

Assignment Set 5

1. **Sorting Strings.** Write a C function, `sort(char *arr[], int n)`, that sorts an array, `arr[]`, of `n` strings. Write a C program, which reads text from a file, `inp.txt`, and does the following:
 - (a) It prints the number of paragraphs in the text. A paragraph is detected by two consecutive *newline* (that is, '\n') characters.
 - (b) It prints the total number of lines in the text.
 - (c) It prints the total number of words in the text.
 - (d) It uses the function `sort()` to sort the words in alphabetic order, and then print it from `main()`.
 - (e) It dynamically allocates a 2-dimensional array `arrange[][]` of character pointers. The array has 10 columns and $\lceil \frac{N}{10} \rceil$ rows, where `N` is the number of words in the text. Your program must read the words in the order in which they appear into the array, `arrange[][]`, with 10 words in each row. It then opens a file, `op.txt`, prints the first word of each row in a line, followed by the second word of each row in the next line, and so on. Suppose the input text is:

To decipher it the recipient has to work out the column lengths by dividing the message length by the key length. Then he can write the message out in columns again then re-order the columns by reforming the key word.

Columnar transposition continued to be used for serious purposes as a component of more complex ciphers at least into the 1950s.

Then the words are arranged in the array, `arrange[][]`, as follows (rows of 10 words each):

To decipher it the recipient has to work out the column lengths by dividing the message length by the key length. Then he can write the message out in columns again then re-order the columns by reforming the key word.

Columnar transposition continued to be used for serious purposes as a component of more complex ciphers at least into the 1950s.

Finally, the rearranged text is printed from the array, `arrange[][]`, column-wise as follows:

To column length again Columnar a 1950s.
 decipher lengths Then then transposition component
 it by he re-order continued of
 the dividing can the to more
 recipient the write columns be complex
 has message the by used ciphers
 to length message reforming for at
 work by out the serious least
 out the in key purposes into
 the key columns word as the