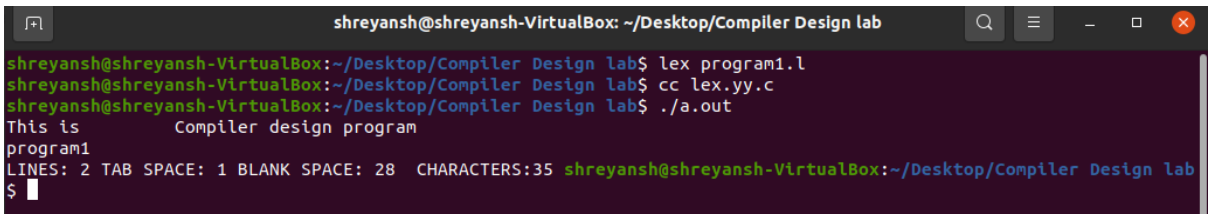
Program 1: Design a LEX Code to count the number of lines, space, tab-meta character, and rest of characters in a given Input pattern.

Code:

```
%{
#include<stdio.h>
int ch=0, bl=0, ln=0, tb=0;
%}
%%
[\n] {ln++;}
[\t] {tb++;}
[" "] {bl++;}
.     {ch++;}
%%
int yywrap(){return 1;}
int main()
{
  yylex();
 printf("LINES: %d TAB SPACE: %d BLANK SPACE: %d  CHARACTERS:%d
",ln,tb,bl,ch);
 return 0;
}
```

Output:

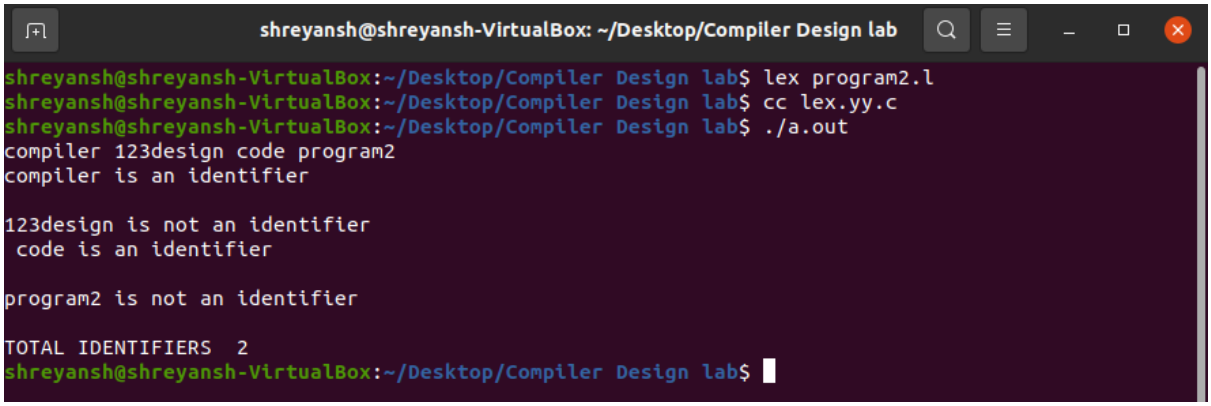


Program 2: Design a LEX Code to identify and print valid Identifier of C/C++ in given Input pattern.

Code:

```
%{
int count=0;
%}
op [+-*/]
letter [a-zA-Z]
digitt [0-9]
id {letter}*|({letter}{digitt})+
notid ({digitt}|{letter})+
%%
[\t\n]+
("int")|("float")|("char")|("case")|("default")|("if")|("for")|("printf")|("scanf") {printf("%s is a keyword\n", yytext);}
{id} {printf("%s is an identifier\n", yytext); count++;}
{notid} {printf("\n%s is not an identifier\n", yytext);}
%%
int yywrap(){
return 1;
}
int main(int argc, char *argv[]) {
 yylex();
 printf("\nTOTAL IDENTIFIERS  %d\n",count);
 return 0;
}
```

Output:

