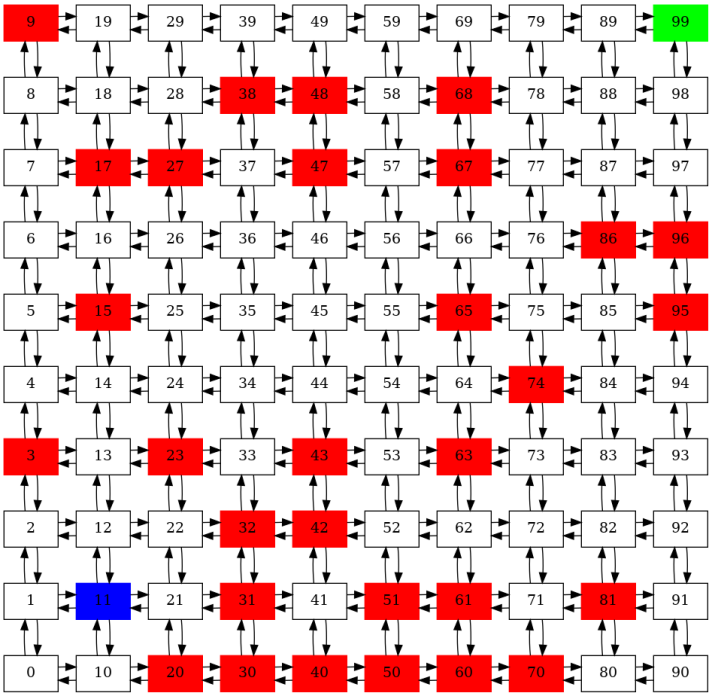
IIT Guwahati, Dept of CSE, CS331: Prog. Lang Lab

Assignment VI: Advanced Prolog Programming

Soft deadline: 11.55 PM IST, 15nd April 2021 (Hard deadline of MS team: submission will not allowed after 11.55PM 16rd April 2021)

Define a Prolog procedure "shortest_path (src, dst, Result)" that finds shorted path solution in the maze (or grid with faulty node), where maze (or grid with faulty node) having possibly more than one path from source to destination.

We can correlate this Maze problem to fault-tolerant shortest path routing from a source node to destination node in Mesh network with some faulty nodes. An example given below shows a mesh/grid with some faulty nodes. No path can be established through a faulty node. We need a find shortest path which passes not though these fault nodes (we can simply exclude link to these nodes). Red nodes are faulty nodes, the blue node is the source node and the green node is the destination node.



Test Cases Generation for Maze (or Grid with some faulty nodes) : You can generate above shown kind of test files (Graphical PNG file) and prolog facts specifying a grid/maze with faulty node by given C++ program (available in resouce section of assignment). This generate two initial files: graph1.png and Mazedata.pl

No need to show the out put shortest path graphically. Textual output is sufficient.

Write a dynamic prolog fact and rules to find shortest path between any two specified nodes. You shoud be able to add a new faulty nodes or remove a faulty nodes during the querry.

Please embedded sample example querries to the code to perform the evaluation.