VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

B.Tech. Winter Semester 2023-24

School Of Electronics Engineering

(SENSE)

COMPILER DESIGN
BCSE307P

LAB Experiment - 2

SUJAY GHOSH

21BLC1607

QUESTION1: Taking input and printing the output in terminal only.

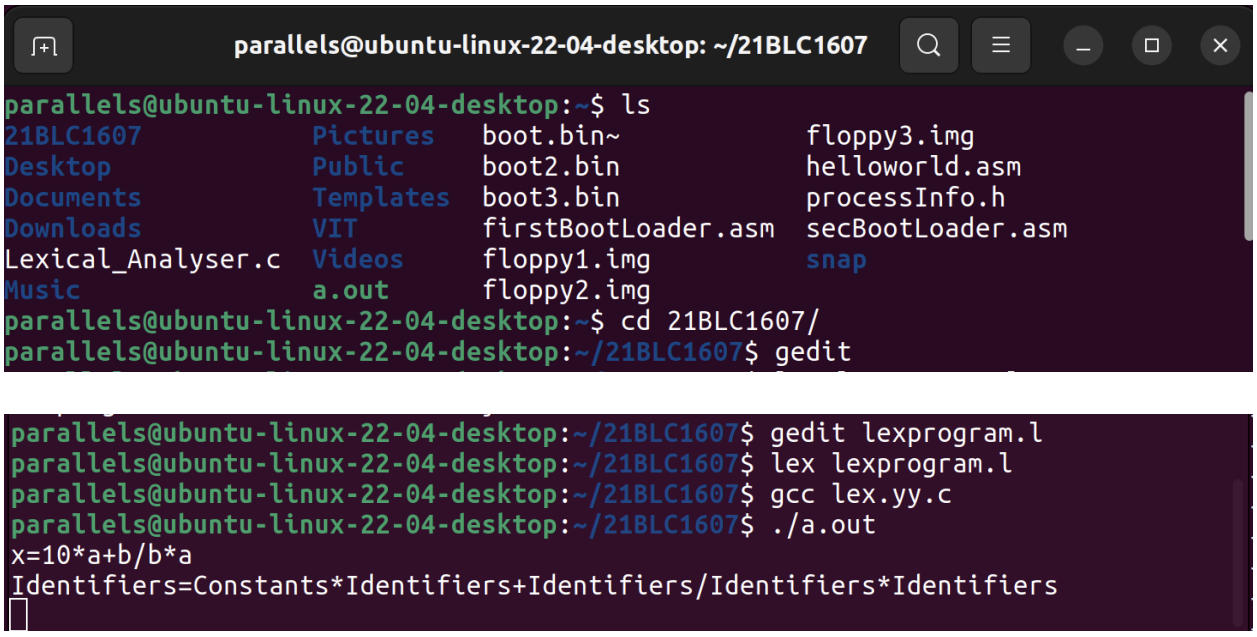
C - Program -

```
%{
#include<stdio.h>
%}
%%
bool|int|float {printf("Keyword");}
[-,+]?[0-9]+ {printf("Constants");}

[,.']+ {printf("Punctuation Chars");}

[!@#$^&()]+ {printf("Special Chars");}
[a-zA-Z]+ {printf("Identifiers");}
%%
int yywrap()
{return 1;
}
void main()
{
yylex();
}
```

