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IT250 Lab Assignment 4

Q1) To Recognize different tokens in the given input file : Keywords, Identifiers, Constants, Operators and Punctuations

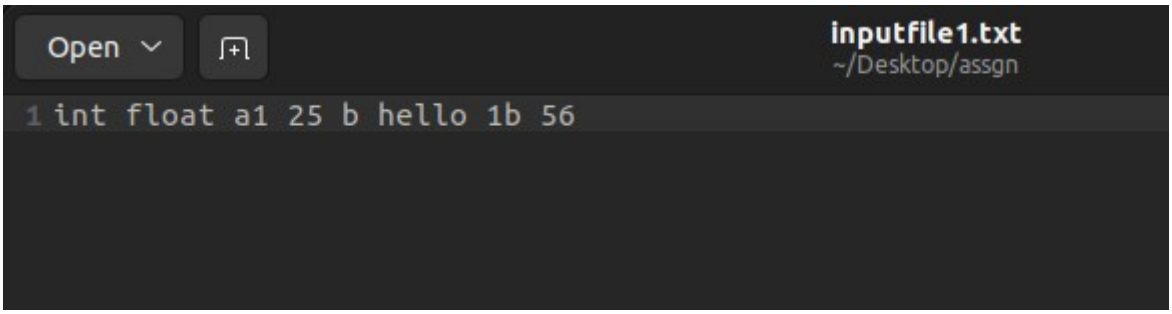
CODE

Note: This code takes file name as command line argument

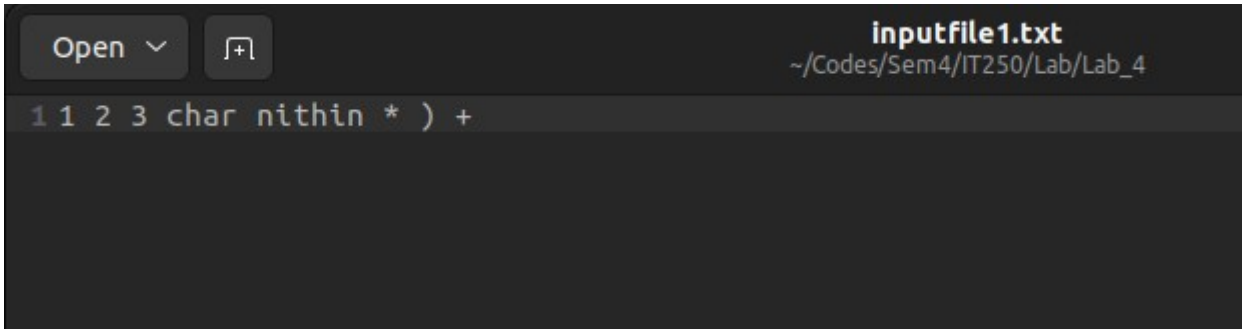
```
%{
#include <stdio.h>
int keywords = 0;
int numbers = 0;
int identifiers = 0;
int operators = 0;
int puncutations = 0;
int ignore = 0;
int newline = 0;
%}

%%

(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)[ \t]+ {keywords++;}

[0-9]+[ \t]+ {numbers++;}

[0-9]+[a-zA-Z_0-9]*[ \t]+ {ignore++;}

[a-zA-Z_][a-zA-Z0-9_]*[ \t]+ {identifiers++;}

[+|-|*|/|>|<|>=|<=|==|!=][ \t]+ {operators++;}

[{}().,;:%&|^!~=<>?][ \t]+ {puncutations++;}

[\n] {newline++;}

. {ignore++;}


%%
int yywrap(void){
    return 1;
}
```

```c
int main(int argc, char *argv[]) {
    if (argc != 2) {
        printf("Usage: %s <input_file>\n", argv[0]);
        return -1;
    }

    FILE *fp = fopen(argv[1], "r");
    if (!fp) {
        printf("Error: Cannot open file %s\n", argv[1]);
        return -1;
    }
    fseek(fp,0,SEEK_SET);
    yyin = fp;

    yylex();

    fclose(fp);

    printf("\nNumber of Keywords: %d", keywords);
    printf("\nNumber of Numbers: %d", numbers);
    printf("\nNumber of Identifiers: %d", identifiers);
    printf("\nNumber of Operators: %d", operators);
    printf("\nNumber of Puncutations: %d", puncutations);
    printf("\nTotal Number of Tokens are: %d\n", keywords + numbers + identifiers + operators + puncutations);

    return 0;
}
```

