Assignment – 1

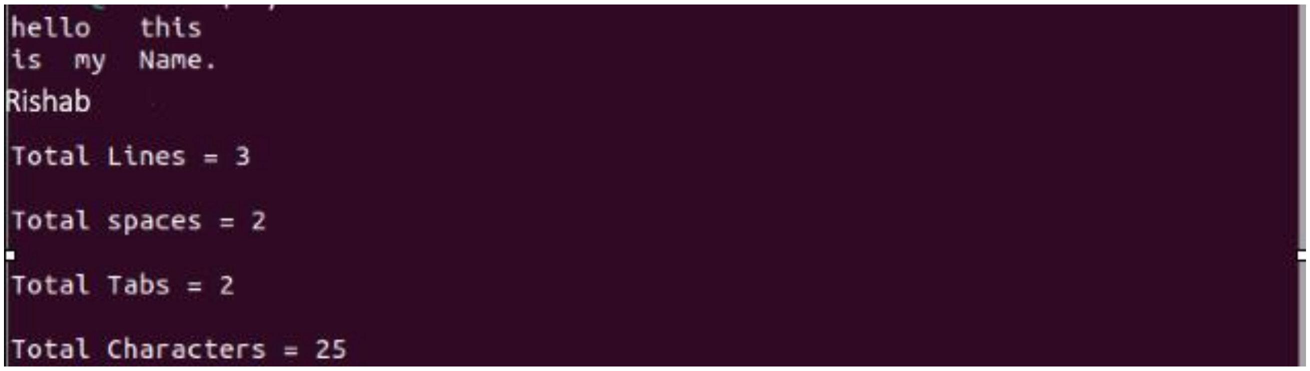
Objective: Design a LEX Code to count the number of lines, space, tab-meta character and rest of characters in a given Input pattern.

Code:

```
%{

#include<stdio.h>

int lc=0, sc=0, tc=0, chc=0;

%}


%%

\n lc++;

[ ] sc++;

\t tc++;

. chc++;

%%


int yywrap(void) {}


int main()

{

yylex();

printf("\nTotal Lines = %d\n",lc);

printf("\nTotal spaces = %d\n",sc);

printf("\nTotal Tabs = %d\n",tc);

printf("\nTotal Characters = %d\n",chc);

return 0;
```

}

Output:



```
hello   this
is  my  Name.
Rishab

Total Lines = 3

Total spaces = 2

Total Tabs = 2

Total Characters = 25
```

Assignment – 2

Objective: Design a LEX Code to identify and print valid Identifier of C/C++ in given Input pattern.

Code:

```
%{ #include<stdio.h>int c=0;%}

%%

[a-zA-Z_][a-zA-Z0-9]*     {c++; printf("%d",yytext);}

. ;

%%


int main(){

yylex();

printf("\nTotal number of valid Identifier = %d \n",c);

}
```

Output:

```
$ lex 2-valid_Identifier.l
$ cc lex.yy.c -lfl
$ ./a.out
count ad_samsung  w12
valid Identifier = count    valid Identifier = ad_samsung     valid Identifier = w12
123 3_er gh_
valid Identifier = gh_
//Press <CTRL>d to stop giving input.
Total number of valid Identifier = 4
$
```

Assignment – 3

Objective: Design a LEX Code to identify and print integer and float value in given Input pattern.

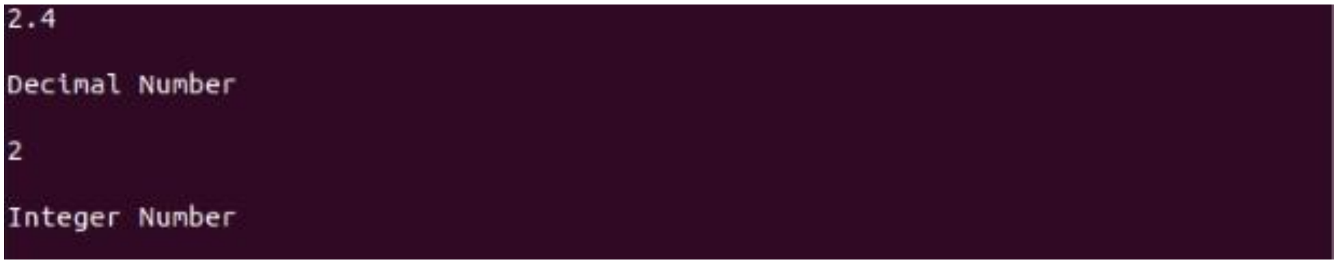
Code:

```
%{
#include<stdio.h>
%}
%%
[0-9]+"."[0-9] {printf("\nDecimal Number\n");}
[0-9]+ {printf("\nInteger Number\n");}
%%
int yywrap(void){}
int main()
```

