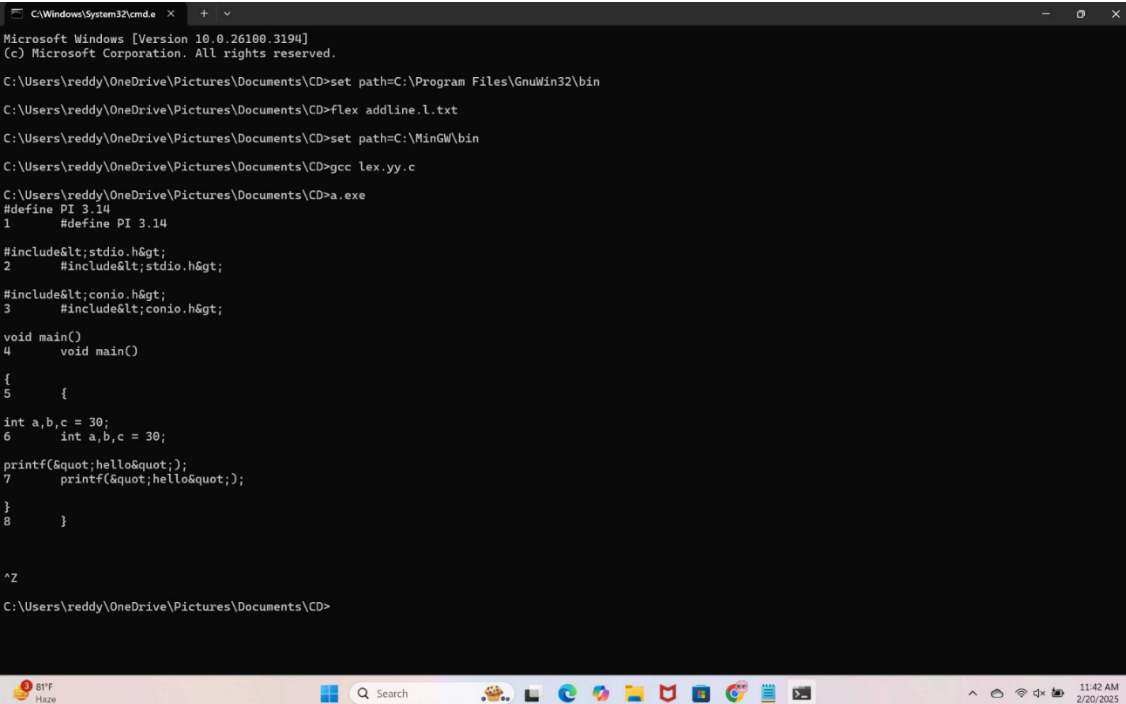


20. Write a LEX program which adds line numbers to the given C program file and display the same in the standard output.

Input Source Program: (sample.c)

```
#define PI 3.14
#include<stdio.h>
#include<conio.h>
void main()
{ int a,b,c =
30;
printf("hello")
;
}
```

