CS19001: Programming and Data Structures Laboratory
Assignment No. 8 (Pointers and Dynamic Memory Allocation)
Date: 11-October-2019

Problem Statement:

Lory, the elder sister of Alice, also lived nearby to Alice's home in the Wonderland city. In the weekends, Lory used to visit Alice's home in the afternoon to play various word games. In one such Sunday afternoon, they together wrote few random words and tried to get out some statistics manually of the letters/alphabets appearing in their words. They have to invest sufficient time to find these statistical features of the words. However, since you are proficient in C programming language, you can always write a C-program to simulate exactly what they did. You may to do the following:

- Dynamically allocate a 2-D character array comprising N words and each word can be of M maximum length.
- Read the N words from the user as input and store them in the array initialized. Note that, words may contain capital as well as small letters (but only alphabets).
- Lexicographically sort (as found in Dictionary) the 2-D array and print all the words in that order.
- Display the number of words that are of length between 1-2 letters, 3-5 letters, 6-10 letters and larger than 10 letters.
- Print the total number of letters, vowels, consonants, capital and small letters present in the input words.
- Find and display the distribution (percentage) of the letters `a` to `z` in proper format by considering all the words together. Here, treat the capital and small letters of the alphabets as similar while counting.
- Find all duplicate words, remove them, bring the succeeding words forward and then display again this updated sorted (lexicographically) list of words.

Note: *Each point/bullet mentioned above MUST be implemented in a separate function called from* `main`() *routine.*

Example Inputs/Outputs:

```
Enter Number of Words: 20
Enter Maximum Length of Words: 30
Enter 20 Words into Words-Array: How can a Quick Brown Fox jumps over the Lazy Dog and it did not Notice because of the Unmindfulness

+++ Word Statistics +++

-- Sorted 20 Words from Words-Array --
 a, and, because, Brown, can, did, Dog, Fox, How, it, jumps, Lazy, not, Notice, of, over, Quick, the, the, Unmindfulness,

-- The Word Length Statistics --
Number of Words with Length 1-2: 3
Number of Words with Length 3-5: 14
Number of Words with Length 6-10: 2
Number of Words with Length larger than 10: 1

-- The Alphabet Distribution --
Total Number of Letters Present = 81
Total Number of Vowels Present = 30
Total Number of Consonants Present = 51
Total Number of Capital Letters Present = 8
Total Number of Small Letters Present = 73

-- The Percentage Distribution of the Letters a-z --
a [   6 % ] : ======
b [   2 % ] : ==
c [   5 % ] : =====
d [   6 % ] : ======
e [   9 % ] : =========
f [   4 % ] : ====
g [   1 % ] : =
h [   4 % ] : ====
i [   6 % ] : ======
j [   1 % ] : =
k [   1 % ] : =
l [   2 % ] : ==
m [   2 % ] : ==
n [  10 % ] : ==========
o [  10 % ] : ==========
p [   1 % ] : =
q [   1 % ] : =
r [   2 % ] : ==
s [   5 % ] : =====
t [   6 % ] : ======
u [   6 % ] : ======
v [   1 % ] : =
w [   2 % ] : ==
x [   1 % ] : =
y [   1 % ] : =
z [   1 % ] : =

-- Duplicate Words --
 the
-- Unique Sorted 19 Words from Words-Array --
 a, and, because, Brown, can, did, Dog, Fox, How, it, jumps, Lazy, not, Notice, of, over, Quick, the, Unmindfulness,
```

Submit a single C source file. Do not use global/static variables.