**EX 13: C program that implements a Lexical Analyzer to count the number of characters, words, and lines in a given input text.**

**Aim:**

To write a C program that implements a Lexical Analyzer to count the number of characters, words, and lines in a given input text.

**Algorithm:**

1. **Start the program.**
2. Open the input file or take user input from the console.
3. Initialize counters for **characters, words, and lines**.
4. Read the file/input character by character.
5. **Increment the character count** for each character read.
6. **Increment the word count** when a space, newline, or punctuation separates words.
7. **Increment the line count** when a newline character ('\n') is encountered.
8. Print the final counts.
9. **End the program.**

**CODE:**

#include <stdio.h>

#include <stdlib.h>

#include <ctype.h>

int main() {

FILE \*file;

char filename[100], ch;

int characters = 0, words = 0, lines = 0;

int inWord = 0;

printf("Enter the filename: ");

scanf("%s", filename);

file = fopen(filename, "r");

if (file == NULL) {

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

return 1;

}

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

characters++;

if (ch == '\n') {

lines++;

}

if (isspace(ch) || ch == '\n' || ch == '\t') {

inWord = 0;

} else if (inWord == 0) {

inWord = 1;

words++;

}

}

fclose(file);

printf("\nFile Analysis Results:\n");

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

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

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

return 0;

}