COMPILER DESIGN LAB-1 SUBMISSION

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SECTION : CSE A1
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WEEK 1

Question 1:
1. To count the number of lines and characters in a file.

```
#include
#include
int main(int argc, char *argv[]) {
 FILE *file;
 char ch;
 int characters = 0;
 int lines = 0;
 //This is to handle imjproper input format
 if (argc != 2) {
 printf("Usage: %s \n", argv[0]);
 return 1;
 }
 //Opening File 1
 file = fopen(argv[1], "r");
 if (file == NULL) {
 printf("Error: Could not open file %s\n", argv[1]);
 return 1;
 }
 while ((ch = getc(file)) != EOF) {
 characters++;
 if (ch == '\n') {
 lines++;
 }
 }
 fclose(file);
 printf("Lines: %d\n", lines);
 printf("Characters: %d\n", characters);
 return 0;
}
```

Output:

file1.txt

```
Line 1 from File One
Line 2 from File One
Line 3 from File One
Line 4 from File One
Line 5 from File One
Line 6 from File One
Line 7 from File One
Line 8 from File One
```

```
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$ gcc l1q1.c -o l1q1
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$ ./l1q1 file1.txt
Lines: 8
Characters: 168
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$
```

Question 2:
To reverse the file contents and store in another file. Also display the size of file using file handling
function.

Files:

input.txt

```
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
```

```c
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char *argv[]) {
    FILE *source, *target;
    long size;
    char ch;

    if (argc != 3) {
        printf("Usage: %s <filename1> <filename2> \n", argv[0]);
        return 1;
    }

    source = fopen(argv[1], "r");
    if (source == NULL) {
        printf("Error: Could not open file %s\n", argv[1]);
        return 1;
    }

    target = fopen(argv[2], "w");
    if (target == NULL) {
        printf("Error: Could not open file %s\n", argv[2]);
        fclose(source);
        return 1;
    }

    fseek(source, 0, SEEK_END);
    size = ftell(source);

    printf("Size of file: %ld bytes\n", size);

    for (long i = size - 1; i >= 0; i--) {
        fseek(source, i, SEEK_SET);
        ch = getc(source);
        putc(ch, target);
    }

    fclose(source);
    fclose(target);

    printf("File contents reversed successfully.\n");

    return 0;
}
```

Output:

```
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$ gcc l1q2.c -o l1q2
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$ ./l1q2 input.txt output.t
xt
Size of file: 45 bytes
File contents reversed successfully.
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$
```

output.txt

```
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```

Question 3:
That merges lines alternatively from 2 files and stores it in a resultant file.

Files:

file1.txt

```
Line 1 from File One
Line 2 from File One
Line 3 from File One
Line 4 from File One
Line 5 from File One
Line 6 from File One
Line 7 from File One
Line 8 from File One
```

```c
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char* argv[]) {
    FILE *file1, *file2, *result;
    char line1[256], line2[256];

    if (argc != 4) {
        printf("Usage: %s <filename1> <filename2> <filename3> \n", argv[0]);
        return 1;
    }

    file1 = fopen(argv[1], "r");
    if (file1 == NULL) {
        printf("Error: Could not open file %s\n", argv[1]);
        return 1;
    }

    file2 = fopen(argv[2], "r");
    if (file2 == NULL) {
        printf("Error: Could not open file %s\n", argv[2]);
        fclose(file1);
        return 1;
    }

    result = fopen(argv[3], "w");
    if (result == NULL) {
        printf("Error: Could not open file %s\n", argv[3]);
        fclose(file1);
        fclose(file2);
        return 1;
    }

    while (1) {
        // take one line from file1 nd put it in result
        if (fgets(line1, sizeof(line1), file1) != NULL) {
            fputs(line1, result);
        }
        // take one line from file2 nd put it in result
        if (fgets(line2, sizeof(line2), file2) != NULL) {
            fputs(line2, result);
        }

        if (feof(file1) && feof(file2)) {
            break;
        }
    }

    fclose(file1);
    fclose(file2);
    fclose(result);

    printf("Files merged alternately\n");

    return 0;
}
```

file2.txt

```
Line 1 from File Two
Line 2 from File Two
Line 3 from File Two
Line 4 from File Two
Line 5 from File Two
Line 6 from File Two
Line 7 from File Two
Line 8 from File Two
```

CLI:

```
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$ gcc l1q3.c -o l1q3
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$ ./l1q3 file1.txt file2.tx
t result.txt
Files merged alternately
CD_A1@CL3-02:~/Desktop/230905010_DevadathanNR_CS_A1/01_LAB$
```

Result:

```
Line 1 from File One
Line 1 from File Two
Line 2 from File One
Line 2 from File Two
Line 3 from File One
Line 3 from File Two
Line 4 from File One
Line 4 from File Two
Line 5 from File One
Line 5 from File Two
Line 6 from File One
Line 6 from File Two
Line 7 from File One
Line 7 from File Two
Line 8 from File One
Line 8 from File Two
```