

I don't quite understand the question, but I'm assuming you want to be able to reach all people within three links. Then, you would treat each friend you are directly connected to as a root node to a subtree, and you would continue to visit the leaf nodes until the depth is equal to three at which point you would stop traversing the vertices and backtrack. That way, you would be able to do a breadth first search through all people within three links to the person P.