

CSB 353: Compiler Design

LAB 4

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Ques 1. Consider the simplest regular expressions which are the strings of text characters with no operators at all like monday tuesday wednesday. These three regular expressions match any occurrences of those character strings in an input text. Design a Scanner that removes every occurrence of the word day in such words.

Code:

```
1  %{
2  #include<stdio.h>
3  %}
4  %%
5  "day" ;
6  %%
7
8  main(void)
9  {
10 yyin= fopen("input.txt","r");
11 yyout= fopen("output.txt","w");
12 yylex();
13
14 }
15
16 int yywrap()
17 {
18 return(1);
19 }
```

Input:

```
1  monday tuesday wednesday
2  thursday
3  friday saturday
4  sunday
```

Output:

```
1  mon tues wednes
2  thurs
3  fri satur
4  sun
```

Ques 2. Design a Lexical analyzer which is successfully able to execute the following tasks:

- (i) Count the total number of all digit strings in an input text
- (ii) Print the running total of the number of digit strings
- (iii) Print out each one as soon as it is found.

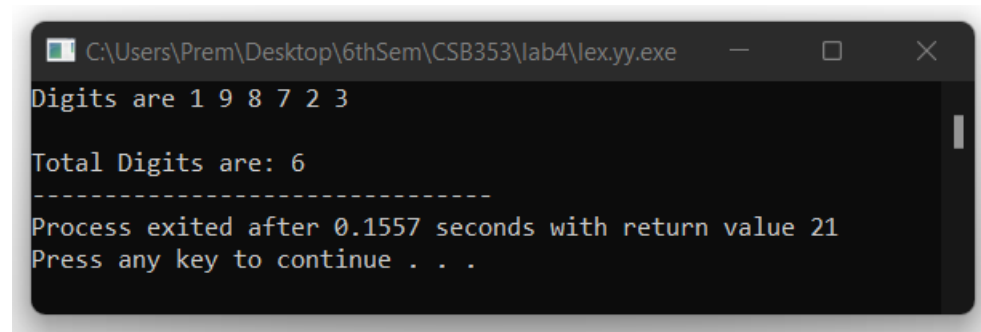
Code:

```
1  %{
2  #include<stdio.h>
3  int digits=0,val=0;
4  %{
5  DIGIT    [0-9]
6  %%
7  {DIGIT} {
8      if(digits==0)
9          printf("Digits are ");
10         printf("%s ", yytext);
11         digits++;
12     }
13     . {
14         printf("");
15     }
16     %%
17
18     main(void)
19     {
20         yyin= fopen("input2.txt","r");
21
22         yylex();
23
24         printf("\n\nTotal Digits are: %d",digits);
25
26
27     }
28
29     int yywrap()
30     {
31         return(1);
32     }
```

Input:

```
1 9 8 7 2 3 abc
```

Output:



The screenshot shows a Windows command prompt window titled "C:\Users\Prem\Desktop\6thSem\CSB353\lab4\lex.yy.exe". The output of the program is as follows:

```
Digits are 1 9 8 7 2 3
Total Digits are: 6
-----
Process exited after 0.1557 seconds with return value 21
Press any key to continue . . .
```

Ques 3. Design a Lexical analyzer which is successfully able to execute the following tasks:

- (i) Count the total number of all digit strings in an input text
- (ii) Print the running total of the number of digit strings
- (iii) Print out each one as soon as it is found.

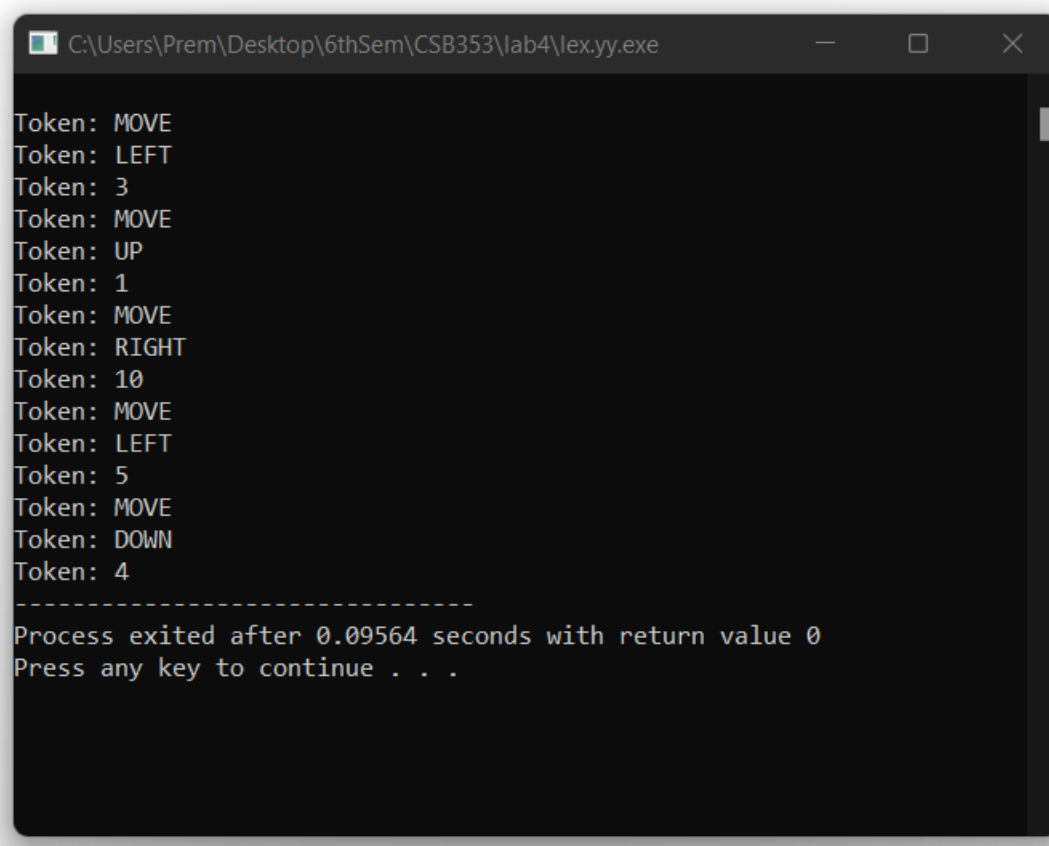
Code:

```
1  %{
2  #include<stdio.h>
3  %}
4  %%
5  "MOVE"|"LEFT"|"RIGHT"|"UP"|"DOWN" {
6  |    printf("\nToken: %s ", yytext);
7  | }
8  [0-9]|[1-9][0-9]* {
9  |    printf("\nToken: %s ", yytext);
10 | }
11 [ \t\n]+
12 . {
13 |    printf("\nInvalid token: %s",yytext);
14 | }
15 %%
16
17 main(void)
18 {
19     yyin= fopen("input3.txt","r");
20
21     yylex();
22
23
24
25 }
26
27 int yywrap()
28 {
29     return(1);
30 }
```

Input:

```
1  MOVE LEFT 3
2  MOVE UP 1
3  MOVE RIGHT 10
4  MOVE LEFT 5
5  MOVE DOWN 4
```

Output:



```
C:\Users\Prem\Desktop\6thSem\CSB353\lab4\lex.yy.exe

Token: MOVE
Token: LEFT
Token: 3
Token: MOVE
Token: UP
Token: 1
Token: MOVE
Token: RIGHT
Token: 10
Token: MOVE
Token: LEFT
Token: 5
Token: MOVE
Token: DOWN
Token: 4
-----
Process exited after 0.09564 seconds with return value 0
Press any key to continue . . .
```