

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

ECE 220: Computer Systems & Programming

Review: Letter Frequency Coding

Review the Problem to Be Solved

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

Where Are the Pieces in Memory?

Let's start with some notes about
where we want to store information

STRING the start of the string
x3000 the start of our code
HIST non-alpha histogram bin
HIST + 1 to 26 alpha bins A to Z (in order)

What Shall We Keep in the Registers?

For the counting part, we will
use registers as follows

R0 histogram pointer (HIST)
R1 string pointer (moves)
R2 current character from string
R3, R4, R5 ASCII constants (to be chosen)
R6 temporary