Assignment 3 (30 marks)

Extend the graph class (for undirected graphs) with the following methods:

1) a method that removes a node from the graph (and all edges with one end or both ends touching this node). (5 marks)

2) a method that removes an edge of the graph (5 marks)

3) Euler showed that an Eulerian walk is possible in a graph if and only if the graph is connected and has exactly zero or two nodes of odd degree. Write a method that checks for a graph whether an Eulerian walk is possible. • If so, the method should print: "Enjoy your walk!". • If not, the method should print: "Better stay put where you are now!" (10 marks)

4) a method that counts the number of nodes in a graph

5) a method that starting from a given node returns: the list consisting of the neighbors of the node (if any), the neighbors of their neighbors (if any) and the neighbors of their neighbors (if any). In other words: it should return the list of the he neighbours' neighbours' neighbours (10 marks)

You need to program these ``from scratch" in Python where you can make use of code provided for graphs in class but you cannot use graph packages.