**Lab 3: Conditionals and Loops**

**Instructions**

* Create a Quarto file called “Lab 3: Conditionals and Loops”
* Copy the questions/prompts with the numbers/letters into the markdown file as text (i.e., in between code chunks, without any #). Use a header for each question #.
* Provide the code responses into code chunks directly beneath the questions (or beneath the text if the question requires both verbal and code answers).
* Submit both a knitted .html (or .docx or .pdf) file and your .qmd file to ELMS before 11:59pm.
* *See ‘lab assignment demo’ file (.qmd) on ELMS or Jupyter for an example.* *Do not directly edit this file, instead create your own markdown file, copy the content from the demo and edit that.*
* **Write code to implement the described functionality *from scratch*. You cannot use any package, library, or built-in function that answers the bulk of the question for you. For both questions, you must find the answers using only *for loops* and *if statements*.**

**Question 1**

a.) Create a vector of numbers called ‘temperature’. For example, temperature might be defined like this (but it could have any numbers as long as there are at least 10 of them): temperature <- c(72, 78, 85, 80, 92, 86, 79, 100, 20,109)

b.) Find the maximum number of the vector and store the result in a variable called ‘temperature\_max’. You cannot use the max() command, range(), or anything else. (Hint: You may need to set temperature\_max to a particular value outside the loop.)

c.) Explain in your own words how you solved that problem.

d.) After setting temperature\_max as appropriate, in a new code chunk, print the statement “Temperature maximum is greater than 50” if temperature\_max is greater than 50. If not, print “Temperature maximum is not greater than 50”.

**Question 2**

a.) Create a *matrix* of numbers in a variable called ‘rating’. It can be any numbers you want as long as it’s *at least* three rows and three columns.

b.) Find the maximum number of the matrix and store the result in a variable called ‘rating\_max’. For the purposes of this exercise you cannot first convert the matrix to a vector if you know how to do this. You must operate on the matrix itself. Remember, the matrix can have *any* set of numbers in it, but your solution must generalize to whatever real numbers can be in any matrix of any size. (Hint: You may need to nest a certain command.)

c.) Explain in your own words how you solved that problem.

d.) After setting rating\_max as appropriate, in a new code chunk, print the statement “Maximum is greater than 5” if rating\_max is greater than 5. If not, print “Maximum is not greater than 5”.