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CMPT440 - Formal Languages and Computability
Extra Credit Assignment

1. **Webber Chap. 18 Exercise 10**
   Taking the alphabet to be $\Sigma = \{a, b\}$, implement an enumerator class SigmaStar using pseudocode. Generate the strings in order of their length: first ϵ, then the strings of length 1, then the strings of length 2, and so on. Among strings of the same length, any fixed order is acceptable.

```
class SigmaStar {

    int n = 0
    int[] alphabet = {a, b}
    String current

    String next() {

        // empty string condition
        if (n == 0):
            n++
            return ""

        // generate next string based on the last string
        String result = current

        // loop through string from right to left
        for (int i = n-1; i >= 0; i--):
            if (current[i] == 'b'):
                // carry b over to next position
                current[i] = 'a'
            else
                // increment current position and break
                current[i] = 'b'
                break

        // Check if length needs to be incremented
        if current[0] == 'a':
            n++
            // reset current string to all 'a's of length n
            current = 'a' * n

        return result

        // E, a, b, aa, ab, ba, bb, aaa, aab, aba, abb, baa, bab, bba, bbb, aaaa...
    }
}
```