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CD Practical 2

1) **Write a lex program to count number of words and digit**

Code :

```
%{
int words = 0,num=0;
%}

%%
[a-zA-Z]+ {printf("\n%s is word\n", yytext);
    words++;}

[0-9]+ {printf("\n%s is number\n", yytext);
    num++;}

[ \n\t] {printf("\n%s is space\n", yytext);
    }
.   {printf("\n%s not valid token\n", yytext);}
\n  {return 0;}
%%

int yywrap(){}

int main(){

yyin=fopen("a.txt","r");
yylex();

printf("\nWords = %d \nNumber = %d\n", words,num);
```

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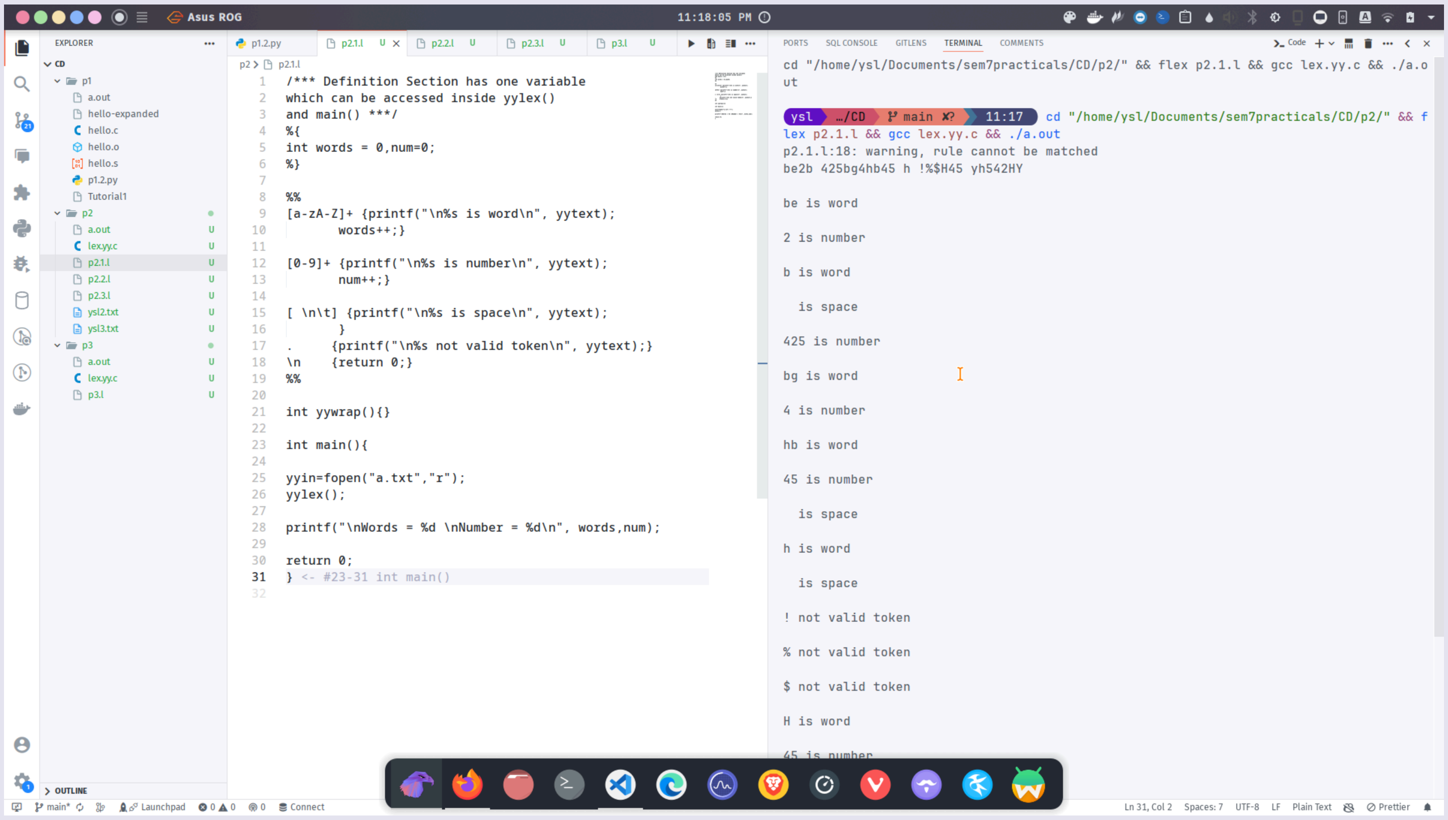
```
return 0;
}
```

