

## Compiler Design Lab (CS 306)

### Week-3 Lab

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**Implementation of the following programs using Lex tool**

#### **1. Identification of Vowels and Consonants**

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

%%
    [aeiouAEIOU] { printf("%s is vowel\n",yytext); }
    [a-zA-Z] {printf("%s is consonant\n",yytext);}
    {printf("%s is invalid lexeme\n",yytext);}
%%
main()
{
    yylex();

}
int yywrap()
{

return 1;
}
```

#### **2. Count the number of Lines in given input**

```
%{
    int num_lines=0;
```

```

%}
%%
\n ++num_lines;
%%
main()
{
    yylex();
    printf("no of lines=%d",num_lines);
}
int yywrap()
{
    return 1;
}

```

### 3. Count number of vowels and consonants

```

%{
#include<stdio.h>
#include<string.h>
int vc=0,c=0;
%}

/* Rules Section*/
%%
stop {return 0;}
[aeiouAEIOU] {vc++;}
[a-zA-Z] {c++;}
%%
int yywrap(void){return 1;}

int main()
{
    int n;
    printf("Enter string: ");
    yylex();
    printf("Number of vowels: %d\n", vc);
    yylex();
    printf("Number of consonants: %d\n", c);
    return 0;
}

```

#### 4. Recognize strings ending with 00

```
%%  
[0-9]*00 {printf("string accepted");}  
[0-9]* {printf("string rejected");}  
%%  
main()  
{  
  yylex();  
}  
int yywrap()  
{  
  return 1;  
}
```

#### 5. Recognize a string with three consecutive 0's

```
%%  
[0-9]*000[0-9]* { printf("string accepted");}  
[0-9]* { printf("string rejected");}  
%%  
main()  
{  
  yylex();  
}  
int yywrap()  
{  
  return 1;  
}
```

**6. Write LEX programs to check well formedness of the parenthesis. Make use of command line arguments.**

```
%{

#undef yywrap
#define yywrap() 1
int flag=0,ln=1;

%}

%%

"(" {flag++;
}

")" { flag--;
}

[n] {
if(flag==0)
printf("\n The statement at line no = %d has no missing parenthesis\n\n",ln);
else
printf("\n Error at line no = %d\n",ln);
if(flag>0)
printf("The statement has either extra ( parenthesis or a missing ) parenthesis\n\n");
else if(flag<0)
printf("The statement has either extra ) parenthesis or a missing ( parenthesis\n\n");
flag=0;
ln++;
}

%%
```

```

main()
{
    char fname[100];
    printf("\nEnter the name of file\n");
    scanf("%s",fname);
    yyin=fopen(fname,"r+");
    yylex();
}

```

**7. Write LEX program to add line number before each line in a file.**

```

%{
#include <stdio.h>
int line_number = 1;
}%

line .*\\n
%%
{line} { printf("%10d %s", line_number++, yytext); }
%%

int yywrap(){ }

int main(int argc, char*argv[])
{
extern FILE *yyin;
yyin = fopen("testtest.c","r");

yylex();

return 0;
}

```