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;
}
```