<u>Output</u> :



```
/*** Definition Section has one variable
which can be accessed inside yylex()
and main() ***/
%{
int words = 0,num=0;
%}

%%
[a-zA-Z]+ {printf("\n%s is word\n", yytext);
       words++;}

[0-9]+ {printf("\n%s is number\n", yytext);
       num++;}

[ \n\t] {printf("\n%s is space\n", yytext);
       }
.     {printf("\n%s not valid token\n", yytext);}
\n    {return 0;}
%%

int yywrap(){}

int main(){

yyin=fopen("a.txt","r");
yylex();

printf("\nWords = %d \nNumber = %d\n", words,num);

return 0;
} <- #23-31 int main()
```

```
cd "/home/ysl/Documents/sem7practicals/CD/p2/" && flex p2.1.l && gcc lex.yy.c && ./a.o
ut

ysl  …/CD  main ✘?  11:17  cd "/home/ysl/Documents/sem7practicals/CD/p2/" && f
lex p2.1.l && gcc lex.yy.c && ./a.out
p2.1.l:18: warning, rule cannot be matched
be2b 425bg4hb45 h !%$H45 yh542HY

be is word

2 is number

b is word

  is space

425 is number

bg is word

4 is number

hb is word

45 is number

  is space

h is word

  is space

! not valid token

% not valid token

$ not valid token

H is word

45 is number
```

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2) Write a lex program to Scan and Count the number of characters, words, digits, vowels, consonants, special characters and lines in a file.

Code :

```
%{
int word = 0, digit = 0, line = 0, vowel = 0, cons = 0, chars =
0, special = 0;
%}
%%
\n { line++; }
[0-9]+ {
    digit += yyleng;
    chars += yyleng;
}
[a-zA-Z]+ {
    word++;
    for (int i = 0; i < yyleng; i++) {
        chars++;
        char ch = yytext[i];
        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o'
|| ch == 'u' ||
            ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O'
|| ch == 'U') {
            vowel++;
        } else {
            cons++;
    }
    }
```

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```
}
[!@#$%^&*.,;?'"(){}[\]] { special++; chars++; }
. { chars++; }
%%
int yywrap() {}

int main() {
yyin = fopen("ysl2.txt", "r");
yylex();

printf("\n\tCount of lines: %d\n", line+1);
printf("\tCount of words: %d\n", word);
printf("\tCount of digits: %d\n", digit);
printf("\tCount of vowels: %d\n", vowel);
printf("\tCount of consonants: %d\n", cons);
printf("\tCount of special characters: %d\n", special);
printf("\tCount of characters: %d\n", chars);
return 0;

}
```

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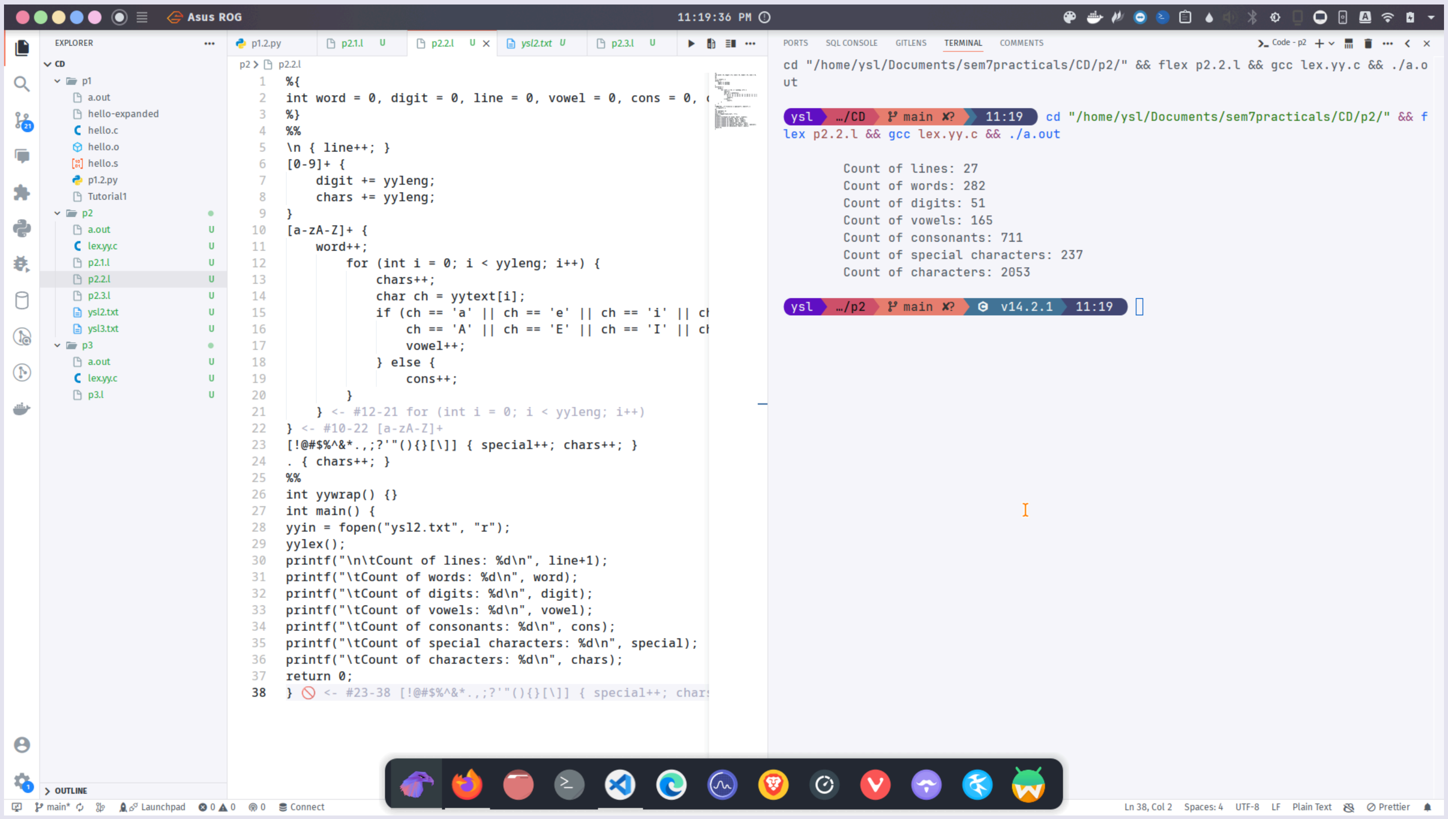
<u>Output :</u>



