Ahsanullah University of Science & Technology

Department of Computer Science & Engineering

CSE 4130
Formal Languages & Compilers Lab

Assignment No: 01

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Question:

A C source program with single and multiple line comments is given. As the first step toward compilation you need to remove the comments and white space (extra spaces, tabs and newline characters). Develop a program that takes as input file the given source program and produces a filtered file as stated above. The program must also display both the files.

Input File:

```
#include<stdio.h>

int     main(void)
{
// Single Line Comment

printf ("Hello");
/* Multi
   Line
        Comment
*/
printf("World");
return 0;
}
```

Source Code:

```
#include<bits/stdc++.h>
const int N = 100005;
char inp[N + 5];
bool is_keyword(char ar[]){
                if (strcmp(ar, "int") == 0){
                        return true;
                }
                if (strcmp(ar, "return") == 0){
                        return true;
                }
                if (strcmp(ar, "float") == 0){
                        return true;
                }
                if (strcmp(ar, "double") == 0){
                        return true;
                }if (strcmp(ar, "long") == 0){
```

```
                return true;
            }
            return false;
}
int main(){
    FILE *input_file = fopen("input.c", "r");
    FILE *out_file = fopen("output.c", "w");
    char c;
    int i = 0;
    while ((c = fgetc(input_file)) != EOF){
        inp[i] = c;
        i++;
    }
    inp[i] = '\0';
    char init[N + 5];
    strcpy(init, inp);
    char modify[N + 5];
    int flag = 0;
    int ind = 0;
    for (int i = 0; i < (int) strlen(inp); i++){
        if (inp[i] == '/' && inp[i + 1] == '/'){
            flag = 1;
        }
        if (flag == 0){
            modify[ind] = inp[i];
            ind++;
        }
        if (inp[i] == '\n'){
            flag = 0;
        }
    }
    modify[ind] = '\0';
    strcpy(inp, modify);
    int cnt = 0;
    ind = 0;
    for (int i = 0; i < (int) strlen(inp); i++){
        if (inp[i] == '/' && inp[i + 1] == '*'){
            cnt++;
        }
        if (cnt == 0){
```

```
                modify[ind] = inp[i];
                ind++;
            }
            if (inp[i] == '/' && inp[i - 1] == '*'){
                cnt--;
            }
        }
        modify[ind] = '\0';
        strcpy(inp, modify);
        ind = 0;
        char token[1000];
        for (int i = 0; i < (int)strlen(inp); i++){
            while (i < (int)strlen(inp) && inp[i] == ' '){
                i++;
            }
            int ti = 0;
            while (i < (int)strlen(inp) && inp[i] != ' ' && inp[i] != '\n'){
                token[ti++] = inp[i];
                i++;
            }
            token[ti] = '\0';
            for (int j = 0; j < (int) strlen(token); j++){
                modify[ind++] = token[j];
            }
            if (is_keyword(token) ){
                modify[ind++] = ' ';
            }
        }
        modify[ind] = '\0';
        strcpy(inp, modify);
        fprintf(out_file, "Actual source:\n\n");
        fprintf(out_file, "%s\n\n", init);
        fprintf(out_file, "Modified source:\n\n");
        fprintf(out_file, "%s\n", inp);
        return 0;
}
```

Output:

#include<stdio.h> int main(void) { printf ("Hello"); printf("World"); return 0; }