Algorithms and Data Structures Coursework

Contents

[Part 1 – Bacterial Frequency Table 2](#_Toc120716353)

[Part 2 – Connect 4 3](#_Toc120716354)

[Part 3 – Potato Competition 4](#_Toc120716355)

[Part 4 - Recursion 5](#_Toc120716356)

# Part 1 – Bacterial Frequency Table

For this challenge, I need to create a program that allows the user to enter the lengths of bacteria, in the range of 1 -> 800 exclusive. There are 4 ranges the lengths can go into; <200, 200-399, 400-599, 600-799, all inclusive. When the user enters a value > 800, the entered values will be displayed as follows:

The number of bacteria lengths entered for each range, the total length of all bacteria in each range, the percentage out of all entered lengths each range represents, the mean length of bacteria, the maximum length of bacteria and the minimum length of bacteria.

My initial thought is that the program will need to be in a loop, the user will be able to enter as many values as they want, while their input is less than 800. Every value that the user enters will have to go through a checklist of conditions to determine which range the value fits into.

do

print “Enter bacteria length”

userInput = input

if userInput >= 800

continue

else

range1 = 0

range2 = 0

range3 = 0

range4 = 0

if userInput <200, range1 += 1

else if userInput >=200 and <400, range2 += 1

else if userInput >=400 and <600, range3 += 1

else if userInput >=600 and <800, range4 += 1

while userInput < 800

If the input is greater than or equal to 800, it will continue straight to the condition check, leaving the loop. Else, there are 4 conditions that the input will be checked against, and if the input fits into one of these, that range will go up by 1. I chose to do this in a do while loop, as this loop will always be entered, and the condition is checked after the first iteration.

# Part 2 – Connect 4

# Part 3 – Potato Competition

# Part 4 - Recursion