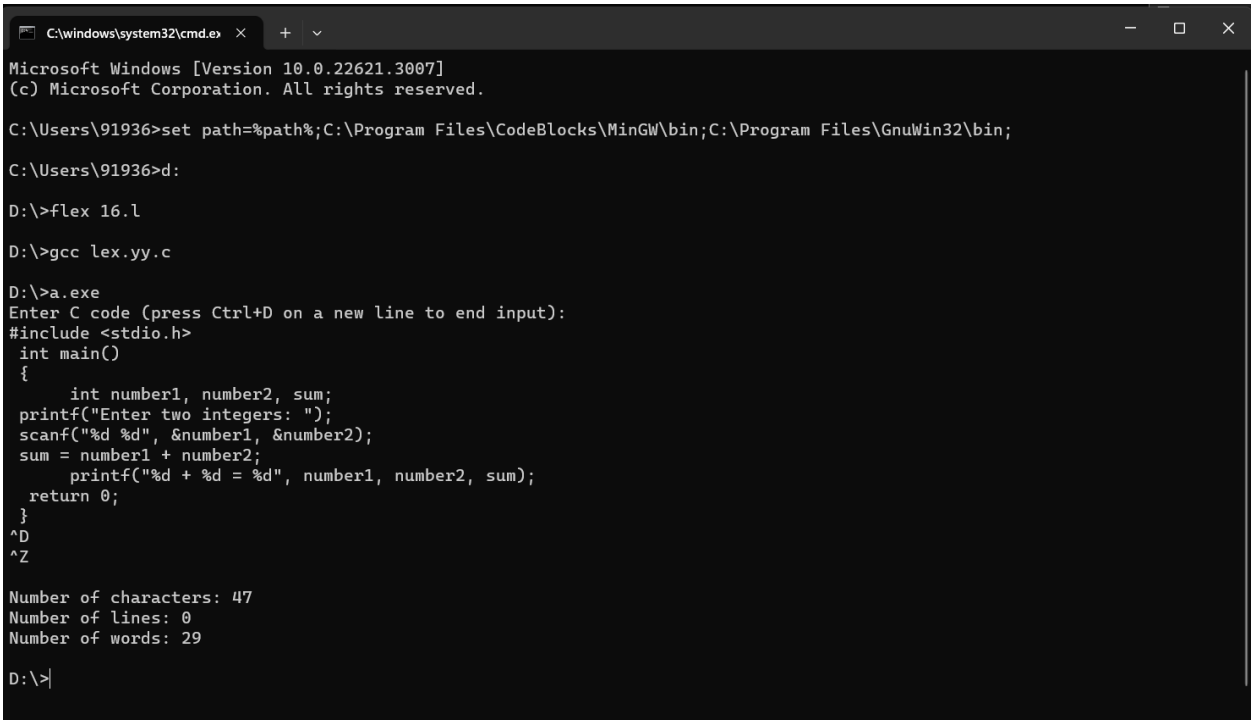
16.The lexical analyzer should ignore redundant spaces, tabs and new lines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value. Write a LEX specification file to take input C program from a .c file and count the number of characters, number of lines & number of words.

Input Source Program: (sample.c)

```
#include <stdio.h>
int main()
{
int number1, number2, sum;
printf("Enter two integers: ");
scanf("%d %d", &number1, &number2);
sum = number1 + number2;
printf("%d + %d = %d", number1, number2, sum);
 return 0;
}
```

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

int charCount = 0;
int lineCount = 0;
int wordCount = 0;
%}

%%
[ \t]+       ; /* Ignore spaces and tabs */
\n           ; /* Ignore new lines */
"/*"[^*]*"*"+([^*/][^*]*"*"+)*"/"  ; /* Ignore comments */
```

```
[a-zA-Z_][a-zA-Z0-9_]{0,31}    { wordCount++; } /* Identifiers (restricted to 32 characters) */

.              { charCount++; } /* Any other character */

%%

int main() {
    printf("Enter C code (press Ctrl+D on a new line to end input):\n");

    yylex();  // Call lexer on user input

    printf("\nNumber of characters: %d\n", charCount);
    printf("Number of lines: %d\n", lineCount);
    printf("Number of words: %d\n", wordCount);

    return 0;
}

int yywrap() {
    return 1; // indicate that there is no more input
}
```


C:\windows\system32\cmd.e
Microsoft Windows [Version 10.0.22621.3007]
(c) Microsoft Corporation. All rights reserved.
C:\Users\91936>set path=%path%;C:\Program Files\CodeBlocks\MinGW\bin;C:\Program Files\GnuWin32\bin;
C:\Users\91936>d:
D:\>flex 16.l
D:\>gcc lex.yy.c
D:\>a.exe
Enter C code (press Ctrl+D on a new line to end input):
#include <stdio.h>
int main()
{
int number1, number2, sum;
printf("Enter two integers: ");
scanf("%d %d", &number1, &number2);
sum = number1 + number2;
printf("%d + %d = %d", number1, number2, sum);
return 0;
}
^D
^Z
Number of characters: 47
Number of lines: 0
Number of words: 29
D:\>