Assignment #9 Santa Clause Problem

This assignment tasks students with the creation and handling of the Santa Clause problem. Utilize the Little Book of Semaphores Chapter 5.5 to assist you with the understanding and implementation of a good solution that solves the issue presented. 5.5.1 and 5.5.2 also give good hints and potential solutions that students can make use of (while ultimately utilizing their own code, obviously). Additionally, the video in Unit 6 > Additional Resources > Santa (10:41) will assist students in visualizing the task at hand. To complete this assignment, you should:

* Establish your own Santa Clause problem which:
  + Contains Elves and reindeer, which are counters, protected by mutex (10%)
    - We can assume there are only 9 reindeer, but there may be any number of elves
  + Contains various semaphores; LBS 5.5.1 for hint (10%)
  + Santa section of code SHOULD run in a loop, only being paused when reindeer == 9 or elves == 3 (20%)
  + Reindeer section of code SHOULD signal Santa when Reindeer == 9 (10%)
  + Elf section of code SHOULD signal Santa when Elves == 3 (10%)
  + You need to have code that distinguishes that Reindeer have priority over Elves. (Ex: if 9 reindeer are waiting AND 3 elves are waiting, then Santa assist the reindeer FIRST! (20%)
  + Code should run in a continuous loop until at least one group of elves and one group of reindeer have been helped by Santa (20%)

Save your program file as 9.cpp. Each of the bullets are worth the listed percentage.

**Due date: Sunday, November 5th, by 11:59 PM**