

Lab 02



For this homework, provide a rendered R Markdown file in pdf format (you may render the R Markdown file to html, and then convert the html file to pdf using the print function on a web browser). Indicate your student number on the markdown file, and make a section for each problem.

Problem 1: My median

- a) Write an R function called `my.median`. This function should take a single parameter (a vector) and return the median of that vector. Write this function without using the built-in R command `median`. Provide the code for this function.

(4 points)

- b) Consider the stock prices in the file *AS-N100.tsv* provided in the archive for week 3. These data involve stock prices for 27 symbols (in the column *ticker*). Compute your student number modulo 27 and add one, call this value a (i.e., a is a number between 1 and 27 inclusive). Imagine a list of the 27 symbols in alphabetical order. You will examine the a -th symbol in this list: You may find the symbol using the R code `sort(unique(data$ticker))[a]`. Compute the median opening price of the symbol you examine over all rows in *AS-N100.tsv* involving that symbol, using your `my.median` function. Provide all code and output.

(2 points)

Problem 2: X marks the spot

- a) The image *Figure03.png* (provided in the archive containing this lab) is a satellite photo of Vancouver and the surrounding area. In this problem, you will mark the location of a library on this image automatically

using code. The upper left hand corner of this image has approximate GPS coordinates 49.410705,-124.217671. The lower right hand corner of this image has approximate GPS coordinates 47.929083,-121.994887. Consider the file *libraries.json* provided in the archive for week 3. This file contains information about 21 branches of the Vancouver public library. Write R code to display *Figure03.png*, and to mark an 'X' symbol on the GPS coordinates of the b -th library branch, and to print the name and address of the library branch directly below the 'X'. Here, b is your student number modulo 21 plus one (i.e., b is a number between 1 and 21 inclusive). Note that after loading the library `rjson` and loading *libraries.json* using `libraries = fromJSON(file = "libraries.json")`, the coordinates of the b -th branch can be accessed with: `libraries[["features"]][[b]][["geometry"]]$coordinates`. And the branch name and address can be accessed with: `libraries[["features"]][[b]][["properties"]]$maptip`. Provide your code, and the resulting display.

(4 points)