17. Write a C program for implementing a Lexical Analyzer to Scan and Count the number of characters, words, and lines in a file.

CODE:

#include <stdio.h>

#include <stdlib.h>

#include <ctype.h>

void analyzeFile(const char\* filename) {

FILE\* file = fopen(filename, "r");

if (file == NULL) {

printf("Error opening file.\n");

exit(1);

}

int characters = 0;

int words = 0;

int lines = 0;

char c;

int inWord = 0;

while ((c = fgetc(file)) != EOF) {

characters++;

if (c == '\n') {

lines++;

}

if (isspace(c)) {

if (inWord) {

words++;

inWord = 0;

}

} else {

inWord = 1;

}

}

// If the last character in the file is not a space or newline, count the last word

if (inWord) {

words++;

}

fclose(file);

printf("Characters: %d\n", characters);

printf("Words: %d\n", words);

printf("Lines: %d\n", lines);

}

int main() {

char filename[100];

printf("Enter the filename: ");

scanf("%s", filename);

analyzeFile(filename);

return 0;

}

