Create an R markdown file, linked with R code stored in an associated R script file, that performs the numbered steps below. Label the steps clearly within the markdown HTML output. For steps 8 and 12, include both the question and your answer in the markdown file.

Step 1 (1 pt): Load libraries and the Les Miserables Full data file stored on D2L. Note that this is a very different network than the one we used in lab, based on the research of Michal Ginsburg of Northwestern University and is intended to inclusive of all of the characters in the book. See https://lesmiserables.mla.hcommons.org/ for more info. You may also wish to consult the Wikipedia page for the book if you are not familiar with it: https://en.wikipedia.org/wiki/Les_Mis%C3%A9rables.

Step 2 (2 pts): Identify the bipartite structure. Some nodes are book sections and some are people. Determine which is which and then create a 'type' attribute from the existing 'bipartite' attribute. The type attribute must have a boolean value.

Step 3 (2 pts): Create section-to-section bipartite projection.

Step 4 (2pts): Display a histogram of the edge weights.

Step 5 (2pts): Remove edges of weight 1.

Step 6 (1pt): Calculate the set of connected components using the `decompose` function.

Step 7 (1 pt): Extract the subgraph containing just the giant component from the list returned by decompose. You will use this for the rest of the assignment.

Step 8 (5 pts): Question: How many sections of the book are removed in steps 5-7? What aspects of the book representation are altered through these steps? How should we understand the remaining network relative to the entire book that we started with?

Step 9 (1 pt): Display a summary of this extracted subgraph.

Step 10 (1pt): Save the extracted subgraph to a graphml file.