

# Project Report

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## Group Members:

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## What is working:

1. Nodes are able to join the network one at a time.
2. Leaf Set of size 16. With 8 as size of lesser leaf set and greater leaf set is fixed.
3. Routing table is maintained and being updated when new node joins
4. Size of the neighbor is set to one.
5. 126 Bits hash is generated and stores in hexadecimal format.

Therefore, routing table has 32 rows and 16 columns

## What is the largest network you managed to deal with?

Sr no	Number of nodes	Number of Request	Average hops request to deliver message
1	10,000	10	3.34555
2	5000	10	3.06718
3	1000	10	2.5831
4	100	10	1.73

## Implementation Details

- First node starts the pastry application with empty routing table and empty leaf set
- For Second node, previous started is considered neighbor and given during startup to perform join.
- Second node sends its Hash and in return receives first node's hash, routing table (empty) and leaf set(empty) and finally updates its routing table and leaf set with received node's hash.
- Second node updates its Routing table and leaf set as per received information. In this case, with just first node's hash.
- Second now has joined the pastry network and as last step sends its routing table and leaf set to all the nodes in its routing table and leaf set.
- This continues for third and fourth.
- Join operation is performed serially.
- We were able to get almost near perfect Average hops. Though not less than theoretical bounds since we have set leaf size to 16 and not 32.
- All the messages request done are performed asynchronously.
- Each node sends message at rate of 1 request/second as per requirement.