

CSE 332: Data Structures and Parallelism

Exercises (Data Structures)

Directions: *Submit your solutions on **Gradescope**. You must submit a pdf file.*

EX10. You're #1 (20 points)

The input to this problem consists of a sequence of 7-digit phone numbers written as simple integers (e.g. 5551202 represents the phone number 555-1202). The sequence is provided via an `Iterator<Integer>`. Note that you do not get an array containing these phone numbers and you cannot go through the iterator more than once. The sequence is potentially too large to fit in the memory limit you are allowed for this problem so be careful about what data structures (if any) you use. No phone number appears in the input more than once. You may assume that phone numbers will not start with 0, although they may contain zeroes otherwise.

Write precise pseudocode for a method that prints out the phone numbers (as integers) in the list in ascending order. Your solution must not use more than **2 MB** (where $\text{MB} = 10^6$ bytes) of memory. Note that it may not use any other storage: files, hard drive, network, etc.) Be sure to examine the [handout on writing proper pseudocode for this course](#).

In your pseudocode you may **ONLY** declare variables and arrays of these unsigned data types (these are not real Java data types): `bit` (1 bit), `byte` (8 bits), `short` (16 bits), `int` (32 bits), `long` (64 bits). You may not use other data structures. **Explain why your solution is under the 2 MB limit. We will not grade this problem without an explanation of why your code is under the 2MB limit.**