

# Programming Assignment 1

Due at the beginning of your discussion session on  
January 22-25, 2019

## Reading

Read Chapters 1, 2, 3, and 4 in Code Complete.

## Programming

In this assignment, you will write a method that finds the longest smaller prefix in two lists:

```
static <T>  
List<T> longestSmallerPrefix(List<T> a,  
                             List<T> b,  
                             Comparator<? super T> cmp)
```

A *prefix* of a list is a list containing the first entry (or entries) of the list. A smaller prefix is a prefix of list *a* whose elements are less than or equal to the corresponding element in list *b*. The method is supposed to return the smaller prefix of maximum length. Here are some examples:

<b>a</b>	<b>b</b>	<b>Longest smaller prefix</b>
1, 2, 4	1, 2, 3	1, 2
1, 2	2, 1	1
1, 2	1, 3, 2, 4	1, 2
1, 2, 3, 4	1, 2, 4	1, 2, 3
2, 1	1, 2, 3	Empty list
1, 3, 2, 4	1, 2, 3, 4	1

To make the assignment more exciting:

- If your CWRU network id ends with a 0, 3, 6, or 9, then your code should use `IteratorS`.
- If your CWRU network id ends with a 1, 4, or 7 then your code can use recursion but cannot use any type of loop (`while`, `do`, `for`, `for-each`, `Iterator`, `ListIterator`, `Streams`, etc.)
- In all other cases, your code should use `Streams`, but cannot use any other type of loop (`while`, `do`, `for`, `for-each`, `Iterator`, `ListIterator`, etc.) or recursion. (In Python, use streams or higher order functions.)

Write a program that reads two strings and prints out their longest common prefix. Create your own input data and run your program on it.

## Canvas Resource

The Course Document page contains links to some of the Java features that are helpful for this assignment, such as collections and streams.

## Submission

Additionally, submit an electronic copy of your program to canvas.

## Notes

If you are in a non-Java section, it is your responsibility to adapt these and future specifications to your programming language.

## Grading Guidelines

The first assignment is required but not graded.