CDL WEEK 5 – INTRODUCTION TO FLEX

PHIROZGAR IRANI
230905370
CSE VI – B
B2 batch – R.No. 45

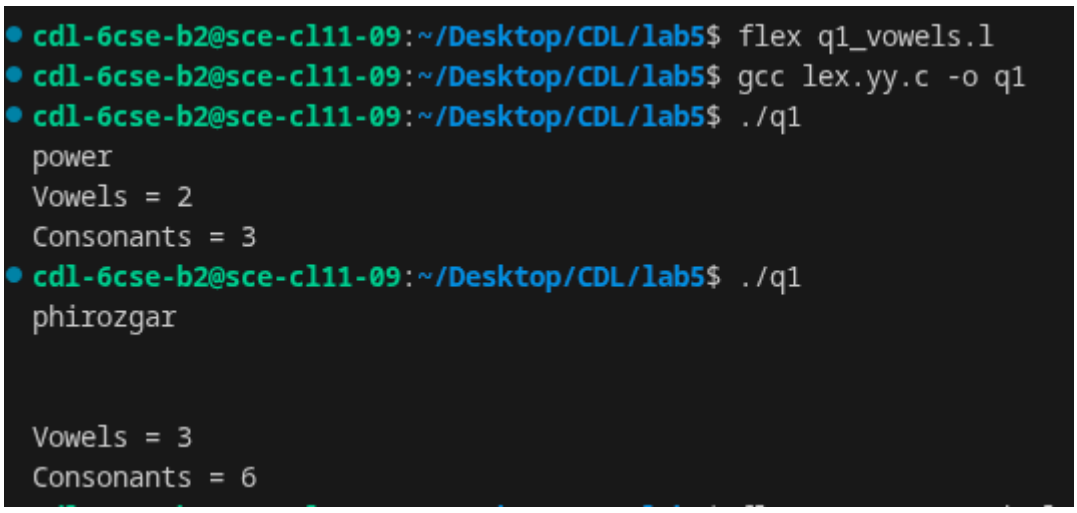
Q1. Count the number of vowels and consonants in the given input.
CODE:

```
%{
#include <stdio.h>
int vowels = 0, consonants = 0;
%}

%%
[aeiouAEIOU]    { vowels++; }
[a-zA-Z]        { consonants++; }
\n              ;
.               ;
%%

int yywrap()
{return 1;}

int main() {
    yylex();
    printf("Vowels = %d\n", vowels);
    printf("Consonants = %d\n", consonants);
    return 0;
}
```



Q2. Count the number of words, characters, blanks and lines in a given text.
CODE:

```
%{
#include <stdio.h>
int words = 0, chars = 0, blanks = 0, lines = 0;
%}
```

```
%%
[ \t]       { blanks++; chars++; }
\n          { lines++; chars++; }
[^ \t\n]+   { words++; chars += yyleng; }
.           { chars++; }
%%

int yywrap()
{return 1;}

int main() {
    yylex();
    printf("Words = %d\n", words);
    printf("Characters = %d\n", chars);
    printf("Blanks = %d\n", blanks);
    printf("Lines = %d\n", lines);
    return 0;
}
```

Q3. Find the

```
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ flex q2_countWords.l
q2_countWords.l:10: warning, rule cannot be matched
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ gcc lex.yy.c -o q2
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ ./q2
phirozgar woke up in the morning at 10:30 am
Words = 9
Characters = 45
Blanks = 8
Lines = 1
```

number of positive integer, negative integer, positive floating positive number and negative floating point number

CODE:

```
%{
#include <stdio.h>
int pos_int=0, neg_int=0, pos_float=0, neg_float=0;
%}

%%
[-]?[0-9]+"."[0-9]+   {
                        if(yytext[0]=='-') neg_float++;
                        else pos_float++;
                      }
[-]?[0-9]+            {
                        if(yytext[0]=='-') neg_int++;
                        else pos_int++;
                      }
\n                    ;
.                     ;
%%

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

```
int main() {
    yylex();
    printf("Positive Integers = %d\n", pos_int);
    printf("Negative Integers = %d\n", neg_int);
    printf("Positive Floats = %d\n", pos_float);
    printf("Negative Floats = %d\n", neg_float);
    return 0;
}
```

```
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ flex q3_countNum.l
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ gcc lex.yy.c -o q3
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ ./q3
-12 45 97 23.1023 1108 8010
Positive Integers = 4
Negative Integers = 1
Positive Floats = 1
Negative Floats = 0
```

Q4. Given a input C file, replace all scanf with READ and printf with WRITE statements also find the number of scanf and printf in the file.

CODE:

```
%{
#include <stdio.h>
int sc = 0, pr = 0;
%}

%%
scanf   { sc++; printf("READ"); }
printf  { pr++; printf("WRITE"); }
.|\n    { printf("%s", yytext); }
%%

int yywrap()
{return 1;}

int main() {
    yylex();
    printf("\nNumber of scanf = %d\n", sc);
    printf("Number of printf = %d\n", pr);
    return 0;
}
```

```
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ flex q4_replace.l
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ gcc lex.yy.c -o q4
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ ./q4
sacnf printf printf
sacnf WRITE WRITE

Number of scanf = 0
Number of printf = 2
```

Q5. That changes a number from decimal to hexadecimal notation.

CODE:

```
%{
```

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

%%
[0-9]+  {
          int n = atoi(yytext);
          printf("0x%X", n);
        }
\n      { printf("\n"); }
.       { printf("%s", yytext); }
%%

int yywrap()
{return 1;}

int main() {
   yylex();
   return 0;
}
```

Q6. Convert

```
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ flex q5_convertNum.l
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ gcc lex.yy.c -o q5
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ ./q5
95
0x5F
```

uppercase characters to lowercase characters of C file excluding the characters present in the comment.

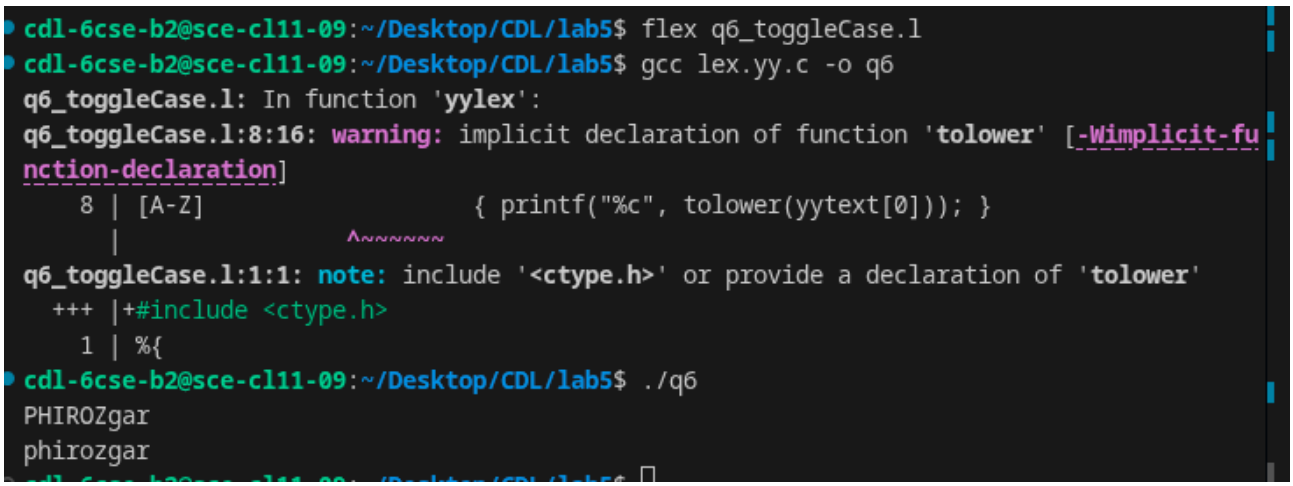
CODE:

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

%%
"//".*                  { printf("%s", yytext); }
"/*"([^*]|\*+[^*/])*\*+"/"   { printf("%s", yytext); }
[A-Z]                   { printf("%c", tolower(yytext[0])); }
.|\n                    { printf("%s", yytext); }
%%

int yywrap()
{return 1;}

int main() {
   yylex();
   return 0;
}
```


cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ flex q6_toggleCase.l
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ gcc lex.yy.c -o q6
q6_toggleCase.l: In function 'yylex':
q6_toggleCase.l:8:16: warning: implicit declaration of function 'tolower' [-Wimplicit-function-declaration]
8 | [A-Z] { printf("%c", tolower(yytext[0])); }
^~~~~~~
q6_toggleCase.l:1:1: note: include '<ctype.h>' or provide a declaration of 'tolower'
+++ |+#include <ctype.h>
1 | %{
cdl-6cse-b2@sce-cl11-09:~/Desktop/CDL/lab5$ ./q6
PHIROZgar
phirozgar