Output -



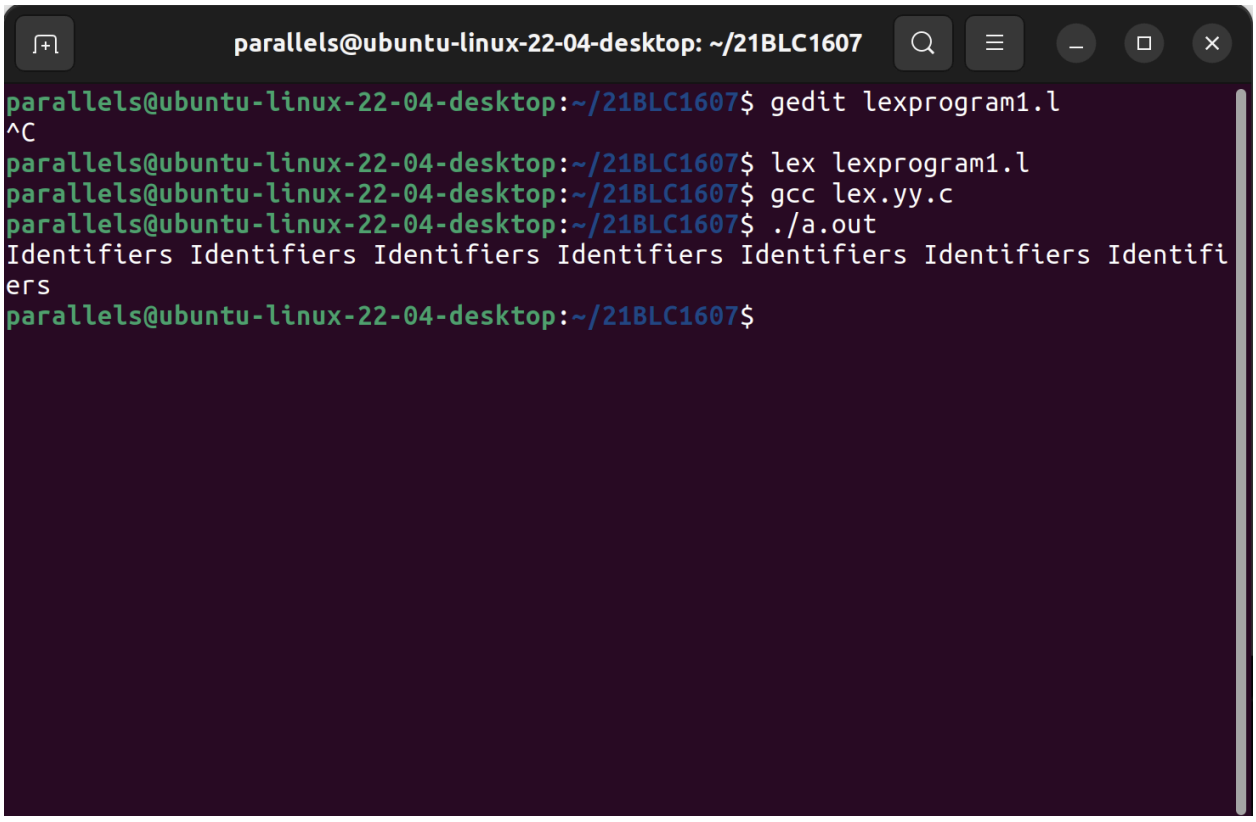
QUESTION2: Input is given through file and output is given through terminal

C - Program -

```
%{
#include<stdio.h>
%}
%%
bool|int|float {printf("Keyword");}
[-+]?10-91+ {printf("Constants");}
[,.';]+ {printf("Punctuation Chars");}
[!@#$^&()]+ {printf("Special Chars");}
[a-zA-Z]+ {printf("Identifiers");}
```

```
%%
int yywrap()
{return 1;
}
int main()
{
extern FILE *yyin;
yyin = fopen("inp.txt","r'");
while(!feof(yyin)) {
yylex();
}
```

}**Output -**



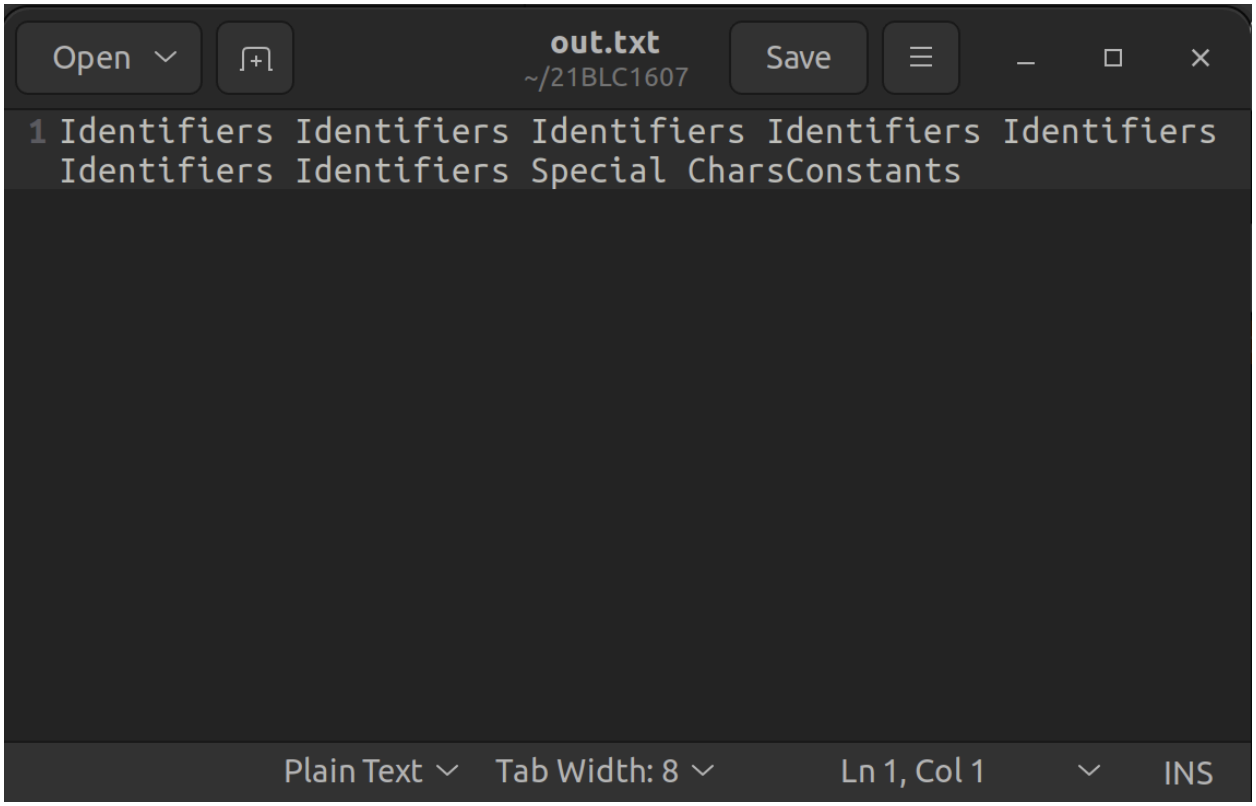
QUESTION3: Input is given through file and output is given through terminal

