

# CSEE 4119: Computer Networks, Spring 2014

## Programming Warm-Up

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A) *Objective of this question:*

Array manipulation is going to play an important role. You may (or will!) need this for various purposes in your program (like maybe defining your packet structure?). Also, using multiple threads (though some of you may consider it as unnecessary) when a server has to “serve” multiple clients is a good practice (Yes, the first programming assignment is going to be single server, multiple clients!). So yes, given this, try the following question!

*Question:*

Perform merge sort. When splitting the array and sorting the two halves, use two child threads handle the two halves. (What is merge sort? - <http://www.personal.kent.edu/~rmuhamma/Algorithms/MyAlgorithms/Sorting/mergeSort.htm>)

*Modifications:*

Split the array at an arbitrary point to and analyze the effect on threads. (Idea, how fast does the thread serving the smaller array perform in comparison to the other? Are there any functions related to “time” that you can use to determine this? May be getting your current system time will help!).

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B) *Objective of this question:*

Data => Strings! So yes, you need strings to handle a lot of things in packets! So lets' try and work on strings!

*Question:*

Consider the following array of strings:  
“computer networks”, “computer”, “network”, “net”, “columbia university”,  
“columbia”, “united states of america”, “united”, “united states”

Write identify if any string is a suffix of any other string in the array. Delete all the suffix strings from the array

a. Using inbuilt functions

So yes, programming languages like Java come with ready-made functions that you can use. Is there a function that checks if one string is a substring of another? Well, you should know!

b. Without using inbuilt functions

Well, using in-built functions was easy! What if we did not have such functions? What if you had to write the code from scratch? Well, it turns out that it's not very hard!

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**NOTE:**

A) It is recommended that you select one of the following programming languages and stick to it for all your assignments.

1. Java
2. Python
3. C/C++

B) This assignment WILL NOT be graded. Hence, no submissions are required. This is just for your practice.

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