# 6. Performance results

Deploy at least 10 peers. They can be setup on the same machine (different directories) or different machines. Each peer has in its shared directory at least 10 text files of varying sizes (for example 1k, 2k, ..., 10k). Make sure some files are replicated at more than one peer sites (so your query will give you multiple results to select).

Do the following experiment in at least the following two topologies (initialize the topology by assigning neighbors for each peer):

1. A star topology.

2. A 2D-mesh topology.

Do a simple experiment to evaluate the behavior of your system. Compute the average response time per client query request by measuring the average response time seen by a client, since there may be multiple results for each query, measure the average among them. And repeat this measurement for 200 times and get the average. Use your own judgment/technique to decide when the last query result should come back. For example, define a cutoff time, waiting until that time and compute the result.

Do the same calculation by changing system load, more specifically, do the same experiment where there's only 1 client issuing queries, then 2 clients, 3 clients, and so on. Draw a plot after collecting all the data and justify your conclusion. Also compare the result to the first programming assignment 1 and justify your conclusion.

**Results:**
For star topology
1. 200 times query to a single neighbor. We choose Peer 1 as sender and Peer 3 as receiver. The searched file is "TenK.txt", which its size is 10 KB.
   ***Mean time: 3.813 ms***
2. 200 times query to multiple peers. We choose Peer 1 as sender. The searched file is "10K.txt", which its size is 10KB.
   ***Mean time: 1.76 ms***

   For 2D-mesh topology
1. 200 times query to a single peer. We choose Peer 1 as sender and Peer 6 as receiver because they are at the diagonal position of the topology. The searched

file is "Test.txt", which its size is 10 KB.
***Mean time: 1.88 ms***

2. 200 times query to a multiple peers. We choose Peer 1 as sender. The searched file is "TenK.txt", which its size is 10 KB.
***Mean time: 1.795 ms***


**Comment:**
Obviously, in the same topology, searching a file located in different nodes spend less time than a unique file in one node because there always exists a node owning that file is closer to the sender than others, and in our designing the timer calculates the shortest time among the time consuming of all queries.