**Appendix**:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scenario | Change in values of | | No. of iterations | | Time Taken (ns) | |
| h | k | BFS | mBFS | BFS | mBFS |
| Worst Case: 1 hospital, worst graph  Graph file used: worstGraph.txt (1 mil nodes and (2 mil -1) edges)  Node file used: allNodes.txt | 1 (1hospital.txt) | 1 | 1000000 | 1000000 | 227392800 | 426862800 |
| **Scenario #1:**  Use the same graph, change no of h, keeping k constant  Graph file used: roadNet-CA.txt  Node file used: allNodes.txt | 1 | 1 | 1957027 | NA | 766073300 | NA |
| 10 | 1 | 1957027 | NA | 614548200 | NA |
| 100 | 1 | 1957027 | NA | 920105300 | NA |
| 1000 | 1 | 1957073 | NA | 1224987500 | NA |
| 10000 | 1 | 1958582 | NA | 1291937000 | NA |
| 100000 | 1 | 1959809 | NA | 1913845400 | NA |
| 1000000 | 1 | 1964037 | NA | 2929902500 | NA |
| **Scenario #2:**  Use the same graph, change k, keeping no of h constant  Graph file used: roadNet-CA.txt  Node file used: allNodes.txt | 4 (defaultHospitals.txt) | 1 | NA | 1957027 | NA | 1878327800 (1.8s) |
| 4 | 2 | NA | 3914054 | NA | 3635802400 (3.6s) |
| 4 | 3 | NA | 5871081 | NA | 6732660700 (6.7s) |
| 4 | 4 | NA | 7828108 | NA | 11274776000 (11s) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scenario  h = 5, k = 2 | No. of Nodes | No. of Edges | No. of loops | | Time Taken (ns) | |
| BFS | mBFS | BFS | mBFS |
| **Scenario #3**:  Only increase no. of nodes  Files used:  graphTestHospitals.txt  allNodes.txt | 500 | 10000 | 500 | 1000 | 2992300 | 8974600 |
| 1000 | 10000 | 1000 | 2000 | 4003200 | 11965700 |
| 2000 | 10000 | 2000 | 4000 | 4986500 | 21941700 |
| 4000 | 10000 | 3976 | 7952 | 7978600 | 25443900 |
| 8000 | 10000 | 7151 | 14302 | 15957500 | 33908700 |
| **Scenario #4:**  Only increase no. of edges  Files used:  graphTestHospitals.txt  allNodes.txt | 5000 | 5000 | 4003 | 8006 | 4986000 | 16955000 |
| 5000 | 10000 | 4893 | 9786 | 8976100 | 27924800 |
| 5000 | 15000 | 4986 | 9972 | 13962600 | 34906700 |
| 5000 | 20000 | 4996 | 9992 | 17951800 | 39893300 |