```
%{
int word = 0, digit = 0, line = 0, vowel = 0, cons = 0,
%}
%%
\n { line++; }
[0-9]+ {
    digit += yyleng;
    chars += yyleng;
}
[a-zA-Z]+ {
    word++;
        for (int i = 0; i < yyleng; i++) {
            chars++;
            char ch = yytext[i];
            if (ch == 'a' || ch == 'e' || ch == 'i' || c
                ch == 'A' || ch == 'E' || ch == 'I' || c
                vowel++;
            } else {
                cons++;
            }
    } <- #12-21 for (int i = 0; i < yyleng; i++)
} <- #10-22 [a-zA-Z]+
[!@#$%^&*.,;?'"(){}[\]] { special++; chars++; }
. { chars++; }
%%
int yywrap() {}
int main() {
yyin = fopen("ysl2.txt", "r");
yylex();
printf("\n\tCount of lines: %d\n", line+1);
printf("\tCount of words: %d\n", word);
printf("\tCount of digits: %d\n", digit);
printf("\tCount of vowels: %d\n", vowel);
printf("\tCount of consonants: %d\n", cons);
printf("\tCount of special characters: %d\n", special);
printf("\tCount of characters: %d\n", chars);
return 0;
} <- #23-38 [!@#$%^&*.,;?'"(){}[\]] { special++; char
```

```
cd "/home/ysl/Documents/sem7practicals/CD/p2/" && flex p2.2.l && gcc lex.yy.c && ./a.o
ut

ysl  …/CD   main ✘?  11:19  cd "/home/ysl/Documents/sem7practicals/CD/p2/" && f
lex p2.2.l && gcc lex.yy.c && ./a.out

        Count of lines: 27
        Count of words: 282
        Count of digits: 51
        Count of vowels: 165
        Count of consonants: 711
        Count of special characters: 237
        Count of characters: 2053

ysl  …/p2   main ✘?   v14.2.1  11:19
```

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3) **Write a lex program to recognize regular expression under 'a', 'a*b+', 'abb' , b* over the input set {a,b}.**

<u>Code</u> :

```
%{
    int state = 0;
%}

%%
abb { printf("%s : Matched abb\n", yytext); state = 1; }
a*b+ { if (state == 0) printf("%s : Matched a*b+\n", yytext);
state = 2; }
a { if (state == 0) printf("%s : Matched a\n", yytext); state =
3; }
[ab]+ { printf("%s : Invalid input\n", yytext); state = -1; }
\n { state = 0; }
%%

