

## Final Exam

ESE 124/EEO 124 – programming Fundamentals

Summer 2023

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Q1:[20pts]

Finding the Index of First Unique Character in a String

Q2:[40pts]

Use a stack to order a sequence of floating point numbers in increasing order of their values. The values are read one by one from the keyboard. Every new number is saved in the stack. Numbers are read until the user enters '#'. Then, the values stored in the stack are displayed in the desired order.

Q3:[40pts]

A hotel manager has to process **N** advance bookings of rooms for Aug 2023. His hotel has **C** rooms. **C** is a constant for the program. Bookings contain an arrival date and a departure date. The program should solve the following requirements:

- All dates of the **N** advance bookings are read from an input file. The value of **N** is found on the first line of the input file. The other lines include two values, one value for the arrival day (e.g., 8052023) and one value for the departure day (e.g., 8092023). The first one or two digits of a value represent the month, then two digits are for the day (i.e. 05 or 23), and 4 digits are for the month. [ **10 points** ]
- The information about arrival and departure date should be stored in an 1D array, where each element of the array stores the two dates. Use a dynamic 1D array of size **N**. [ **10 points** ]
- The hotel manager wants to find out whether there are enough rooms in the hotel to satisfy the demand. Saved output file and display the dates that can be satisfied [ **10 points** ] and the dates that cannot be satisfied [ **10 points** ].

Q3:

input data:

C: a number of the room

N: Advanced booking number from the input file (input.txt).

input.txt (sample)

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08142023 08152023

08112023 08252023

08012023 08152023

assume:

if  $C = 2$

output file (output.txt)

Aug 1. Satisfied

Aug 2. Satisfied

...

Aug 14 unsatisfied

Aug 15 unsatisfied

Aug 16 satisfied

...

Aug 31 satisfied