node=60 avgDelay is maximum, less on either sides.
- For node=80 delivery ratio is minimum, maximum for 100.
- For node=80 drop ratio is maximum.

Flow Variation:
- throughput increases upto flow=40 then decreases.
- For flow=10 avgDelay is maximum.
- Avg delivery ratio maximum for flow 10 and 50.
- Avg drop ratio increases upto flow=30 and then decreases.