CSE 332: Data Abstractions

Exercises (Parallelism)

Directions: Submit your solutions using gitlab. You must fill out the partners form for para to get access to your repository. Choosing a partner is disabled, because these exercises are solo.

EX19. filterEmpty (20 points)

Use the ForkJoin framework to write the following method in Java:

```java
public static int[] filterEmpty(String[] arr)

Returns an array with the lengths of the non-empty strings from arr (in order).

For example, if arr is ["", "", "cse", "332", ",", "hw", ",", "7", "rox"], then
filterEmpty(arr) == [3, 3, 2, 1, 3].
```

A parallel algorithm to solve this problem in $O(\lg n)$ span and $O(n)$ work is the following:

1. Do a parallel map to produce a bit set
2. Do a parallel prefix over the bit set
3. Do a parallel map to produce the output

In lecture, we wrote parallelPrefix together, and it is included in the gitlab repository. Rather than re-implementing that piece yourself, you should just use it. For the other two parts though, you should write them. Do not bother with a sequential cutoff for this exercise.