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Homework 6

11.16) Outputting Character Count to a File

Code:

```c
#include <stdio.h>
#include <stdlib.h>
#include <ctype.h>
#define MAX_LEN 1000
#define ASCIIstart 97
#define ASCIIend 122

int main(void) {

    // initialize variables
    FILE *inpfPtr, *cfPtr;
    int c;
    unsigned int sum;
    char file_name[MAX_LEN];

    // ask for file name to user
    printf("Enter a file name: ");
    scanf("%s", file_name);

    // check if file can be opened and a file to write is created
    if ((cfPtr = fopen("count.dat", "w")) == NULL
    || (inpfPtr = fopen(file_name, "r")) == NULL) {
      puts("File could not be opened");
    }
    else {

    // open input file in read mode
    inpfPtr = fopen(file_name, "r");

    // write to output file
    fprintf(cfPtr, "Character");
    fprintf(cfPtr, "%8s", "Count\n");

    // check for lowercase english ASCII letters
    for (int i = ASCIIstart; i <= ASCIIend; i++)
    {
        // initiliaze sum for summation of each character
        sum = 0;
        // read file data with fgetc to control while loop
        c = fgetc(inpfPtr);

        while (c != EOF) {
            // get characters and make them lowercase
            c = tolower(fgetc(inpfPtr));
```

```
            // count the characters if they match
            if (c == i)
            {
                sum++;
            }
        }

        // write to the output file
        fprintf(cfPtr, "%-11c%u\n", i, sum);
        // rewind to the beginning in the text file
        rewind(inpfPtr);
    }
    // close files
    fclose(cfPtr);
    fclose(inpfPtr);
    }
} // end function main
```

Output:

The file name is asked. Then number of each character is written to “count.dat” file at the same directory, as it is shown below. A text file which contains all of the complete works of William Shakespeare is given as the input file. If an invalid file is given as input, program raises an error message.

```
Enter a file name: shakespeare.txt
```

Error message:

```
Enter a file name: non-exist-file
File could not be opened
```

count.dat

	Character	Count
2	a	289150
3	b	61956
4	c	88185
5	d	149462
6	e	447204
7	f	80516
8	g	68199
9	h	236868
10	i	253990
11	j	4779
12	k	35408
13	l	170019
14	m	111452
15	n	243262
16	o	314600
17	p	58464
18	q	3582
19	r	237864
20	s	248989
21	t	329774
22	u	128947
23	v	37569
24	w	89390
25	x	5294
26	y	94370
27	z	1631