{

yylex();return 0;}

Output :



```
2.4

Decimal Number

2

Integer Number
```

Assignment – 4

Objective: Design a LEX Code for Tokenizing (Identify and print OPERATORS, SEPERATORS, KEYWORDS, IDENTIFERS) the following C-fragment:

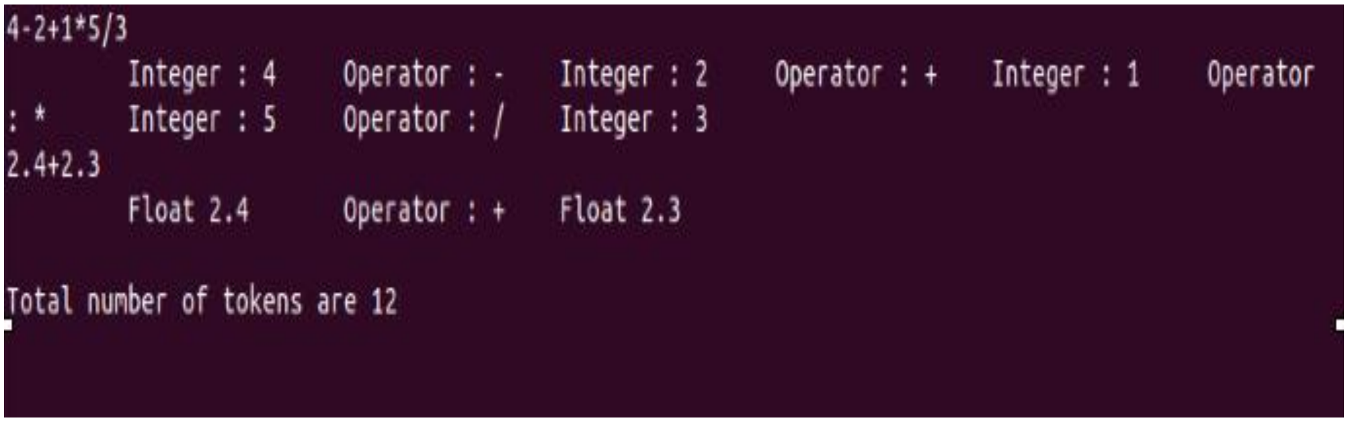
```
int p=1, d=0, r=4;

float m=0.0, n=200.0;

while (p <= 3)

   { if(d==0)

       {m= m+n*r+4.5; d++;}

     else

       { r++; m=m+r+1000.0;  }

 p++; }
```

Code:

```
%{

int n=0;

%}
```

```
%%
"while"|"if"|"else" {n++; printf("\t Keywords : %s",yytext);}
"int"|"float"       {n++; printf("\t Keywords : %s",yytext);}
[a-zA-Z_][a-zA-Z0-9_]*   {n++; printf("\t Identifier : %s",yytext);}
"<="|"=="|"="|"++"|"+"|"-"|"*"|"/"       {n++; printf("\t Operator : %s",yytext);}
"("|")"|"{"|"}"|","|";"    {n++; printf("\t Seperator : %s",yytext);}
[0-9]*"."[0-9]+  {n++; printf("\t Float %s",yytext);}
[0-9]+   {n++; printf("\t Integer : %s",yytext);}
,;
%%

int main() {
yylex();
printf("\nTotal number of tokens are %d",n);
}
```

Output:



```
4-2+1*5/3
        Integer : 4     Operator : -    Integer : 2     Operator : +    Integer : 1     Operator
: *     Integer : 5     Operator : /    Integer : 3
2.4+2.3
        Float 2.4       Operator : +    Float 2.3

Total number of tokens are 12
```

