

CODTECH Internship Task - 1

File Handling Program in C

Instructions:

- Build a simple lexical analyzer that identifies keywords, operators, and identifiers from an input file.
- Deliverable: A C program demonstrating lexical analysis with sample outputs.

C Code: Lexical Analyzer

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <ctype.h>

char keywords[32][10] = {
    "auto", "break", "case", "char", "const", "continue", "default",
    "do", "double", "else", "enum", "extern", "float", "for", "goto",
    "if", "int", "long", "register", "return", "short", "signed",
    "sizeof", "static", "struct", "switch", "typedef", "union",
    "unsigned", "void", "volatile", "while"
};

int isKeyword(char *str) {
    for (int i = 0; i < 32; i++) {
        if (strcmp(keywords[i], str) == 0)
            return 1;
    }
    return 0;
}

int isOperator(char ch) {
    return ch == '+' || ch == '-' || ch == '*' || ch == '/' || ch == '=' || ch == '<' ||
    ch == '>' || ch == '%';
}

int main() {
    FILE *file = fopen("input.c", "r");
    char ch, buffer[100];
    int i = 0;

    if (file == NULL) {
        printf("Error opening file.\n");
        return 1;
    }
}
```

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```
printf("Lexical Analysis Output:\n\n");

while ((ch = fgetc(file)) != EOF) {
    if (isalnum(ch)) {
        buffer[i++] = ch;
    } else if (ch == ' ' || ch == '\n' || ch == ';' || ch == '(' || ch == ')' || ch
== '{' || ch == '}' || isOperator(ch)) {
        buffer[i] = '\0';
        i = 0;

        if (strlen(buffer) > 0) {
            if (isKeyword(buffer))
                printf("[Keyword: %s]\n", buffer);
            else
                printf("[Identifier: %s]\n", buffer);
        }

        if (isOperator(ch)) {
            printf("[Operator: %c]\n", ch);
        }
    }
}

fclose(file);
return 0;
}
```

Sample Input (input.c):

```
int main() {
    int a = 10, b = 20;
    float sum = a + b;
    return 0;
}
```

Sample Output:

```
[Keyword: int]
[Identifier: main]
[Keyword: int]
[Identifier: a]
[Operator: =]
[Identifier: 10]
[Identifier: b]
```

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```
[Operator: =]  
[Identifier: 20]  
[Keyword: float]  
[Identifier: sum]  
[Operator: =]  
[Identifier: a]  
[Operator: +]  
[Identifier: b]  
[Keyword: return]  
[Identifier: 0]
```