Assignment 1

Bioinformatics (CIS 455)

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Problem 1-1 Jones & Pevzner, Problem 2.1

1.

We are going to write the pseudocode for an algorithm, that given a list of n numbers, returns the largest and smallest number in that list.

Algorithm 1 Finding largest and smallest numbers

for n in number list **do**
    if $n < min$ **then**
        $min = n$
    end if
    if $n > max$ **then**
        $max = n$
    end if
end for
Return max and min

Algorithm 2 My implementation

while $S_{assign} < N_{pos}$ & $S_{check} < n$ & student s hasnt proposed to all $h_i \in s_{pref}$ **do**
    Try to assign to that student a hospital in his preference list
    if $n_{assign}(h_i) < n_{avail}(h_i)$ **then**
        Student s is assigned to hospital h_i
    else if $n_{assign}(h_i) \geq n_{avail}(h_i)$ **then**
        Check $h_{pref}(h_i)$
        if student s is higher in the list than any student $s_i \in S$ **then**
            Least prefered student s' in h is now free, and will try to be reassigned
            Student s is now assigned to hospital h_i
        else if Student s is not higher in h_{pref} than any $s_i \in h_{pref}(h_i)$ **then**
            Student s remains free
        end if
    end if
end while
Return the set of hospitals and assigned students to each hospital.