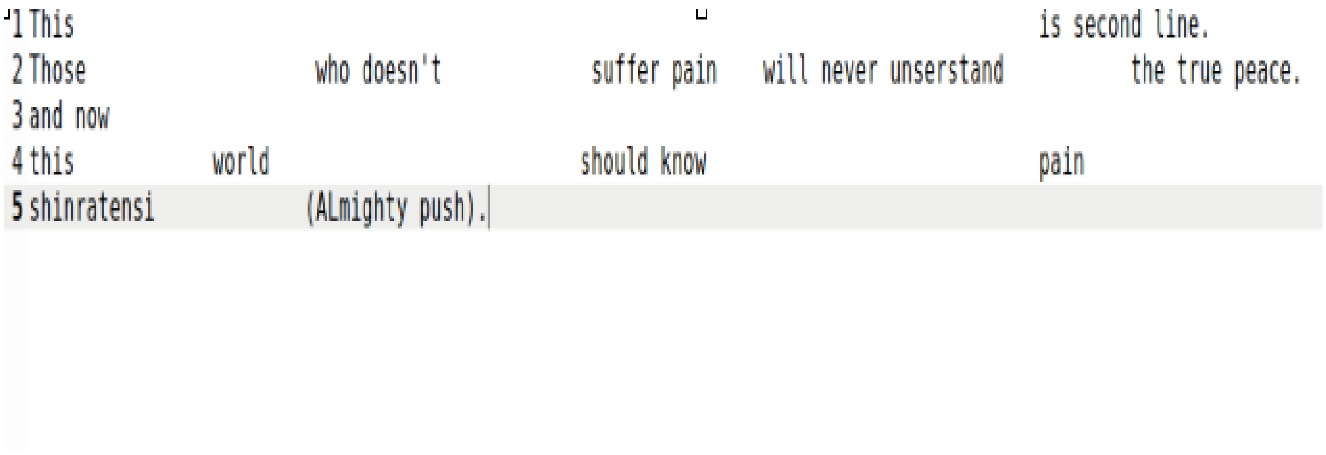
Assignment – 5

Objective: Design a LEX Code to count and print the number of total characters, words, white spaces in given ‘Input.txt’ file.

Code:

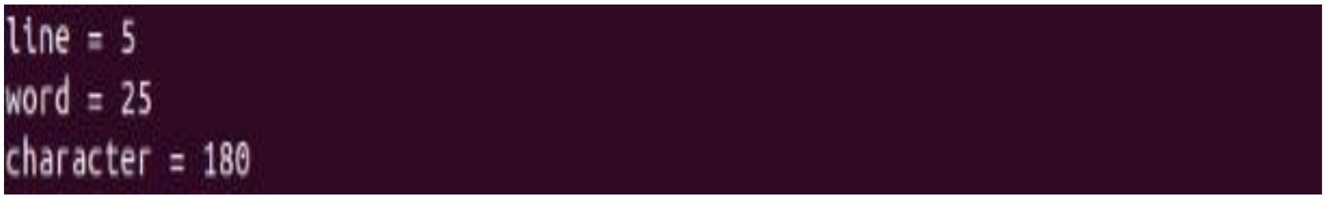
```
%{
int n,w,c;
%}

%%
\n          n++;
[^ \n\t]+            {w++;    c=c+yyleng;}
.           c++;
%%

int main()
{
extern FILE *yyin;
yyin = fopen("file","r");
yylex();
printf("line = %d\nword = %d\ncharacter = %d\n",n,w,c);
}
```

Input:



```
This                                                  is second line.
Those            who doesn't         suffer pain   will never unserstand        the true peace.
and now
this        world                 should know                    pain
shinratensi           (ALmighty push).
```

Output:



```
line = 5
word = 25
character = 180
```

Assignment – 6

Objective: Design a LEX Code to replace white spaces of 'Input.txt' file by a single blank character into 'Output.txt' file.