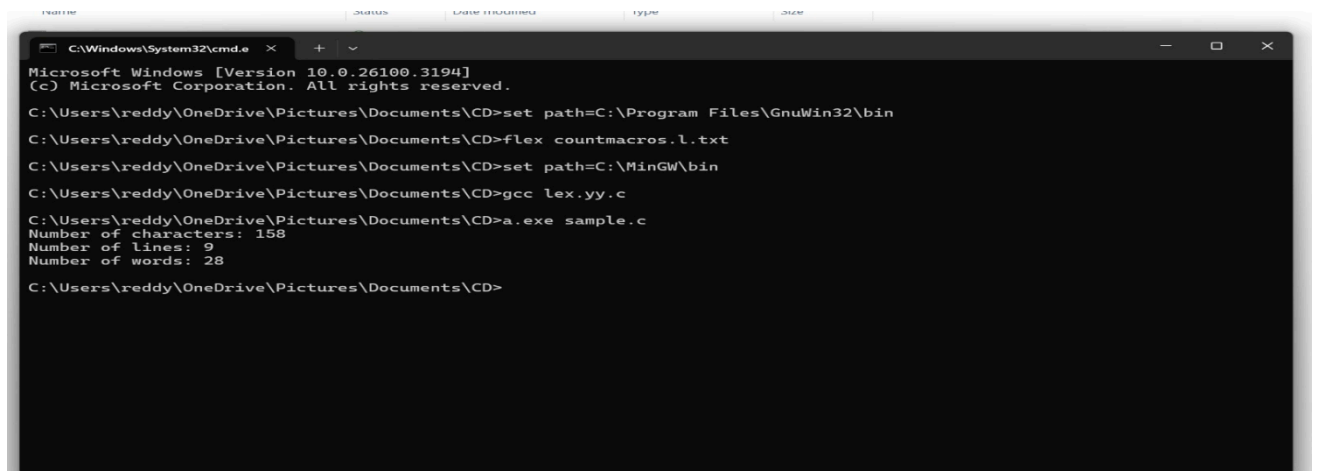


```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\Program Files\GnuWin32\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>flex addLine.l.txt
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\MinGW\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>gcc lex.yy.c
C:\Users\reddy\OneDrive\Pictures\Documents\CD>a.exe
1  #define PI 3.14
2  #include<stdio.h>;
3  #include<conio.h>;
4  void main()
5  {
6  int a,b,c = 30;
7  printf("hello");
8  }

^Z
C:\Users\reddy\OneDrive\Pictures\Documents\CD>
```

21. Write a LEX specification count the number of characters, number of lines & number of words.



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\Program Files\GnuWin32\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>flex countmacros.l.txt
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\MinGW\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>gcc lex.yy.c
C:\Users\reddy\OneDrive\Pictures\Documents\CD>a.exe sample.c
Number of characters: 158
Number of lines: 9
Number of words: 28
C:\Users\reddy\OneDrive\Pictures\Documents\CD>
```

22. Write a LEX program to count the number of comment lines in a given C program and eliminate them and write into another file.

Input Source File: (input.c)

```
#include<stdio.h> int main() {
int a,b,c; /*variable
declaration*/ printf("enter two
numbers"); scanf("%d
%d",&a,&b); c=a+b;//adding
two numbers printf("sum is
%d",c); return 0;
}
```

23. Write a LEX program to identify the capital words from the given input.