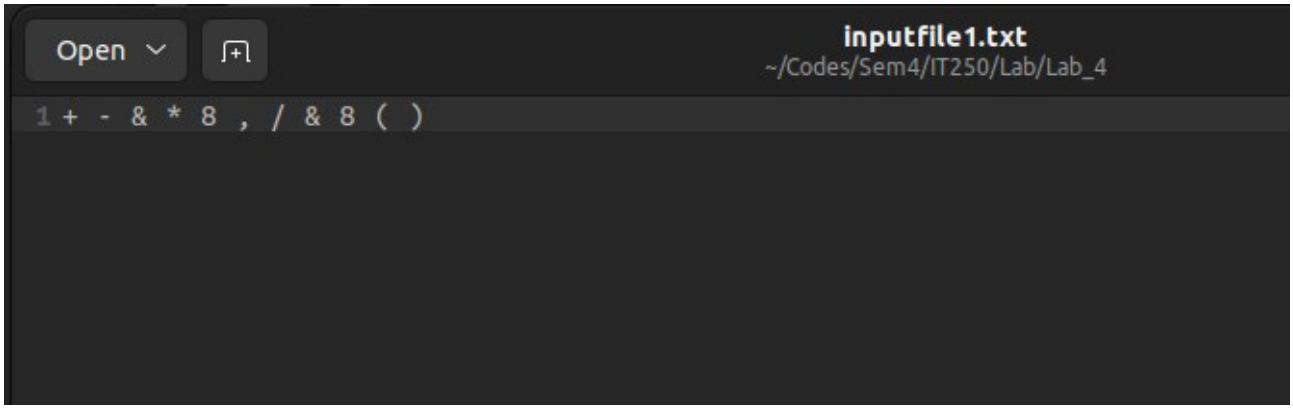
OUTPUT




```
student@HP-Elite600G9-08:~/Desktop/assgn$ lex 1.l
student@HP-Elite600G9-08:~/Desktop/assgn$ cc lex.yy.c
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out inputfile1.txt

Number of Keywords: 2
Number of Numbers: 2
Number of Identifiers: 3
Number of Operators: 0
Number of Puncutations: 0
Total Number of Tokens are: 7
student@HP-Elite600G9-08:~/Desktop/assgn$
```




```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ lex 1.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ ./a.out inputfile1.txt

Number of Keywords: 1
Number of Numbers: 3
Number of Identifiers: 1
Number of Operators: 2
Number of Puncutations: 1
Total Number of Tokens are: 8
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$
```



Q2) A new video about the recent developments in coding has been published on social media. After some time, it is seen that there are N comments added. Now from N comments the admin wants to know count C - the occurrences of the keyword K. He needs your help to find the value of C.

CODE

```
%{
#include <stdio.h>
#include <string.h>
int n;
int matches = 0;
char K[11];
int flag = 0;
%}


%%

[a-zA-Z_]+ {
    if (strstr(yytext, K) != NULL) {
        matches++;
    }
}

.* {flag = 1;}

%%

int yywrap(void){
    return 1;
}


int main()
{
    void solution(char K[11], char input[1000], char comments[100][1000]){
        yy_scan_string(input);
        yylex();
        return ;
    }

    char comments[100][1000];
    scanf("%d", &n);
    scanf("%s", K);
    for (int i = 0; i < n; i++) {
        char input[1000];
        scanf("%s", input);
        strcpy(comments[i], input);
        solution(K, input, comments);
    }
    if (flag == 1) printf("\n-1\n\n");
    else printf("\n%d\n\n", matches);
    return 0;
}
```

OUTPUT

```
student@HP-Elite600G9-08:~/Desktop/assgn$ lex 2.l
student@HP-Elite600G9-08:~/Desktop/assgn$ cc lex.yy.c
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
2
good
The_video_is_good
Informative

1
```

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ ./a.out
4
helpful
Most_expensive_topic_now_a_days
It_was_really_helpful
This_is_very_helpful_video
Productive_talk

2
```

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ ./a.out
2
usefull
#Most_wanted_and_usefull_video
Thanks a lot...

-1
```

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ lex 2.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_4$ ./a.out
3
virtue
Helped us
great channel!
Video is incredible

0
```