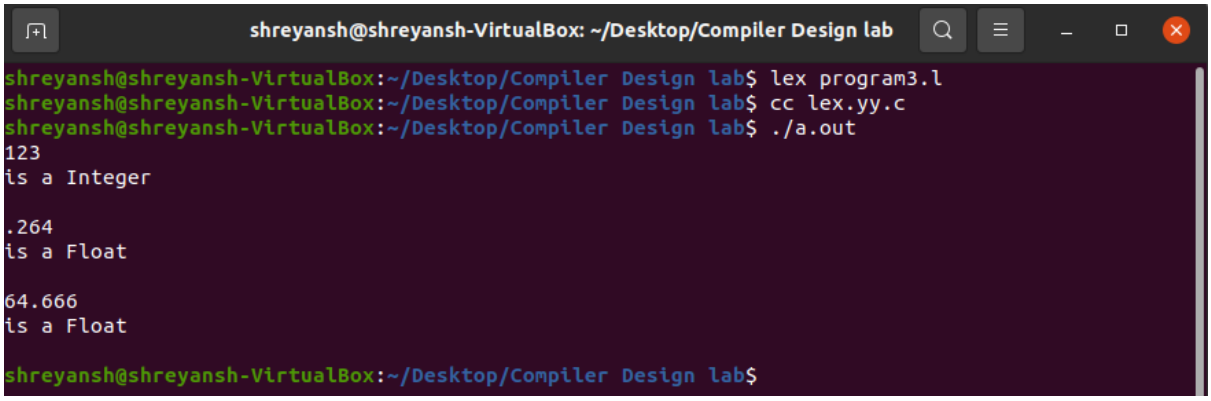


Program 3: Design a LEX Code to identify and print integer and float value in given Input pattern.

Code:

```
%{
%}
DIGIT    [0-9]
%%
{DIGIT}*        {printf("is a Integer\n");}
{DIGIT}*?\.{DIGIT}*    {printf("is a Float\n");}
%%
int yywrap(){}
int main(int argc, char *argv[])
{
    yylex();
    return 0;
}
```

Output:



Program 4: 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++;

}

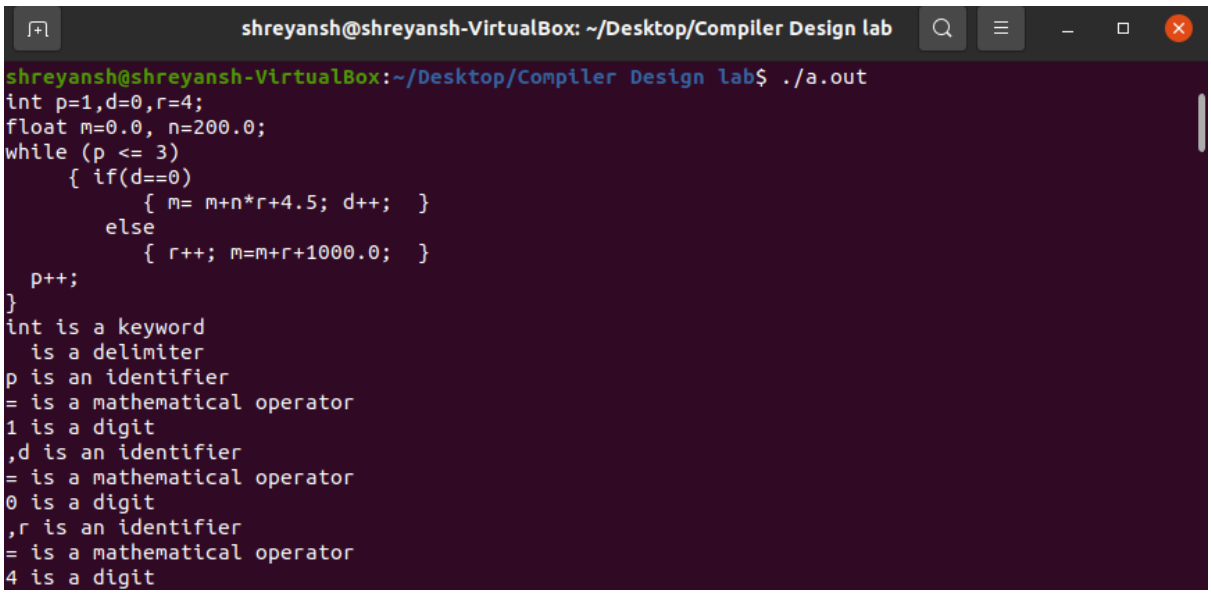
Code:

```
%{
#include <stdio.h>
%}
DIGIT [0-9]
NUMBER {DIGIT}+
REAL {DIGIT}*"."{DIGIT}+
TEXT [a-zA-Z ]+
TEXT_NUMBERS [a-zA-Z0-9]
CONDITIONALS "if"|"else"|"else if"|"switch"|"case"
```

```
KEYWORD
"break"|"continue"|"goto"|"printf"|"scanf"|"sprintf"|"sscanf"|"fopen"|"fwrite"|"fread"|"fclo
se"|"
write"|"read"|"open"|"close"|"return"|"int"|"float"|"char"|"unsigned"|"signed"|"short"|"lon
g"|"d ouble"

ITERATORS "for"|"while"|"do"

PREPROCESSOR
"#"|"#line"|"#undef"|"#error"|"#elif"|"#else"|"#endif"|"#if"|"#define"|"#include"|"#pragma
"|"#i fndef"|"#ifdef"

DELIMITER [; :\t\n()"]

IDENTIFIER [a-zA-Z]{TEXT_NUMBERS}*|[a-
zAZ]{TEXT_NUMBERS}*[[{NUMBER}+]]

FORMAT_SPECIFIER "%"{TEXT_NUMBERS}+

FILE "<"{IDENTIFIER}.h">"

COMMENT "/*"[a-zA-Z0-9 \t\n;.~!@#$%^&*()_+=<>?:"{}]*"*/"

AOPERATOR "+"|"-"|"*"|"/"|"="

BLOCK_BEGINS "{"

BLOCK_ENDS "}"

UNARY "++"|"--"

LOPERATOR "&"|"|"|"&&"|"~"|"||"|">"|"<"|">="|"<="|"=="

FUNCTION
{IDENTIFIER}+"("{DELIMITER}*{TEXT}{TEXT_NUMBERS}*{DELIMITER}*")"

%%

{CONDITIONALS} { printf("%s is a conditional\n", yytext); }

{ITERATORS} { printf("%s is an iterator\n", yytext); }

{DIGIT} { printf("%s is a digit\n", yytext); }

{NUMBER} { printf("%s is a number\n", yytext); }

{REAL} { printf("%s is a real number\n", yytext); }

{PREPROCESSOR} { printf("%s is a preprocessor directive\n", yytext); }

{DELIMITER} { printf("%s is a delimiter\n", yytext); }

{KEYWORD} { printf("%s is a keyword\n", yytext); }

{IDENTIFIER} { printf("%s is an identifier\n", yytext); }

{COMMENT} { printf("%s is a comment\n", yytext); }
```

```
{AOPERATOR} { printf("%s is a mathematical operator\n", yytext); }
{LOPERATOR} { printf("%s is a logical operator\n", yytext); }
{BLOCK_BEGINS} { printf("Block begins\n", yytext); }
{BLOCK_ENDS} { printf("Block ends\n", yytext); }
{FILE} { printf("%s is a file\n", yytext); }
{UNARY} { printf("%s is a unary operator\n", yytext); }
{FUNCTION} { printf("%s is a function\n", yytext); }
{FORMAT_SPECIFIER} {printf("%s is a format specifier\n", yytext); }
%%
int yywrap(){
return 1;
}
int main(int argc, char *argv[]) {
extern FILE *yyin;
yyin = fopen(argv[1],"r");
yylex();
return 0;
}
```

Output:

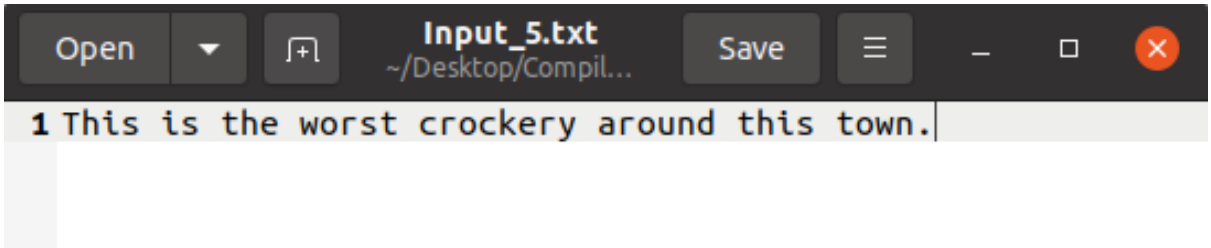


Program 5: Design a LEX Code to count and print the number of total characters, words, white spaces in given ‘Input.txt’ file

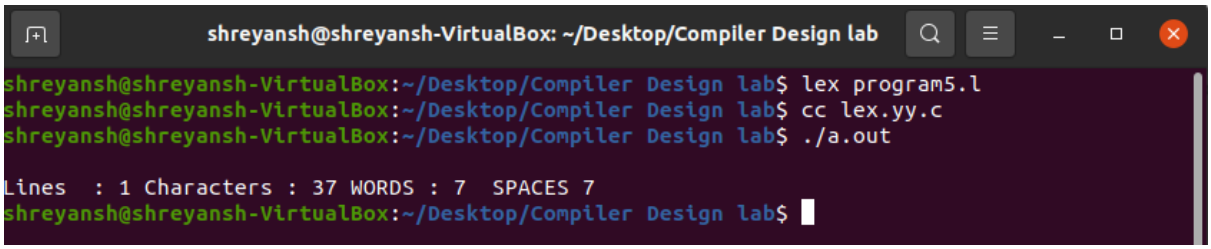
Code:

```
%{
#include<stdio.h>
int words=0,spaces=0,tchar=0,line=0;
%}
%%
\n line++;
" " {spaces++;words++;}
[\t\n] {words++;}
. {tchar++;}
%%
int yywrap(){
return 1;
}
int main(int argc, char *argv[])
{
extern FILE *yyin;
 yyin = fopen("Input_5.txt","r");
 yylex();
 printf("\nLines  : %d Characters : %d WORDS : %d  SPACES %d
\n",line,tchar,words,spaces);
 return 0;
}
```

Input:



Output:



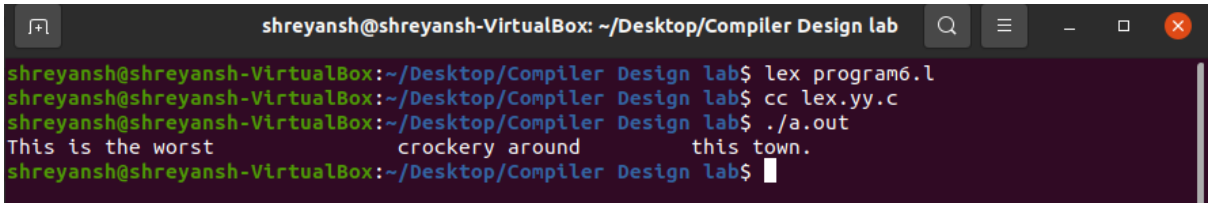
Program 6: Design a LEX Code to remove the extra spaces and empty line and write it into "Store.txt" file.

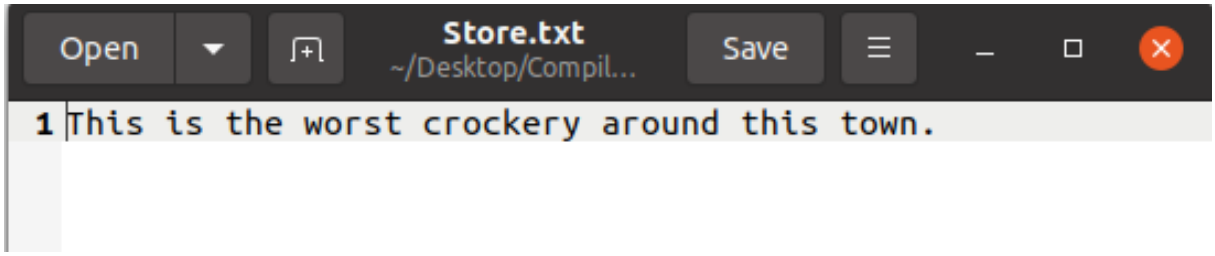
Code:

```
%{
%}
space [ \t]
emptyline \n
%%
{space}+ fprintf(yyout," ");
{emptyline}+ fprintf(yyout,"\n");
. {fprintf(yyout,"%s",yytext);}
%%
int yywrap(){
return 1;
}
int main(int argc, char *argv[])
{
```

```
extern FILE *yyout;
 yyout = fopen("Store.txt","w");
 yylex();
 return 0;
}
```