```
C:\Windows\System32\cmd.exe
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\Program Files\GnuWin32\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>flex comment.l.txt
"comment.l.txt", line 9: unrecognized rule
"comment.l.txt", line 9: unrecognized rule
"comment.l.txt", line 9: unrecognized rule
"comment.l.txt", line 12: unrecognized rule
"comment.l.txt", line 12: unrecognized rule
"comment.l.txt", line 12: unrecognized rule
"comment.l.txt", line 15: unrecognized rule
"comment.l.txt", line 15: unrecognized rule
"comment.l.txt", line 15: unrecognized rule
C:\Users\reddy\OneDrive\Pictures\Documents\CD>flex capital.l.txt
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\MinGW\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>gcc lex.yy.c
C:\Users\reddy\OneDrive\Pictures\Documents\CD>a.exe sample.c
Enter text (Ctrl-D to end input on Linux/macOS, Ctrl-Z on Windows):
A
CAPITAL WORD: A
a
^Z
Total Capital Words: 1
C:\Users\reddy\OneDrive\Pictures\Documents\CD>
```

24. Write a LEX Program to check the email address is valid or not.

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

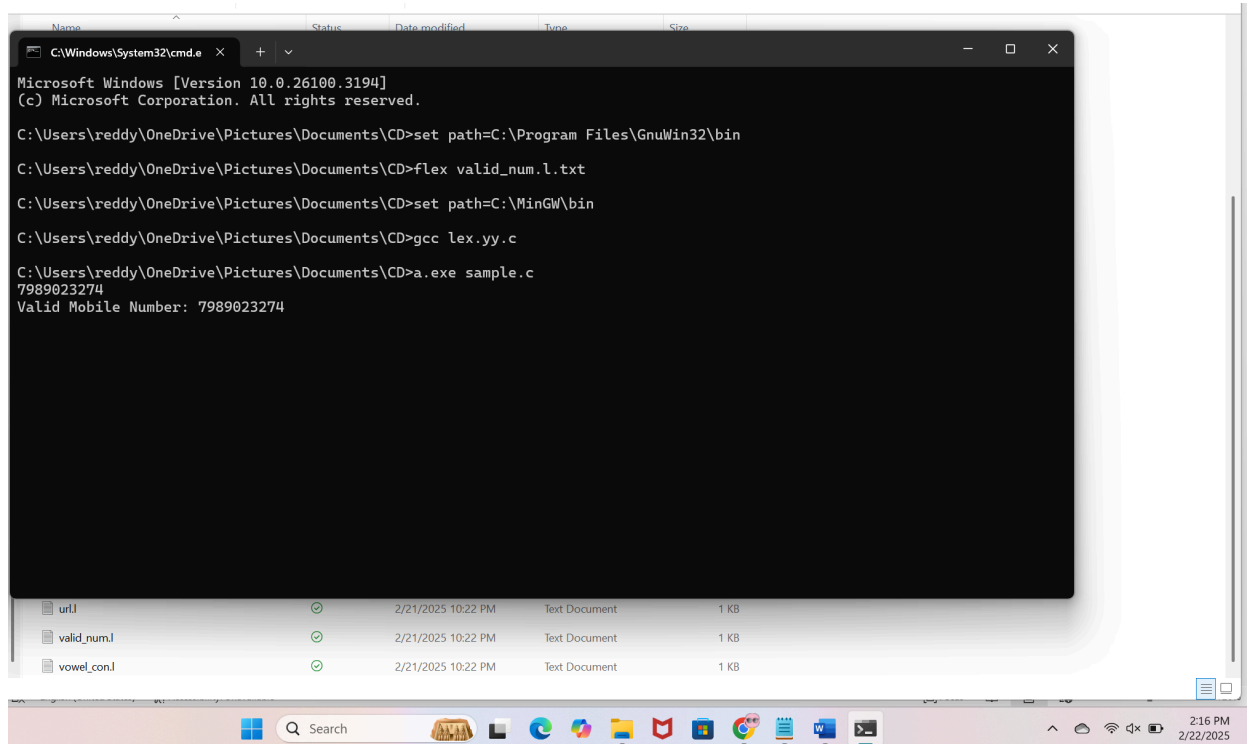
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\Program Files\GnuWin32\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>flex email.l.txt
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\MinGW\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>gcc lex.yy.c
C:\Users\reddy\OneDrive\Pictures\Documents\CD>a.exe sample.c
sudharshanreddy@gmail.com
^Z
Accepted
C:\Users\reddy\OneDrive\Pictures\Documents\CD>
```

25. Write a LEX Program to convert the substring abc to ABC from the given input string.

```
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\Program Files\GnuWin32\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>flex substring.l.txt
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\MinGW\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>gcc lex.yy.c
C:\Users\reddy\OneDrive\Pictures\Documents\CD>a.exe sample.c
abc
ABC
```

26. The Company ABC runs with employees with several departments. The Organization manager had all the mobile numbers of employees. Assume that you are the manager

and need to verify the valid mobile numbers because there may be some invalid numbers present. Implement a LEX program to check whether the mobile number is valid or not.



```
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\Program Files\GnuWin32\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>flex valid_num.l.txt
C:\Users\reddy\OneDrive\Pictures\Documents\CD>set path=C:\MinGW\bin
C:\Users\reddy\OneDrive\Pictures\Documents\CD>gcc lex.yy.c
C:\Users\reddy\OneDrive\Pictures\Documents\CD>a.exe sample.c
7989023274
Valid Mobile Number: 7989023274
```

Name	Status	Date modified	Type	Size
url.l	OK	2/21/2025 10:22 PM	Text Document	1 KB
valid_num.l	OK	2/21/2025 10:22 PM	Text Document	1 KB
vowel_con.l	OK	2/21/2025 10:22 PM	Text Document	1 KB

27. Implement Lexical Analyzer using LEX or FLEX (Fast Lexical Analyzer). The program should separate the tokens in the given C program and display with appropriate caption.

