PRACTICAL No 1

1) Copy one input character to output at a time:

```
%%
. ECHO;
\n ECHO;
%%
int main(void)
{
yylex();
return 0;
}
int yywrap()
{ return 1; }
```

Output:

```
hello
hello
world
world
```

For Program 2 and 3 use file.txt as input:

File.txt:

```
#include<stdio.h>
int main()
{
printf("Hello World");
return 0;
}
```

2) Attach line no. to each line in a file:

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

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

int main(void)
{
extern FILE *yyin;
yyin=fopen("file.txt","r");
yylex();
return 0;
}

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

Output:

```
1 #include<stdio.h>
2
3 int main()
4 {
5 printf("Hello World");
6 return 0;
7 }
```

3) Count the no of chars, words and lines in a file:

```
%{
int c=0,w=0,l=0;
%}
%%
[a-zA-Z0-9] {c++;}
\n {l++;w++;}
[\t''] {w++;}
[\#\(\)\{\}\[\]\<\>\.\,\;\"] {}
%%

int main(void)
{
        extern FILE *yyin;
        yyin=fopen("file.txt","r");
        yylex();
        printf("\nNo of characters: %d\nNo of
words: %d\nNo of lines: %d\n",c,w,l);
        return 0;
}

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

Output:

```
No of characters: 43
No of words: 7
No of lines: 7
```

4) Convert all decimal to HEX

```
%{
        int val=0, i=0, hex[100];
        char str[100];
%}
```

```
%%
[0-9]+ {val=atoi(yytext);
                    i=0;
                    while(val!=0)
                    {
                    hex[i]=val%16;
                    val/=16;
                    i++;
                    }
                    i--;
                    printf("HEX VALUE:\t");
                    for(;i>=0;i--)
                    {if(hex[i]<=9)
                    printf("%d", hex[i]);
                    else
                    printf("%c",(char)(hex[i]+55));
                    }}
%%

int main(void)
{
printf("Enter number to get HEX value\n");
yylex();
return 0;
}

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

Output:

```
Enter number to get HEX value
42
HEX VALUE:      2A
16
HEX VALUE:      10
10
HEX VALUE:      A
^C
```

For Program 5 use file2.txt as input:

File2.txt:

nice day
good weather
surroundings green
happy all

5) Select all those lines that end or begin with 'n' and ignore all other lines

```
%%
^n.*\n|.*n\n {printf("%s",yytext);}
[a-zA-Z] {/* Ignore */}
%%

int main(void)
{
extern FILE *yyin;
yyin=fopen("file2.txt","r");
yylex();
return 0;
}

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

Output:

```
nice day

surroundings green
```

For Programs 6,7,8 use file3.txt as input:

File3.txt:

this is a sample file with sample text and comments.
//this is a comment
this is not a comment
//test me: i am a comment
test me: i am not a comment

6) Print only the comments of a file

```
%%
\/\/.* {printf("%s",yytext);}
[a-zA-z\t''\.\:]+ {/* Ignore */}
%%

int main(void)
{
extern FILE *yyin;
yyin = fopen("file3.txt","r");
yylex();
return 0;
}
```

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

Output:

```
//this is a comment

//test me: i am a comment
```

7) Print everything except the comments

```
%{
%}

%%
\/\/.* {/* Ignore */}
[a-zA-z\t''\.\:]+ {printf("%s",yytext);}
%%

int main(void)
{
extern FILE *yyin;
yyin = fopen("file3.txt","r");
yylex();
return 0;
}

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

Output:

```
this is a sample file with sample te

this is not a comment

test me: i am not a comment
```

8) Count the frequency of each letter from a-z:

```
%{
        int freq[52]={0}, val =0,i=0;
%}

%%
[a-z] {val = (int)yytext[0];
          freq[val-97]=freq[val-97]+1 ;
}
[A-Z] {val = (int)yytext[0];
          freq[val-65+26]=freq[val-65+26]+1;

}
[\/\:\.]+ {/* Ignore */}
%%

int main(void)
{
extern FILE *yyin;
yyin = fopen("file3.txt","r");
yylex();
for(i=0;i<52;i++){
        if(freq[i]!=0){
        if(i<26)
        printf("%c:%d\n",(char)i+97,freq[i]);
        else
        printf("%c:%d\n",(char)i+65-
26,freq[i]);
}}
printf("\n");
return 0;
}

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

Output:

```
a:10
c:5
d:1
e:13
f:1
h:4
i:10
l:3
m:16
n:8
o:7
p:2
s:11
t:17
w:1
x:1
```