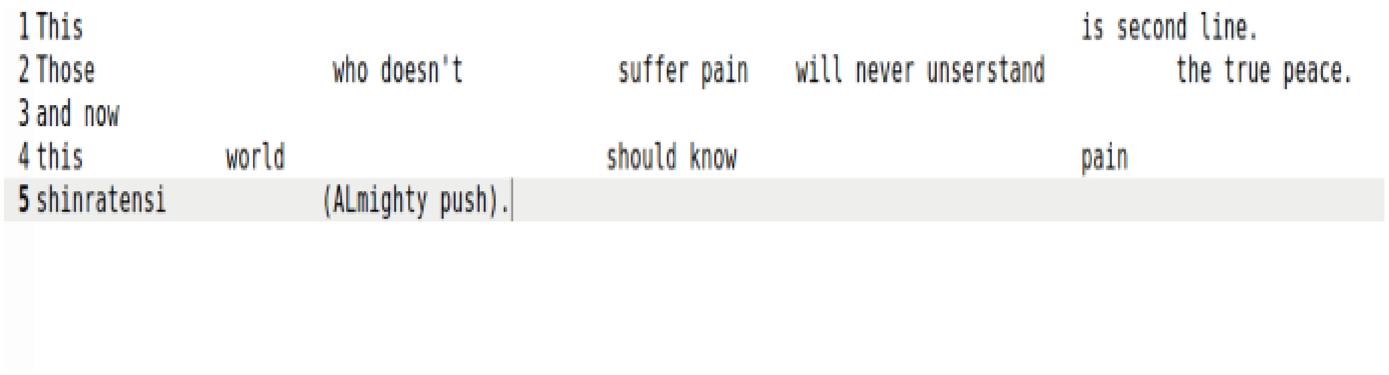
Code:

%{

%}

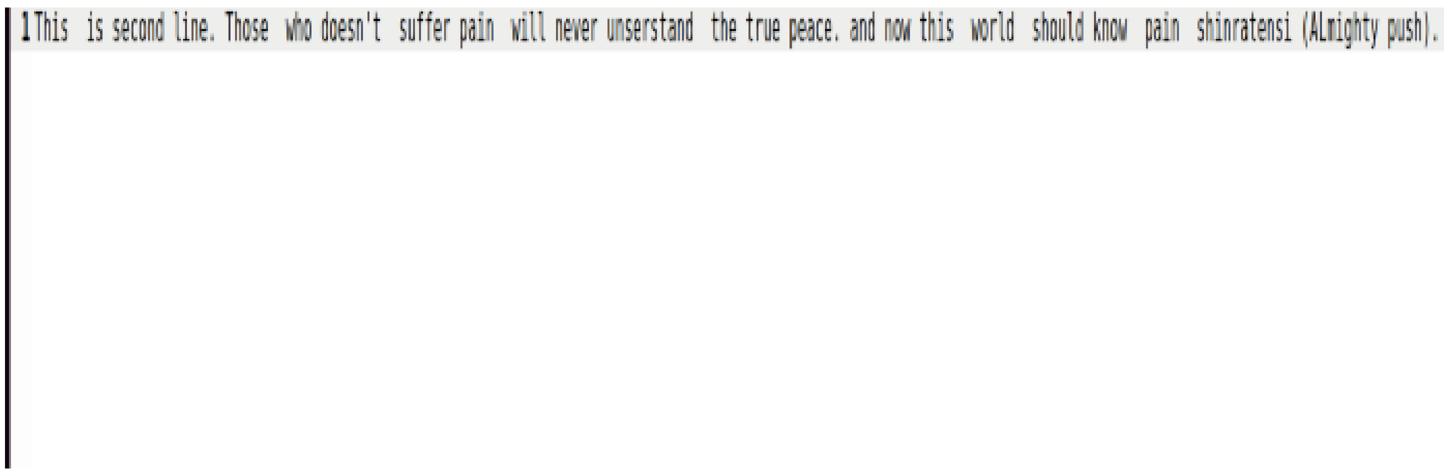
```
%%
[\t\n]+  fprintf(yyout," ");
. fprintf(yyout,"%s",yytext);
%%

int main()
{
extern FILE *yyin, *yyout;
yyin = fopen("file","r"); //r for read.
yyout = fopen("output","w"); //w for write.
yylex();
}
```

Input:



```
This                                                    is second line.
Those            who doesn't         suffer pain   will never unserstand      the true peace.
and now
this       world                    should know                             pain
shinratensi         (ALmighty push).
```

Output:



```
This  is second line. Those  who doesn't  suffer pain  will never unserstand  the true peace. and now this  world  should know  pain  shinratensi (ALmighty push).
```

Assignment – 7

Objective: Design a LEX Code to remove the comments from any C-Program given at run-time and store into 'out.c' file.

