

Spring 2007 CSE 114 Coding Exam: Section 1

This exam has three problems. Program skeletons for each of these problems are available on the exam machines in the directory posted on the blackboard.

When you are finished, ask one of the exam proctors to grade your work. You have three tries to answer each problem. You will not receive credit for any problems that you have not shown us.

1. Linked Lists (40 points)

Define a `reverse()` method for the `CSE114List` class. This method should reverse the order of the nodes in the list so that the last node in the old list becomes the first node in the new list, the next-to-last node in the old list becomes the second node in the new list, and so forth. Your method should ultimately change the original list to its reversed version. You may add any helper methods that you need.

For example, if the original order of nodes was "apple", "banana", "grape", after calling `reverse()`, the list would contain "grape", "banana", "apple", in that order.

Sample method header: `public void reverse ()`

2. Arrays (30 points)

Add a method named `interleave()` to the `ArrayProblem` class. This method takes two integer arrays as its arguments and combines their contents in the following order:

1. The odd values in the first array, in the order they appear in that array
2. The odd values in the second array, in reverse order
3. The even values in the second array, stored in the order they appear in that array
4. The even values in the first array, stored in reverse order

Give the starting arrays `[1, 2, 3, 4, 5, 6, 8, 7]` and `[20, 21, 22, 23, 24, 25, 26]`, the resulting array would be `[1, 3, 5, 7, 25, 23, 21, 20, 22, 24, 26, 8, 6, 4, 2]`.

Your method should return the resulting array. You **MAY NOT** assume that the input arrays are of equal size!

Sample header: `public static int [] interleave (int [] first, int [] second)`

3. General Programming (30 points)

Complete the code for the `Balancer` program.