

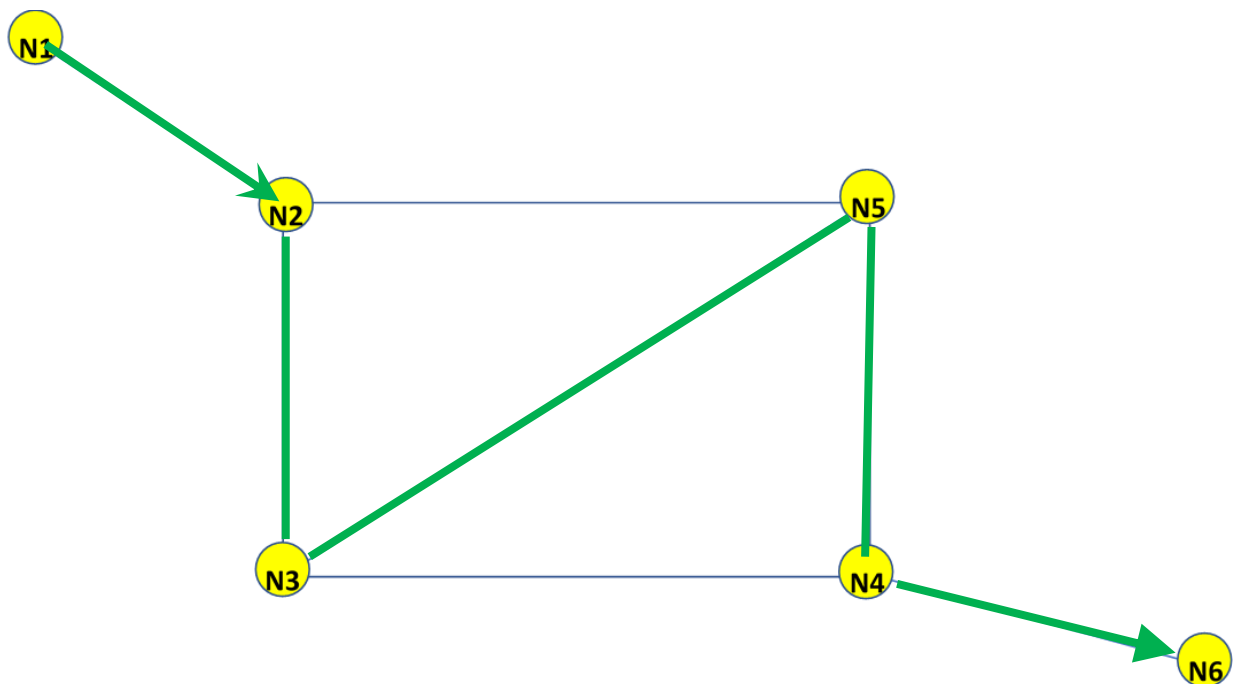
The 2 paths that visit all nodes once are : [1,2,3,5,4,6] and [1,2,5,3,4,6]

Solution

Solutions to this problem will rely heavily upon logical thinking combined with trial and error (or really trial and improvement).

You will find yourself saying "If I go this this way and continue to the next node, I will have to re-visit a node..." and so forth.

Even though this is a relatively simple network, it is always a good idea to draw the diagram and draw your possible paths over the graph.



Note

Networks of this kind are called Graphs. Each Node is also called a Vertex. (As in the 3 vertices of a triangle, or the 4 vertices of a square in Maths)

The line joining two vertices is called an edge.

If you can travel both ways it is called an undirected graph.

