**CSA1443-COMPILER DESIGN FOR INTRAPROCEDURAL ANALYSIS**

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**PROGRAM 5**

**Design a lexical Analyzer to find the number of whitespaces and newline characters using C.**

**Aim:**

The aim of this program is to design a **lexical analyzer** in C that counts the number of whitespace characters (spaces and tabs) and newline characters (\n) in a given input string or file. This program will process the input character by character and keep track of the counts for whitespace and newline characters.

**Code:**

#include <stdio.h>

#include <ctype.h>

void countWhitespaceAndNewlines(FILE \*fp) {

char ch;

int whitespaceCount = 0, newlineCount = 0;

// Read the file character by character

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

if (isspace(ch)) {

whitespaceCount++; // Increment for spaces and tabs

}

if (ch == '\n') {

newlineCount++; // Increment for newline characters

}

}

// Output the results

printf("Number of whitespace characters: %d\n", whitespaceCount);

printf("Number of newline characters: %d\n", newlineCount);

}

int main() {

FILE \*fp = fopen("input.txt", "r"); // Open the file

if (fp == NULL) {

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

return 1;

}

countWhitespaceAndNewlines(fp); // Call the function to count whitespaces and newlines

fclose(fp); // Close the file

return 0;

}

**Output:**

