**Garance Nicole Loison, UCID 10083186 CPSC441 - Assignment 4**

Necessary tools to be installed:

- gcc for the appropriate OS of running computer to compile the C code.

Compiling the program:

Please compile the mac.c file with gcc on terminal such as :

gcc -o mac mac.c

Running the program:

Run the program with 3 arguments : the total number of levels in the tree (0<10), the start level of the protocol (1<start level <N), number of test scenarios (>0).

Example: ./mac 10 10 100

The program will ask for proper input values if the user enters invalid ones.

Results Display:

The results will be displayed on console as such:

Number of real nodes: Number of Scenarios: Starting Level:

1024 100 10

Avg number of ready stations: 481.700000

Avg total probes: 15623.170000

Avg collisions per test: 15141.470000

Failure rate: 37.608753 Avg Test Performance: 62.391247

Performance Analysis:

With N = 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, and 1024 (tree level = 1, 2, 3, 4, 5 , 6, 7 ,8 ,9 , 10 ) and 100 scenarios we were able to get the following performance:

PERFORMANCE AS A FUNCTION OF N AND THE START LEVEL:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Start Level | N = 1 | N = 2 | N = 4 | N = 8 | N = 16 | N = 32 | N = 64 | N = 512 | N= 1024 |
| 0 |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |