Test cases:

**Q.1.** Given 10 gateways with 2 repeaters each, what is the average total upgrade time over 10 runs?

ANS:

2019-10-15 11:03:17,078 - \_\_main\_\_ - INFO - Average simulation running time for 10 runs :(for each run 10 Gateway & 2 Repeater) :18.51

For simulating the above test case:

$python main.py -d 100 -s 50 -g 10 -r 2 -i 5 -n 10

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**Q.2.** Over these 10 runs, at the 8 minute mark, how many gateways and repeaters were at each point in

the upgrade cycle?

ANS:

Based on above scenario, at the 8th minute mark, 10 gateways and 2 repeater were initialized the first check in process.

For simulating the above test case:

$python main.py -d 100 -s 50 -g 10 -r 2 -i 5 -n 10

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**Q: 3.** Which network upgrades faster on average, a network with 3 gateways with 4 repeaters each or a

Network with 4 gateways and 3 repeaters each?

4 Gateway and 3 Repeater each:

INFO:\_\_main\_\_:Average simulation running time for 1 runs :(for each run 4 Gateway & 3 Repeater) :19.54

3 Gateway and 4 Repeater each:

INFO:\_\_main\_\_:Average simulation running time for 1 runs :(for each run 3 Gateway & 4 Repeater) :23.65

ANS: With 3 Gateway and 4 Repeater are faster based on the above simulation results.

For simulating the above scenario 1: (4 Gateway and 3 Repeater each)

$python main.py -d 100 -s 50 -g 4 -r 3 -i 5 -n 1

For simulating the above scenario 2: (3 Gateway and 4 Repeater each)

$python main.py -d 100 -s 50 -g 3 -r 4 -i 5 -n 1

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4. If the random times range from 0.00 to 6.00 minutes instead of 0.00 to 5.00, how does that affect the

Total average time on 10 runs? What new problems does this cause?

For each random range 0.00 to 6.00: (1 Gateway and 1 Repeater & 6 min interval)

INFO:\_\_main\_\_:Average simulation running time for 10 runs :(for each run 10 Gateway & 2 Repeater) :21.70

For each random range 0.00 to 5.00: (1 Gateway and 1 Repeater & 5 min interval)

\_\_main\_\_ - INFO - Average simulation running time for 10 runs :( for each run 10 Gateway & 2 Repeater) :18.51

**ANS:**

For every simulation with 1 Gateway, 1 Repeater & 6 min interval, Time to upgrade is more when compared to 5 min interval.

For simulating the above scenario 1: (1 Gateway and 1 Repeater & 6 min interval)

$python main.py -d 100 -s 50 -g 1 -r 1 -i 6 -n 1

For simulating the above scenario 2: (1 Gateway and 1 Repeater & 5 min interval)

$python main.py -d 100 -s 50 -g 1 -r 1 -i 5 -n 1