

University of Illinois at Urbana-Champaign  
Dept. of Electrical and Computer Engineering

## ECE 220: Computer Systems & Programming

Review:  
Letter Frequency Decomposition

## Let's Decompose the Problem

The task:

- given an **ASCII** string (terminated by **NUL**)
- count the occurrences of each letter (regardless of case), and
- the number of non-alphabetic characters.

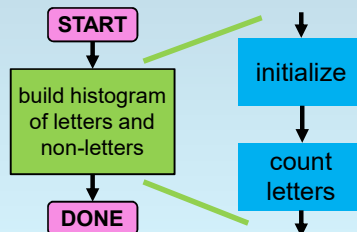
The high-level approach:

**initialize histogram to all 0s**  
**for each character in the string**  
**increment the appropriate histogram bin**

## The First Step: Break the Task into a Sequence of Two

The first decomposition step is clear from the high-level approach.

We break our task into a sequence of two subtasks.



## The Second Step: Count by Iterating Over Characters

Next, break down counting into an iteration.

When is the iteration done?

