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Module : Compilation 2
1ST YEAR OF MASTER'S DEGREE IN
NETWORKS, INFORMATION SYSTEMS & SECURITY (RSSI)
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Les expressions régulières en lex TP-01

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Contents

List of Figures	ii
1 Solutions of Fiche TP-01	1
1.1 Exercise 1	2
1.1.1 Ecrire une expression régulière pour :	2
a. Les caractères superflus (inutiles).	2
b. Les entiers.	3
c. Les chaînes alphanumériques.	4
d. Les chaînes alphanumériques dont le 1 ^{er} caractère est une lettre.	5
e. Les floats (nombre décimal)	6
f. Les réels avec exposant.	7
1.2 Exercise 2	8
1.2.1 Ecrire en lex un programme qui calcule le nombre de lignes et de caractère d'un fichier	8

List of Figures

1.1	exo1 a	2
1.2	exo1 b	3
1.3	exo1 c	4
1.4	exo1 d	5
1.5	exo1 e	6
1.6	exo1 f	7
1.7	exo2	9

Chapter 1

Solutions of Fiche TP-01

Notes regarding this solution :

This solution and the executions of the code in it was done in the following machine :

- *PC* : Lenovo IdeaPad S210 8GB
- *OS* : Linux Mint 20.2 Cinnamon Kernel v.5.4.0-88
- *IDE* : RStudio 2021.09.0 Build 351
- *R Version* : 3.6.1 (2019-07-05)

b. Les entiers.

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

%%
[0-9]+ { printf("accepted"); }
.+ { printf("not_accepted"); }
%%

int yywrap(){}
void yyerror(const char* mens){}
int main()
{
    yylex();

    getchar();

    void yyerror(const char* mens);
    return 0;
}
```

The screenshot shows a terminal window with two panes. The left pane displays the source code of a C program, which is a simple lexer. The right pane shows the terminal output after compiling and running the program. The output shows the program accepting valid integer inputs and rejecting invalid ones.

```
er 1/Semester 1/Compilation 2/TP/TP01$ gcc lex.y
y.c
tripleh@tripleh-IdeaPad-S210:~/Documents/M1/mast
er 1/Semester 1/Compilation 2/TP/TP01$ ./a.out
5
accepted
65565
accepted
0.5
not accepted
0.6465
not accepted
kjlk
not accepted
kjbkjhb
not accepted
0.k
not accepted
0000kjhk
not accepted
lkjl6545645
not accepted
```

FIGURE 1.2: exo1 b

c. Les chaines alphanumériques.

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

%%
[a-zA-Z 0-9]+ { printf("accepted");}
.+ { printf("not_accepted");}
%%

int yywrap(){}
void yyerror(const char* mens){}
int main()
{
yylex();

getchar();

void yyerror(const char* mens);
return 0;
}
```

```
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ lex TP01.l
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ gcc lex.yy.c
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ ./a.out
^C
kjhkj
accepted
khjkh64654
accepted
564564kjhkj
accepted
/**
not accepted
jkhkj*
not accepted
65464/
not accepted
```

FIGURE 1.3: exo1 c

d. Les chaines alphanumériques dont le 1 er caractère est une lettre.

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

%%
[a-z | A-Z]+[0-9 | a-z | A-Z]* {printf("accepted");}
.+ {printf("not_accepted");}
%%

int yywrap(){}
void yyerror(const char* mens){}
int main()
{
yylex();

getchar();

void yyerror(const char* mens);
return 0;
}
```

```
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ lex TP01.l
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ gcc lex.y.c
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ ./a.out
kjhkh
accepted
q
accepted
q5231
accepted
sgsd6541651fsgsdfg
accepted
2d
not accepted
1313
not accepted
sdf151635sdf
accepted
d-2516
not accepted
d9651-651
not accepted
d4
accepted
```

FIGURE 1.4: exo1 d

e. Les floats (nombre décimal)

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

%%
"-"?[0-9]+ "."[0-9]+ { printf("accepted"); }
.+ { printf("not_accepted"); }
%%

int yywrap(){}
void yyerror(const char* mens){}
int main()
{
yylex();

getchar();

void yyerror(const char* mens);
return 0;
}
```

```
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ lex TP01.l
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ gcc lex.y
tripleh@tripleh-IdeaPad-S210: ~/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01$ ./a.out
l
not accepted
jkkbj
not accepted
0.1
accepted
05616.5
accepted
1.0651656
accepted
-4654.0
accepted
-65.656516
accepted
```

FIGURE 1.5: exo1 e

f. Les réels avec exposant.