Code:

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

%%
\/\/(.*) {};
\/\*(.*\n)*.*\*\/            {};
%%

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

int main()

{

yyin = fopen("input8.c","r");

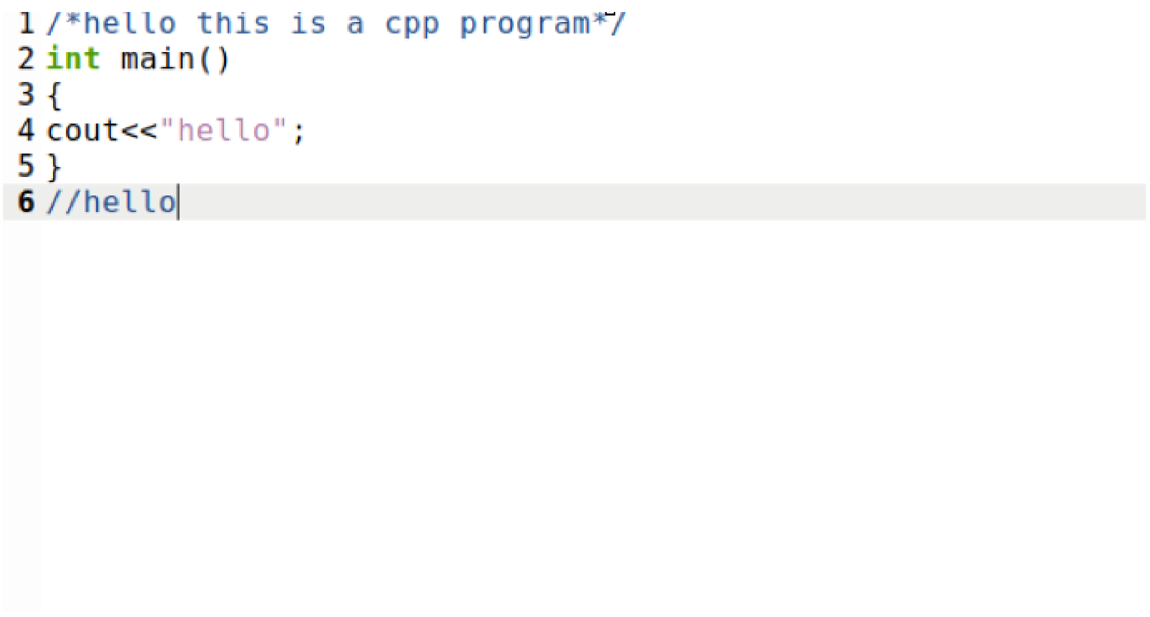
yyout = fopen("output8.txt","w");

yylex();

return 0;

