D1265154 Assignment2 report 曾郁珊 Mina

The objective of this program is to analyze a text file named "Gift_of_Magi.txt" containing English text. The program performs various analyses on the text, including counting the total number of characters, identifying contiguous letter sequences, counting occurrences of vowels, and printing the first 800 characters of the text. This report outlines the challenges encountered during the development of the program and the corresponding solutions.

Challenges Faced and Solutions

1. Dynamic Memory Allocation: One of the challenges encountered was managing dynamic memory allocation for the text buffer. Initially, the buffer size was fixed, but it needed to be dynamically resized to accommodate large text files. To address this, the malloc() and realloc() functions were used to allocate and reallocate memory dynamically as needed.

2. File Handling: Another challenge was reading and processing the input text file efficiently. The program needed to read characters from the file, convert them to uppercase, and perform various analyses. The fgetc() function was used to read characters from the file, and file pointers were managed to handle input and output operations effectively.

3. String Manipulation: Analyzing contiguous letter sequences required efficient string manipulation techniques. The strspn() function was utilized to find the length of contiguous letter sequences, and the character pointer was manipulated to navigate through the text efficiently.

4. Vowel Counting: Counting occurrences of vowels posed a challenge due to the need to identify and differentiate between different vowel characters ('A', 'E', 'I', 'O', 'U'). The strpbrk() function was employed to locate vowels within the text, and a switch statement was used to increment the corresponding vowel counts.