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

%%
"-"?[0-9]+ "."[0-9]+"^"?[0-9]* { printf("accepted");}
.+ { printf("not_accepted");}
%%

int yywrap(){}
void yyerror(const char* mens){}
int main()
{
yylex();

getchar();

void yyerror(const char* mens);
return 0;
}
```

```

TP01.1 - /home/tripleh/Documents/M1/master 1/Semester 1/Compilation 2/TP/TP01 - Geany
File Edit Search View Document Project Build Tools Help
1  %{
2  #include <stdio.h>
3  }%
4
5  %%
6  "-"?[0-9]+ "."[0-9]+"^"?[0-9]* {printf("accepte
7  .+ {printf("not_accepted");}
8  %%
9
10 int yywrap(){}
11 void yyerror(const char* mens){}
12 int main()
13 {
14 yylex();
15
16 getchar();
17
18 void yyerror(const char* mens);
19 return 0;
20 }
21
22
23
24
25
26
27
28
29
30
31

er 1/Semester 1/Compilation 2/TP/TP01$ gcc lex.y
y.c
tripleh@tripleh-IdeaPad-S210:~/Documents/M1/mast
er 1/Semester 1/Compilation 2/TP/TP01$ ./a.out
5
not accepted
sdf
not accepted
6546
not accepted
-56465
not accepted
0.5
accepted
0.656565
accepted
651651.5
accepted
-6546.65651
accepted
-0.5
accepted
5.3^5
accepted
165465.5416516^9898
accepted
-5646.16516^12
accepted

```

FIGURE 1.6: exo1 f

1.2 Exercise 2

1.2.1 Ecrire en lex un programme qui calcule le nombre de lignes et de caractère d'un fichier

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

\n { lines++;}
. chars++;

%%

int main(void)
{
yyin= fopen("secretoom.txt","r");
yylex();
printf("\n\n\n\n_This_Text_File_contains_...");
printf("\n\t%d_lines", lines);
printf("\n\t%d_characters", chars);
printf("\n\tHadjazi_Mohammed_Hisham_+_Amuer_Wassim_Group_:_01/RSSI\n");
}

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

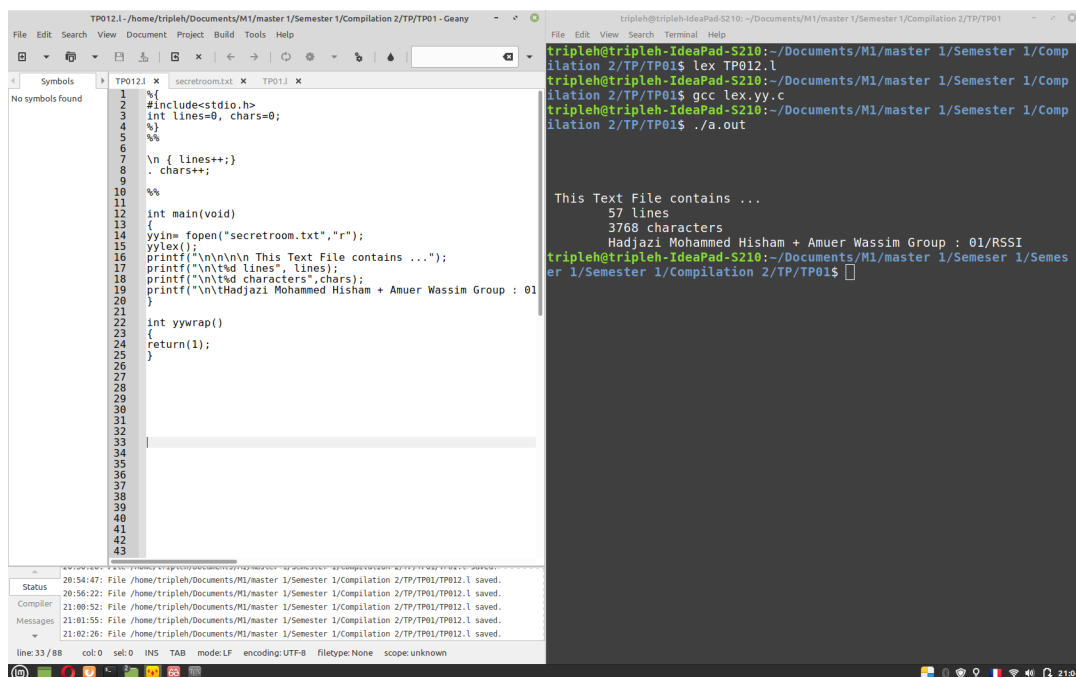


FIGURE 1.7: exo2