Input Source Program: (sample.c)

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

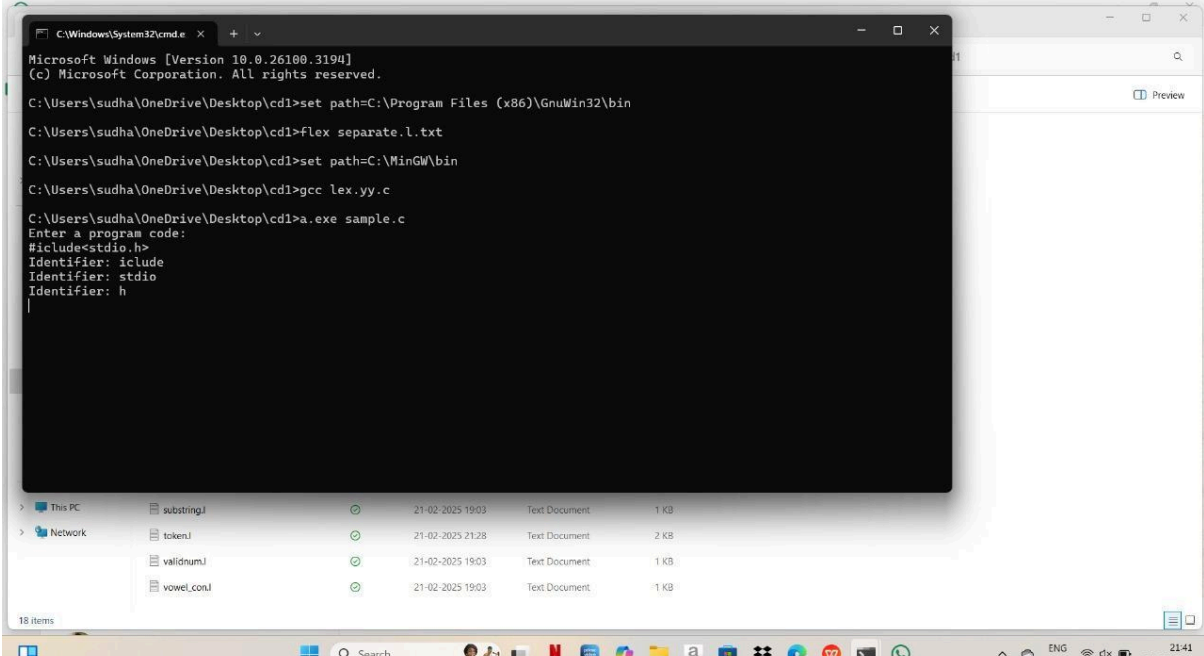
```
void main()
```

```
{
int a,b,c = 30;
printf("hello");
}
```

28. In a class, an English teacher was teaching the vowels and consonants to the students. She says “Vowel sounds allow the air to flow freely, causing the chin to drop noticeably, whilst consonant sounds are produced by restricting the air flow”. As a class activity the students are asked to identify the vowels and consonants in the given word/sentence and count the number of elements in each. Write an algorithm to help the student to count the number of vowels and consonants in the given sentence.

29. Keywords are predefined, reserved words used in programming that have special meanings to the compiler. Keywords are part of the syntax and they cannot be used as an identifier. In general there are 32 keywords. The prime function of Lexical

Analysing token generation. Among the 6 types of tokens, differentiating Keyword and Identifier is a challenging issue. Thus write a LEX program to separate keywords and identifiers.



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\sudha\OneDrive\Desktop\cd1>set path=C:\Program Files (x86)\GnuWin32\bin
C:\Users\sudha\OneDrive\Desktop\cd1>flex separate.l.txt
C:\Users\sudha\OneDrive\Desktop\cd1>set path=C:\MinGW\bin
C:\Users\sudha\OneDrive\Desktop\cd1>gcc lex.yy.c
C:\Users\sudha\OneDrive\Desktop\cd1>a.exe sample.c
Enter a program code:
#include<stdio.h>
Identifier: iclude
Identifier: stdio
Identifier: h
```

The screenshot shows a Windows File Explorer window in the background with a list of files: `substring.l` (1 KB), `token.l` (2 KB), `validnum.l` (1 KB), and `vowel_con.l` (1 KB). The taskbar at the bottom shows the system clock as 21:41 on 21-02-2025.