assgn2_D1171708 Brian

```
datain = fopen("Gift_of_Magi.txt", "r");
if (datain == NULL) {
    printf("File not found\n");
    return -1;
}
buffer = (char*)malloc(512 * sizeof(char));
while ((c = fgetc(datain)) != EOF) {
    if ((c >= 'a' && c <= 'z') || (c >= 'A' && c <= 'Z')) {
        if (length >= extend) {
            extend = extend + 512;
            char *temp = realloc(buffer, extend * sizeof(char));
            buffer = temp;
        }
        if (c >= 'a' && c <= 'z') {
            c = c-32;
        }
        buffer[length++] = c;
```

In this assignment. Firstly, I use fopen to read the content of the .txt file and then allocate 512 memory size to the buffer. Then, use the fgetc() to get each character to the buffer and verify whether the buffer is full or not, if so extend 512 more size to the buffer. Last, check whether the characters are upper or lower, and convert to the upper by minus 32.

```
if (buffer[length-1] != buffer[length-2]&&buffer[length-2] != buffer[length-3]){
    one++;
}
if (buffer[length-1] == buffer[length-2]&&buffer[length-2] != buffer[length-3]){
    two++;
}
if (buffer[length-1] == buffer[length-2]&&buffer[length-2] == buffer[length-3]){
    three++;
}
if (buffer[length-1] == buffer[length-2] && buffer[length-2] == buffer[length-3] && buffer[length-3] == buffer[length-4]){
    four++;
}
```

Use buffer content to check how many contiguous character letters.

```
if (c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U' || c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u') {
    if (c=='A'||c=='a'){
        as = as+1;
    }
    else if(c=='E'||c=='e'){
        es = es+1;
    }
    else if(c=='I'||c=='i'){
        is = is+1;
    }
    else if(c=='O'||c=='o'){
        os = os+1;
    }
    else if(c=='U'||c=='u'){
        us = us+1;
    }
}
```

Also, calculate the occurrence of vowels at the same time.

```
fclose(datain);
buffer[length] = '\0';
dataout = fopen("result.txt", "w");
fwrite(buffer, sizeof(char), strlen(buffer), dataout);
fclose(dataout);
```

Use fwirte to output the result to the result.txt.

```
printf(">>>> Total input English characters: %d.\n",length);
printf("*********************************************************************\n\n");
printf(">>>> The first 800 characters are:\n");
int print_length = length < 800 ? length : 800;
for (i = 0; i < print_length; i++) {
    putchar(buffer[i]);
    if ((i + 1) % 80 == 0)
        putchar('\n');
}
printf("\n*********************************************************************\n\n");
printf(">>>> The number of contiguous letter(s) are:\n");
printf("One character: %d\n",one);
printf("Two contiguous characters: %d\n",two);
printf("Three contiguous characters: %d\n",three);
printf("Four or more contiguous characters: %d\n",four);
printf("**** Total characters counts: %d.\n",length);
printf("*********************************************************************\n\n");
printf(">>>> The number of occurences of vowels:\n");
printf("Vowel 'A': %d\n",as);
printf("Vowel 'E': %d\n",es);
printf("Vowel 'I': %d\n",is);
printf("Vowel 'O': %d\n",os);
printf("Vowel 'U': %d\n",us);
printf("**** Total vowel count: %d",as+es+is+os+us);
free(buffer);

return 0;
```

Print out the first 800 characters by using the for loop. Then print out the rest of result.