19CSE401 - Compiler Design

Lab Sheet 3

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1. Write a lex program to extract the tokens from a given C – program.

Input program:

```
#include<stdio.h>
main()
{
        int fact=1,n;
        for(int i=1;i<=n;i++)
        {
                fact=fact*i;
        }
        printf("Factorial Value of N is", fact); getch();
}
```

1.l

```
%option noyywrap

%{
    #include <stdlib.h>
    #include <stdio.h>
%}

String ["](.)+["]

Number [0-9]+

Identifier [a-z]([a-z]|[0-9])*

%%

"#include<stdio.h>" printf("<INCLUDE, %s>",  yytext);
"(" printf("<LBRACKET>");
")" printf("<RBRACKET>");
"++" printf("<INC>");
```

```
"=" printf("<ASSIGN>");
";" printf("<SEMI>");
"<=" printf("<LE>");
"{" printf("<LPAREN>");
"}" printf("<RPAREN>");
"*" printf("<MULT>");
"," printf("<COMMA>");
"int" printf("<INT>");
"for" printf("<FOR>");

{Identifier} printf("<ID,%s>", yytext);

{Number} printf("<NUM,%s>", yytext);

{String} printf("<STRING>");



%%

int main()
{
    FILE *f;
    f=fopen("Input.txt","r");
    yyin=f;
    yylex();
    return 1;
}
```

```
root at Abhishek in /mnt/h/Compiler Design/Lab/Lab 3
 ○ lex 1.l
root at Abhishek in /mnt/h/Compiler Design/Lab/Lab 3
 ○ cc lex.yy.c
root at Abhishek in /mnt/h/Compiler Design/Lab/Lab 3
 ○ ./a.out
<INCLUDE, #include<stdio.h>>
<ID,main><LBRACKET><RBRACKET>
<LPAREN>
<INT> <ID,fact><ASSIGN><NUM,1><COMMA> <ID,n><SEMI>
<FOR><LBRACKET><INT> <ID,i><ASSIGN><NUM,1><SEMI><ID,i><LE><ID,n><SEMI><ID,i><INC><RBRACKET>
<LPAREN>
<ID,fact><ASSIGN><ID,fact><MULT><ID,i><SEMI>
<RPAREN>
<ID,printf><LBRACKET><STRING><COMMA> <ID,fact><RBRACKET><SEMI>
<ID,getch><LBRACKET><RBRACKET><SEMI>
<RPAREN>
```

2. Write a LEX program to identify the tokens from the below HTML file. Generate your own tokens.

```
<head>
    <title>Title of web page</title>
</head>
<body>
    <h1>This is the main heading</h1>
    <img src="/smiley.gif" alt="Smiley face">
    <p>This is a paragraph of body text.</p>
</body>
```

Input.html

```
<!DOCTYPE html>

<html>

    <head>

        <title>Page Title</title>

    </head>

    <body>

        <h1>This is a Heading</h1>

        <p>The HTML<code>button</code> tag defines a clickable button.</p>

        <p>The CSS <code>background-color</code> property defines the
background color of an element.</p>

    </body>

</html>
```

2.l

```
%option noyywrap

%{
    #include<stdio.h>
%}

Tag <[^>]*>

%%
```

```
{Tag} printf("%s", yytext);

\n printf("\n");

. "";

%%

int main()
{
    FILE * f;
    f=fopen("Input.html","r");
    yyin=f;
    yylex();
    return 0;
}
```

```
root at Abhishek in /mnt/h/Compiler Design/Lab/Lab 3
 o lex 2.l
root at Abhishek in /mnt/h/Compiler Design/Lab/Lab 3
 o cc lex.yy.c
root at Abhishek in /mnt/h/Compiler Design/Lab/Lab 3
 o ./a.out
<!DOCTYPE html>

<html>

<head>

<title></title>

</head>

<body>

<h1></h1>

<p><code></code></p>

<p><code></code></p>

</body>

</html>
```

Thankyou!!