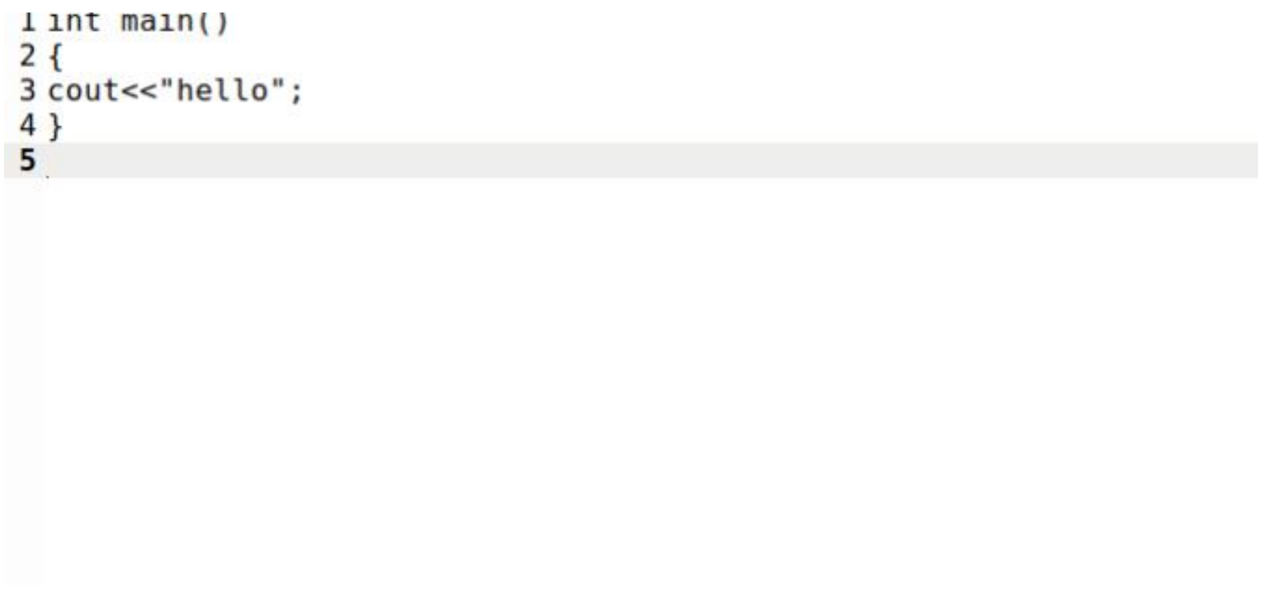
}

Input:



```
/*hello this is a cpp program*/
int main()
{
cout<<"hello";
}
//hello
```

Output:



```
int main()
{
cout<<"hello";
}
```

Assignment – 8

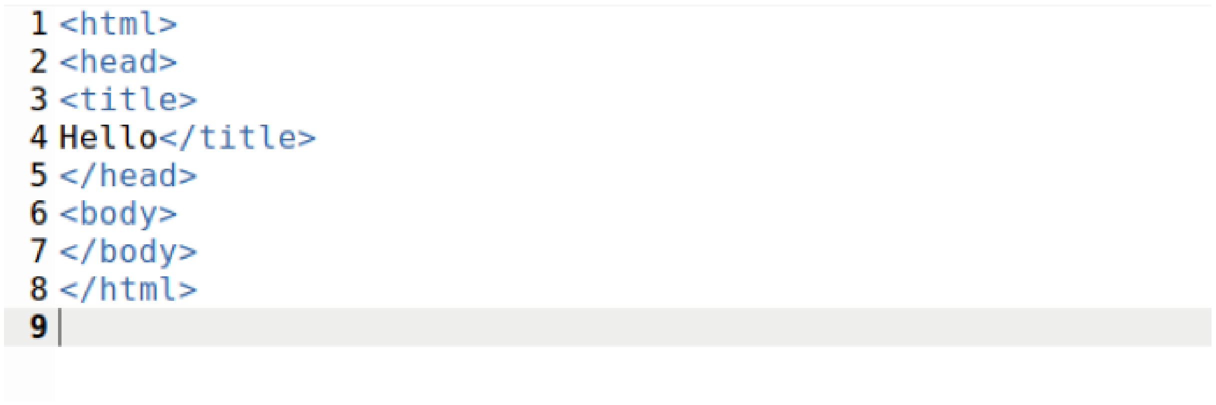
Objective: Design a LEX Code to extract all html tags in the given HTML file at run time and store into Text file given at run time.

Code:

