

## CSE332 Week 7 Section Worksheet

For these problems you don't need to write pseudo-code – just describe what to do at the sequential cut-off step, and how to merge results.

1.
  - a. Given a large array of integers, describe a fork-join program to compute the number of elements that are less than 7.
  - b. Given a large array of strings (each element is a string of relatively small length), describe a fork-join program that counts the number of elements that exactly match the string “parallel”.
  - c. Given a large array of integers, return ‘true’ if there are an even number of even numbers, or ‘false’ if not. For instance, on [1, 7, 4, 3, 6] it would return ‘true’, as we have 2 even numbers, whereas on [6, 5, 4, 3, 2, 1] it would return ‘false’.
2. Given an unsorted array of integers, describe how you would efficiently determine whether the list had duplicates; assume that you have access to a large number of processors.
3.
  - a. Describe a ForkJoin framework program that can traverse a balanced binary tree (but without the BST ordering property) to find whether a given element exists in the tree or not. This should have a  $\log(n)$  span, provided that the tree is balanced.
  - b. Describe a ForkJoin framework program that takes a propositional logic statement (ie,  $(P \wedge Q) \vee \neg R$ ), and an assignment of Boolean values to all variables (ie, P: true, Q: false, etc.), and efficiently evaluates whether the statement is true or false.