int yywrap() {
    return 1;
}
int main() {
    yyin = fopen("ysl3.txt", "r");
    printf("\n");
    yylex();
    return 0;
}
```

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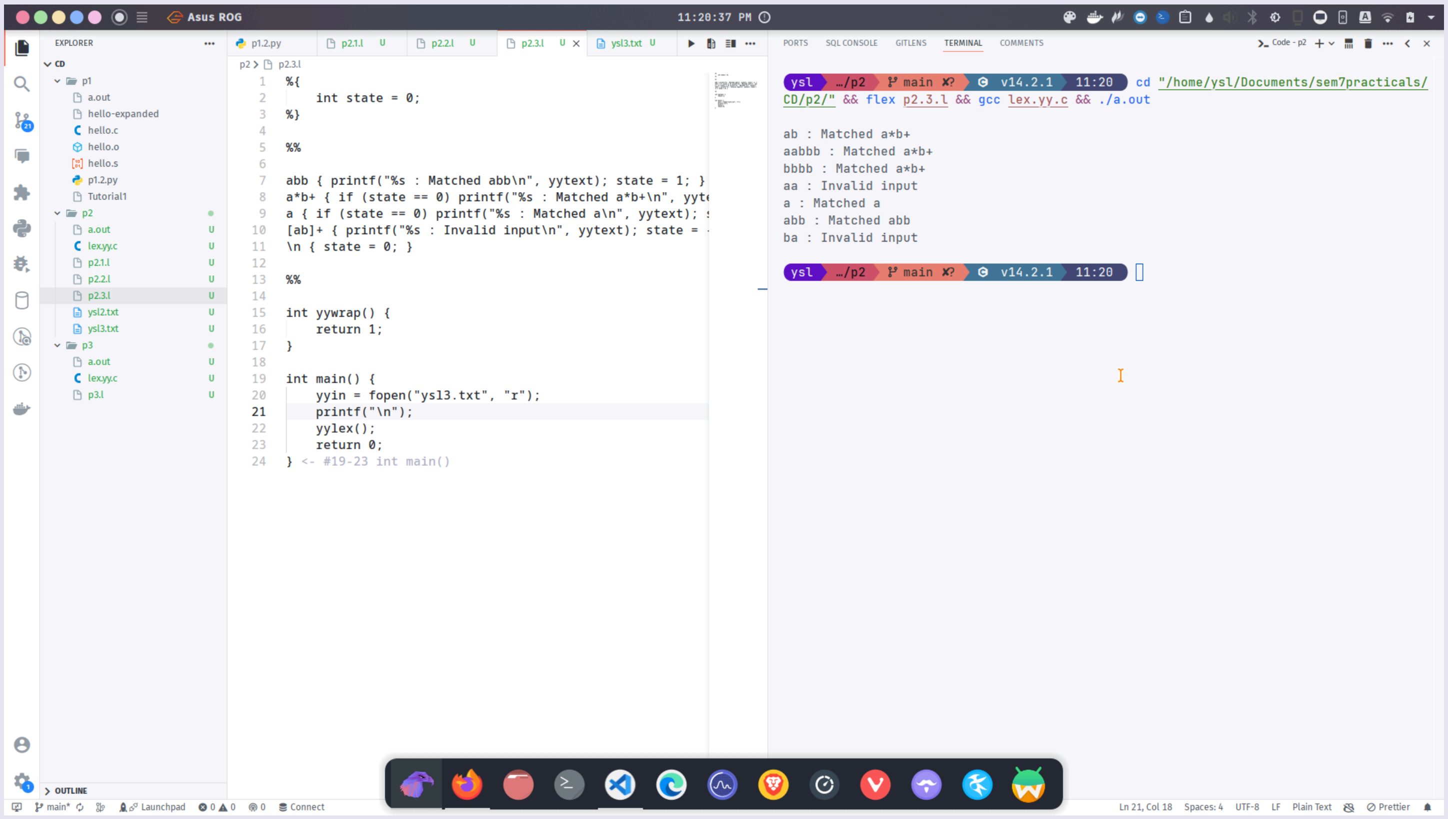
<u>Output</u> :



```
%{
    int state = 0;
%}

%%

abb { printf("%s : Matched abb\n", yytext); state = 1; }
a*b+ { if (state == 0) printf("%s : Matched a*b+\n", yyte
a { if (state == 0) printf("%s : Matched a\n", yytext); s
[ab]+ { printf("%s : Invalid input\n", yytext); state = 
\n { state = 0; }

%%

int yywrap() {
    return 1;
}

int main() {
    yyin = fopen("ysl3.txt", "r");
    printf("\n");
    yylex();
    return 0;
} <- #19-23 int main()
```

```
ysl  …/p2  main ✘?  v14.2.1  11:20  cd "/home/ysl/Documents/sem7practicals/
CD/p2/" && flex p2.3.l && gcc lex.yy.c && ./a.out

ab : Matched a*b+
aabbb : Matched a*b+
bbbb : Matched a*b+
aa : Invalid input
a : Matched a
abb : Matched abb
ba : Invalid input

ysl  …/p2  main ✘?  v14.2.1  11:20
```