LAB-ASSIGNMENT –9

SYSTEM SOFTWARE

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Que 1: Write a lex program to identify identifiers, constants and keywords (int, float) used in c/c++ from a given input file.

Code :→

```
/*Definition Section*/
%{
#include<stdio.h>
%}


/*Rule Section*/
%%
auto|double|int|struct|break|else|long|switch|case|enum|register|typedef|char|extern
|return|union|continue|for|signed|void|do|if|static|while|default|goto|sizeof|volati
le|const|float|short|unsigned {printf("It is a keyword ");}

[0-9]* printf("It is a constant");

^[a-zA-Z_][a-zA-Z0-9_]*  {printf("It is Identifier\n");}

.* {printf("Invalid Identifier ");}

%%
```

```
/*call the yywrap function*/
int yywrap()
{
return 1;
}

/*Auxiliary function*/
/*Driver function*/
int main(void)
{
/*call the yylex function.*/
yylex();
return 0;
}
```

Output :→

```
68
It is a constant
else
It is a keyword
```

Que 2 : Write a lex Program to find octal and hexadecimal numbers.

Code :→

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

%%

[0-7]*  {printf("The number is Octal number or Hexadecimal number..");}

[0-9A-F]* {printf("The number is Hexadecimal number..");}

.* {printf("It is a invalid input..");}


%%

int yywrap()
{
return 1;
}


int main(void){

   yylex();

   return 0;
}
```

Output :→

```
665
The number is octal number..
678
The number is Hexadecimal number..
A456
The number is Hexadecimal number..
```

<u>Que 3:</u> Write a lex program to count and display Single line and multiline comments.

Code :→

```
%{
    #include<stdio.h>
    int mult_count = 0;
    int single_count = 0;

%}

%x C
%%

"/*"][.]*"./" {mult_count++;}
"/*"            {BEGIN C;}
<C>"*/"         {BEGIN 0; mult_count++;}
<C>\n           {;}
<C>.            {;}
\/\/.*          {single_count++;}
. {;}

%%

int yywrap()
{
return 1;
}


int main(void){

  extern FILE *yyin, *yyout;
  yyin = fopen("input.c", "r");

  yylex();

  printf("\nCount of Single line comment:- %d\n",single_count);
  printf("\nCount of Multi line comment:- %d\n",mult_count);

  return 0;


}
```

Output :→

Input file:

```c
#include<stdio.h>

//Single line comment

/*

 Multiline comment

*/

// Single line comment
void main(){
    int a;
    if(a==0){
        a=5;
    }
    return;
}
```

Output:

```
Count of Single line comment:- 2

Count of Multi line comment:- 1
```

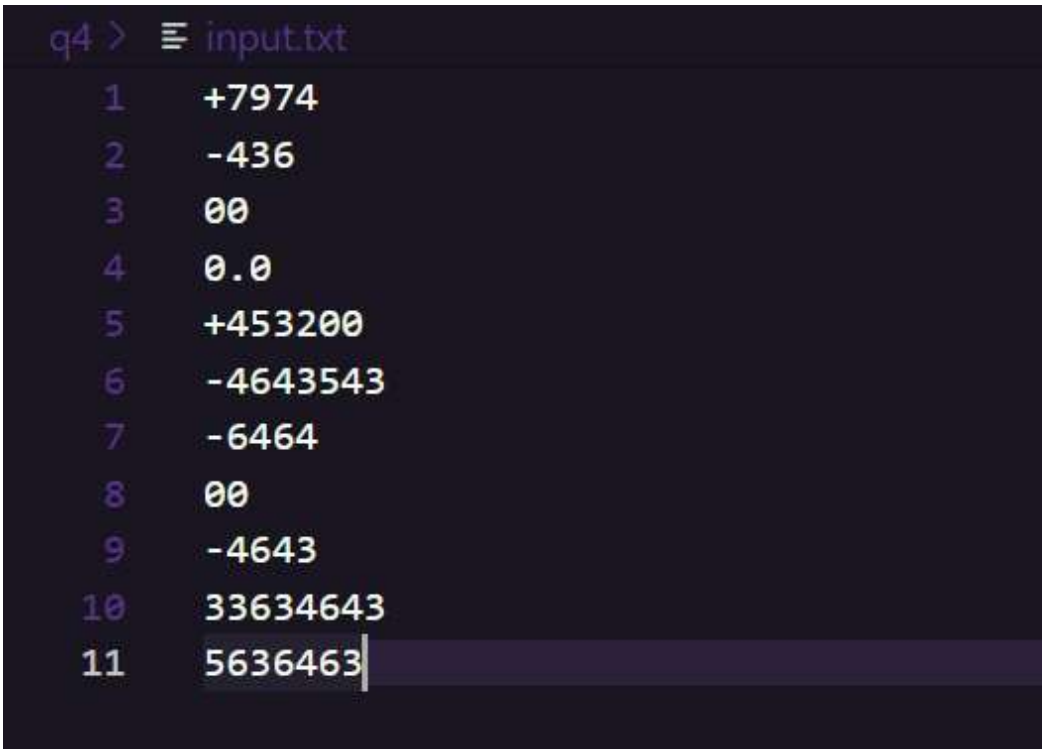
<u>Que 4:</u> Write a lex program to count no of negative, positive and zero numbers.

Code :→

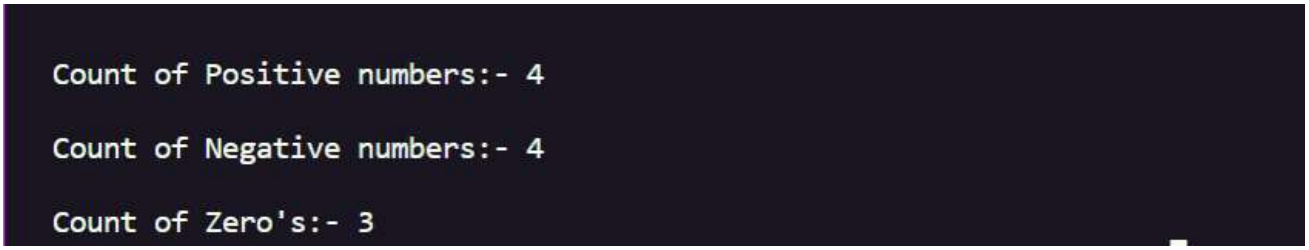
```
%{

    int neg_count = 0;
    int pos_count = 0;
    int zero_count = 0;

%}

%%
[0]+  {zero_count++;}
[0]+[.][0]+ {zero_count++;}
[+]?[0-9]+ {pos_count++;}
[+]?[0-9]+\.[0-9]+ {pos_count++;}
[-][0-9]+[.][0-9]+ {neg_count++;}
[-][0-9]+ {neg_count++;}
%%

int yywrap(){};

int main(){
    extern FILE *yyin , *yyout;
    yyin = fopen("input.txt","r");
    yylex();

    printf("\nCount of Positive numbers:- %d\n",pos_count);
    printf("\nCount of Negative numbers:- %d\n",neg_count);
    printf("\nCount of Zero's:- %d\n",zero_count);

}
```

Output :→

Input file :



Ouput :



Que 5: Write a Lex program to accept strings that start with aa and end with bcd .

Code :→

```
%%

(aa)[a-zA-Z0-9]*(bcd) {printf("\n%s is accepted.\n",yytext);}
\n {return 0;}
.+ {printf("\n%s is not accepted. \n",yytext);}

%%

int yywrap(){}

int main(){
    printf("Enter the string : ");
    yylex();
    return 0;
}
```

Output :→

```
Enter the string : aasandeepbcd

aasandeepbcd is accepted.
```

```
Enter the string : aasocd

aasocd is not accepted.
```