

## Session 1: Scanning and Filtering a Source Program

### I. OBJECTIVES

To develop a program which can filter comments and white space characters from a source program.

### II. DEMONSTRATION OF USEFUL RESOURCES

Extracting the sequence of occurrences of a specified character from a source program.

**Sample Input: datafile1.c**

```
datafile1.c
#include <stdio.h>
int main(void)
{
    FILE *p1, *p2; char c;

    p1 = fopen("datafile1.c", "r");
    p2 = fopen("parentheses.txt", "w");

    if(!p1) printf("\nFile can't be opened!");
    else {
        while((c = fgetc(p1)) != EOF) {
            if ((c == '(') || (c == ' '))
                fputc(c, p2); } }
    fclose(p1);
    fclose(p2);

    p2 = fopen("parentheses.txt", "r");
    while((c=fgetc(p2))!=EOF)
        printf("%c",c);
    fclose(p2);

    return 0;
}
```

**Output of the program:** 00000(( ))(( ))0000(( ))00

### III. LAB EXERCISES

1. Write a program to print the header files used in a source program.

**Sample Input:** *input.c*

```
#include <stdio.h>
int main()
{
    // printf() displays the string inside quotation
    printf("Hello, World!");
    return 0;
}
```

**Sample Output:** *stdio.h*

2. Write a program to add line numbers to a source program.

**Sample Input:** *input.c*

**Sample Output:**

```
1: #include <stdio.h>
2: int main()
3: {
4:     // printf() displays the string inside quotation
5:     printf("Hello, World!");
6:     return 0;
7: }
```

#### IV. ASSIGNMENT #1:

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 a file, the given source program, and produces a filtered file as stated above. **The program must also display both the files.**

**Sample Input:** *input1.c*

```
#include<stdio.h>

int  main(void)
{

// Single  Line Comment

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

**Sample Output:** *output.txt*

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