Output:





Program 7: Design a LEX Code to remove the comments from any C-Program given at run-time and store into "comment.txt" file.

Code:

```
%{
%}
%%
\/\/.* ;
\/\*(.*\n)*.*\*\/ ;
%%
int yywrap(){
return 1;
}
```

```
int main(int argc, char *argv[])
{
extern FILE *yyout;
 yyout = fopen("comment.txt","w");
 yylex();
 return 0;
}
```

Output:

```
shreyansh@shreyansh-VirtualBox: ~/Desktop/Compiler Desi...
shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$ lex program7.l
shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$ cc lex.yy.c
shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$ ./a.out
int p=1,d=0,r=4;
float m=0.0, n=200.0;        // hello
while (p <= 3)
     { if(d==0)      //this is wrong
           { m= m+n*r+4.5; d++;  }
        else
           { r++; m=m+r+1000.0;  }  // haha
  p++;  }
shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$
```

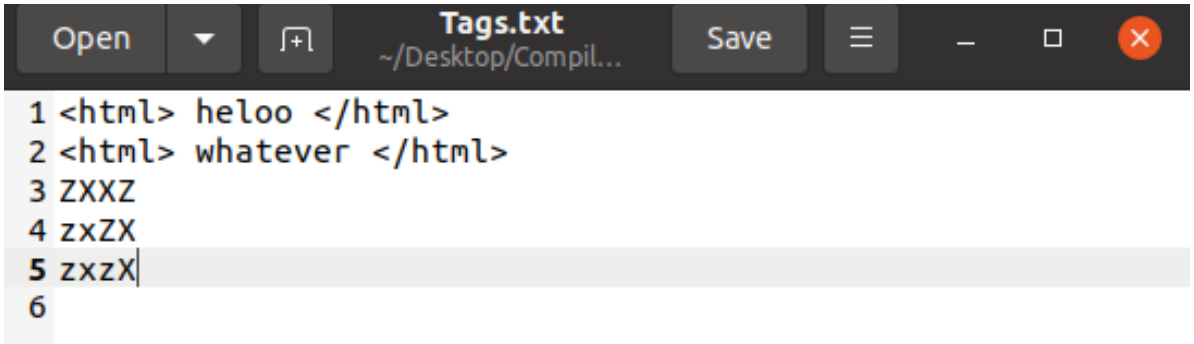
```
Open   comment.txt ~/Desktop/Compil...   Save
Store.txt   comment.txt
1 int p=1,d=0,r=4;
2 float m=0.0, n=200.0;
3 while (p <= 3)
4      { if(d==0)
5            { m= m+n*r+4.5; d++;  }
6         else
7            { r++; m=m+r+1000.0;  }
8   p++;  }
```

Program 8: Design a LEX Code to extract all html tags in the given HTML file at run time and store into Text file "Tags.txt" given at run time.

Code:

```
%{
%}
%%
"<"[^>]*> {printf("%s\n",yytext);}
. ;
%%
int yywrap(){
return 1;
}
int main(int argc, char *argv[])
{
extern FILE *yyin;
 yyin = fopen("Tags.txt","r");
 yylex();
 return 0;
}
```

Input:



Output:

```
shreyansh@shreyansh-VirtualBox: ~/Desktop/Compiler Desi...
shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$ lex program8.l
shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$ cc lex.yy.c
shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$ ./a.out
<html>
</html>

<html>
</html>

shreyansh@shreyansh-VirtualBox:~/Desktop/Compiler Design lab$
```