C - Program -

```
%{
#include<stdio.h>
%}
%%
bool|int|float {(fprintf(yyout, "Keyword",yytext));}
[-, +]?[0-91]+ {fprintf(yyout,"Constants",yytext);}
[,.';]+ {fprintf(yyout, "Punctuation Chars",yytext);}
[!@#$^&()]+ {fprintf(yyout,"Special Chars",yytext);}
[a-zA-Z]+ {fprintf(yyout,"Identifiers",yytext);}
%%
int yywrap()
{return 1;
}
int main()
{
extern FILE *yyin;
yyin=fopen("inp.txt","r");
yyout = fopen("out.txt","w");
while(!feof(yyin)){
yylex();
}
}
```

Output -

```
parallels@ubuntu-linux-22-04-desktop:~/21BLC1607$ flex lexprogrsm3.l
parallels@ubuntu-linux-22-04-desktop:~/21BLC1607$ gcc lex.yy.c
lexprogrsm3.l: In function ‘yylex’:
lexprogrsm3.l:5:18: warning: too many arguments for format [-Wformat-extra-args]
    5 | bool|int|float {(fprintf(yyout, "Keyword",yytext));}
      |                  ^~~~~~~~
lexprogrsm3.l:6:16: warning: too many arguments for format [-Wformat-extra-args]
    6 | [-, +]?[0-91]+ {fprintf(yyout,"Constants",yytext);}
      |                ^~~~~~~~~~
lexprogrsm3.l:7:17: warning: too many arguments for format [-Wformat-extra-args]
    7 | [,.';]+ {fprintf(yyout, "Punctuation Chars",yytext);}
      |                 ^~~~~~~~~~~~~~~~~~
lexprogrsm3.l:8:16: warning: too many arguments for format [-Wformat-extra-args]
    8 | [!@#$^&()]+ {fprintf(yyout,"Special Chars",yytext);}
      |                ^~~~~~~~~~~~~~
lexprogrsm3.l:9:16: warning: too many arguments for format [-Wformat-extra-args]
    9 | [a-zA-Z]+ {fprintf(yyout,"Identifiers",yytext);}
      |                ^~~~~~~~~~~~
parallels@ubuntu-linux-22-04-desktop:~/21BLC1607$ ./a.out
parallels@ubuntu-linux-22-04-desktop:~/21BLC1607$
```



QUESTION 4: Write a lex program to check the date as valid or invalid given as input

C- Program -

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

%option noyywrap
```

```
DIGIT [0-9]
MONTH (0[1-9]|1[0-2])
DAY (0[1-9]|[12][0-9]|3[01])
YEAR [0-9]{4}

%%

{MONTH}"/"{DAY}"/"{YEAR} {
    int month = atoi(yytext);
    int day = atoi(yytext + 3);
    int year = atoi(yytext + 6);

    if (month < 1 || month > 12) {
        printf("%s is an invalid date.\n", yytext);
        return 0;
    }

    if ((day < 1) || (day > 31) ||
        ((month == 4 || month == 6 || month == 9 || month == 11) && (day > 30)) ||
        (month == 2 && ((year % 4 != 0) || (year % 100 == 0 && year % 400 != 0))
&& (day > 28)) ||
        (month == 2 && day > 29)) {
        printf("%s is an invalid date.\n", yytext);
        return 0;
    }
```

```
    printf("%s is a valid date.\n", yytext);
}

.|\n    ;
%%

int main() {
    printf(“Enter the date as MM/DD/YYYY format.\n ”);
    yylex();
    return 0;
}
```

OUTPUT -