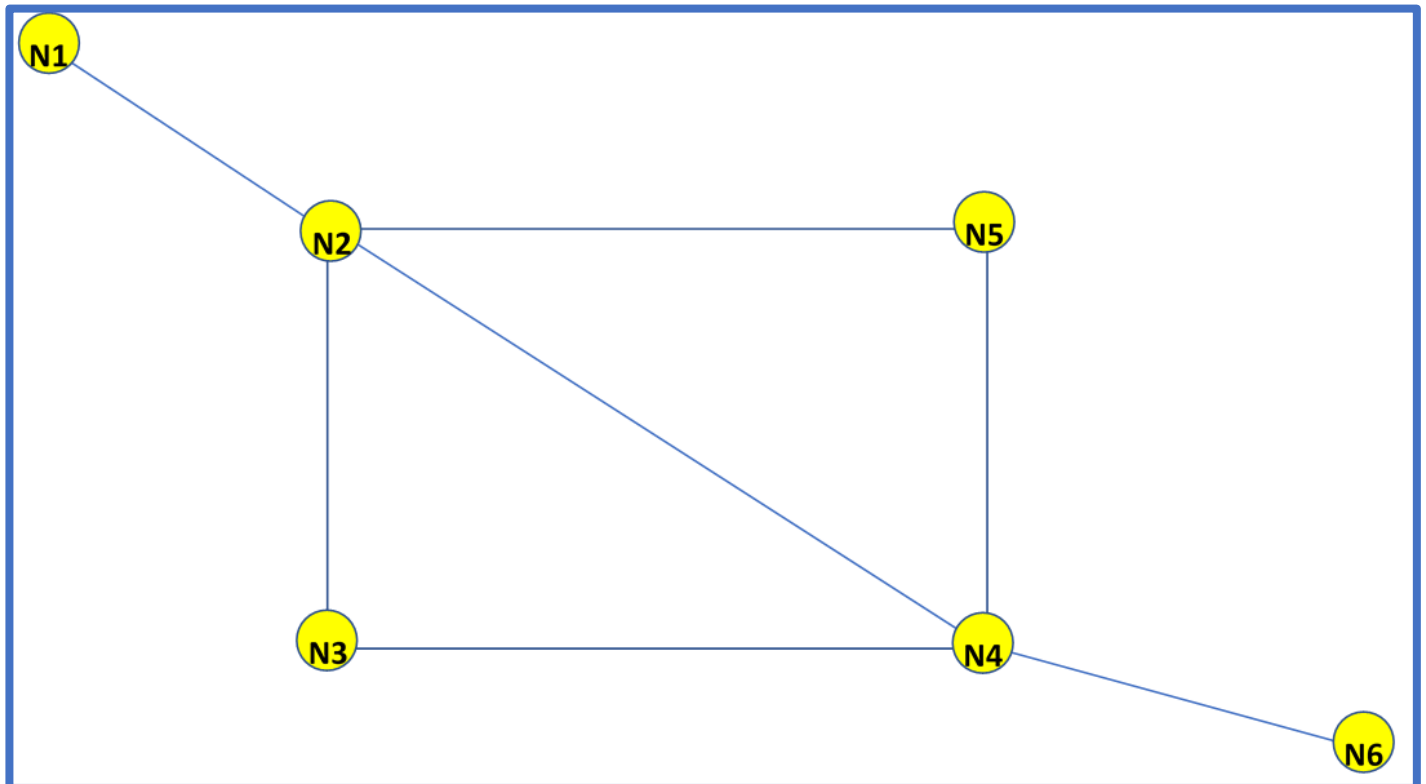
A path that visits all the nodes is called a Hamiltonian Path.

(see <https://www.khanacademy.org/computing/computer-science/algorithms/graph-representation/a/describing-graphs> or just google khan academy graph representation)



Try the one below...

When you write a program to solve the problem, you should be able to add the network (graph) below into your program and hopefully your program will solve the problem.



Try some more

When you write a program to solve the problem, you should be able to add a network of higher complexity.

Create your own solvable Hamiltonians or non-solvable. Use names instead of numbers.

Check out:

<http://mathworld.wolfram.com/HamiltonianPath.html>

The following video is 2 minutes and sets a cool puzzle at the end that your program could solve.

<https://www.youtube.com/watch?v=IRH0tax5dFA>