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

%%
\<[^>]*\> fprintf(yyout,"%s\n",yytext);
.|\n;
%%

int yywrap()
```

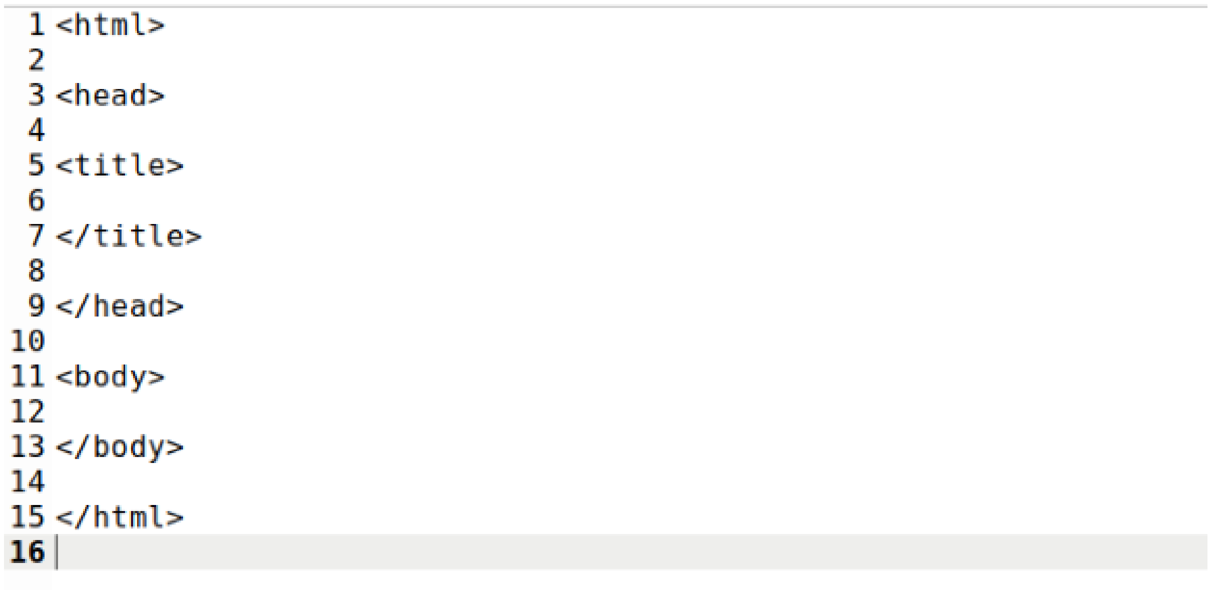
```
{
return 1;
}

int main()
{
yyin = fopen("input7.html","r");
yyout = fopen("output7.txt","w");
yylex();
return 0;
}
```

Input:



```
<html>
<head>
<title>
Hello</title>
</head>
<body>
</body>
</html>

```

Output:



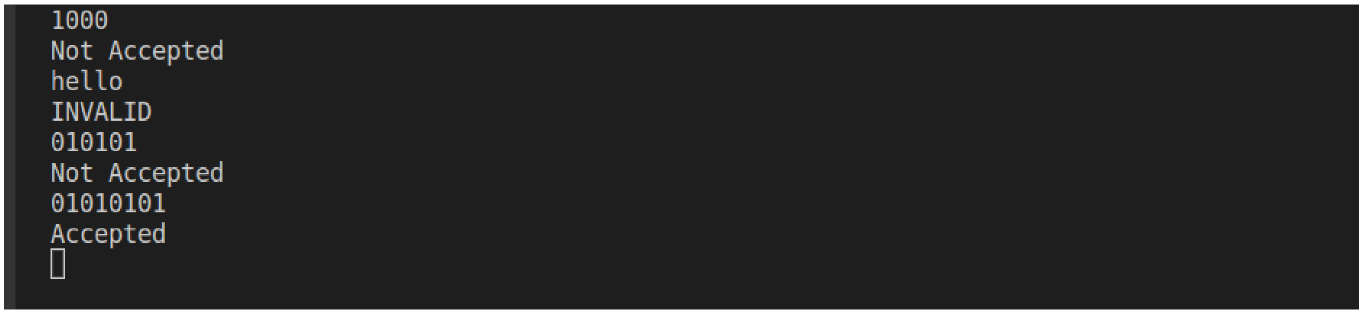
```html
<html>

<head>

<title>

</title>

</head>

<body>

</body>

</html>

```

Assignment - 9

Objective: Design a DFA in LEX Code which accepts string containing even number of ‘a’ and even number of ‘b’ over input alphabet {a, b}.

```
%{

#include<stdio.h>%}
%s A B

%%

<INITIAL>1 BEGIN INITIAL;

<INITIAL>0 BEGIN A;<INITIAL>[^0|\n] BEGIN B;<INITIAL>\n BEGIN INITIAL;

printf("Accepted\n");

<A>1 BEGIN A;

<A>0 BEGIN INITIAL;

<A>[^0|\n] BEGIN B;

<A>\n BEGIN INITIAL;

printf("Not Accepted\n");

<B>0 BEGIN B;<B>1 BEGIN B;<B>[^0|\n] BEGIN B;

<B>\n {BEGIN INITIAL;

printf("INVALID\n");

}%%

void main()
{

yylex();

}
```

OUTPUT:



```
1000
Not Accepted
hello
INVALID
010101
Not Accepted
01010101
Accepted
```