Aaditiya Tyagi

2200290120001 CS6A

Compiler Design Lab 1: Parse String and file to find comment and the keywords in the program.

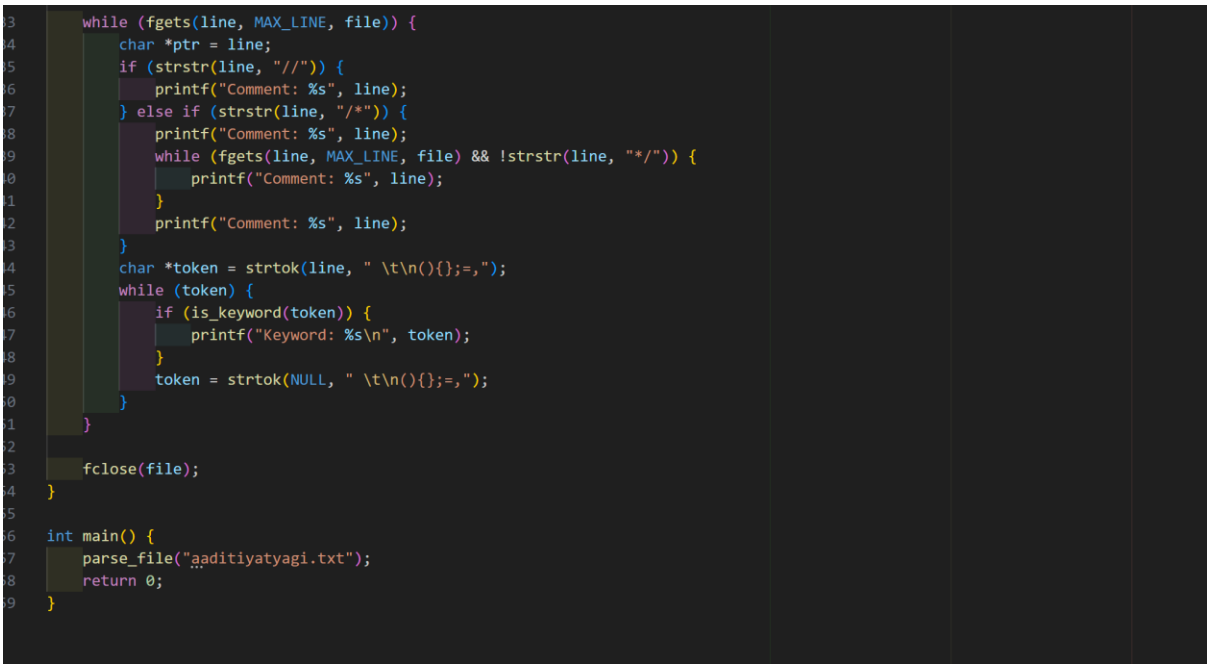
File parser:

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

#define MAX_KEYWORDS 32
#define MAX_LINE 256

const char *keywords[MAX_KEYWORDS] = {
    "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 is_keyword(const char *word) {
    for (int i = 0; i < MAX_KEYWORDS; i++) {
        if (strcmp(word, keywords[i]) == 0) {
            return 1;
        }
    }
    return 0;
}
void parse_file(const char *filename) {
    FILE *file = fopen(filename, "r");
    if (!file) {
        printf("Error opening file.\n");
        return;
    }

    char line[MAX_LINE];
    printf("Parsed Data:\n");
```



```c
    while (fgets(line, MAX_LINE, file)) {
        char *ptr = line;
        if (strstr(line, "//")) {
            printf("Comment: %s", line);
        } else if (strstr(line, "/*")) {
            printf("Comment: %s", line);
            while (fgets(line, MAX_LINE, file) && !strstr(line, "*/")) {
                printf("Comment: %s", line);
            }
            printf("Comment: %s", line);
        }
        char *token = strtok(line, " \t\n(){};=,");
        while (token) {
            if (is_keyword(token)) {
                printf("Keyword: %s\n", token);
            }
            token = strtok(NULL, " \t\n(){};=,");
        }
    }

    fclose(file);
}

int main() {
    parse_file("aaditiyatyagi.txt");
    return 0;
}
```

TXT File:

aaditiyatyagi.txt

```c
#include<stdio.h>
// This is a c program
int main(){
    printf("Hello World");
    string arr[] = {"if","IF","else","break"};

    for(int i =0;i<n;i++){
        if(arr[i]=="if"||arr[i]="else"||arr[i]=="break"){
            printf("%s",arr[i]);
        }
    }
}
```

Output:

```
[Running] cd "c:\Users\veert\OneDrive\Desktop\new\" && gcc parse.c -o parse && "c:\Users\veert\OneDrive\Desktop\new\"parse
Parsed Data:
Comment: // This is a c program
Keyword: int
Keyword: for
Keyword: int
Keyword: if
Comment: /* hello my name is aaditiya tyagi ,
Comment: I'm a student of cs departement KIET*/
[Done] exited with code=0 in 0.583 seconds
```

String Parser:

stringparse.c > main()

```c
#include <stdio.h>
#include <string.h>
#include <ctype.h>
#define MAX_KEYWORDS 32
const char *keywords[MAX_KEYWORDS] = {
    "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 is_keyword(const char *word) {
    for (int i = 0; i < MAX_KEYWORDS; i++) {
        if (strcmp(word, keywords[i]) == 0) {
            return 1;
        }
    }
    return 0;
}
void parse_string(const char *str) {
    printf("Parsed Data:\n");

    char buffer[256];
    strncpy(buffer, str, sizeof(buffer) - 1);
    buffer[sizeof(buffer) - 1] = '\0';

    char *comment = strstr(buffer, "//");
    if (comment) {
        printf("Comment: %s\n", comment);
        *comment = '\0';
    }
char *token = strtok(buffer, " \t\n(){};=,");
    while (token) {
        if (is_keyword(token)) {
            printf("Keyword: %s\n", token);
        }
        token = strtok(NULL, " \t\n(){};=,");
    }
}
int main() {
    const char *input_str = "int main() { return 0; } // This is a comment";
    parse_string(input_str);
    return 0;
}
```

Output:

```
[Running] cd "c:\Users\veert\OneDrive\Desktop\new\" && gcc stringparse.c -o stringparse && "c:\Users\veert\OneDrive\Desktop\new\"stringparse
Parsed Data:
Comment: // This is a comment
Keyword: int
Keyword: return

[Done] exited with code=0 in 0.469 seconds
```