Final Project Helper 3

Some help:
Instead of solving this whole project directly, it’s easier to divide the final project into smaller pieces and then try to solve them. For example, overhearing can be one part, network coding in Node E is another part, and network decoding in Node C/D is the third part. Besides, network coding part also can have three parts: store packets into buffer, xor calculation and broadcast. In order to help you get more credits in this project, a simplified version of network coding problem is added. In this version, you don’t have to implement overhearing part. Therefore you can verify whether your network coding and network decoding works correct or not.

In this version, there are only three nodes connected by wifi and they use line topology: A———E———B
A and B are trying to send packets to each other but their packets have to be forwarded by Node E (because distance between A and B are too far). Similarly, Node E uses network coding to improve throughput in this network. After E have received packet a from Node A and packet b from Node B, E xor a and b to build a new packet called e and broadcast this packet e to A and B. In this problem, you don’t have to implement overhearing anymore because Node A knows packet a and Node B knows packet b. Finally, Node A can decode packet b by (e xor a), while Node B can decode packet a by (e xor b).

Please note that both reports and codes will be considered to get your score in final project. If your codes cannot run correct, you may have to mention your methods in detail.

Some general suggestions:

1. Because NS-3 is a project written in C++, you may need to refer to some C++ grammars when you are trying to solve this project.
2. When you are trying to read module codes, it’s easier for you to read these codes on NS-3 doxygen on line. For example, https://www.nsnam.org/doxygen/classns3_1_1_packet.html#ab2d46939241156115411e66aa1a65f09. They give you information about public member, private member and they provide links to other class/methods needed.
3. Please read final project helper 2 on my website. It will give you some ideas which function you are going to modify.