CD LAB 1

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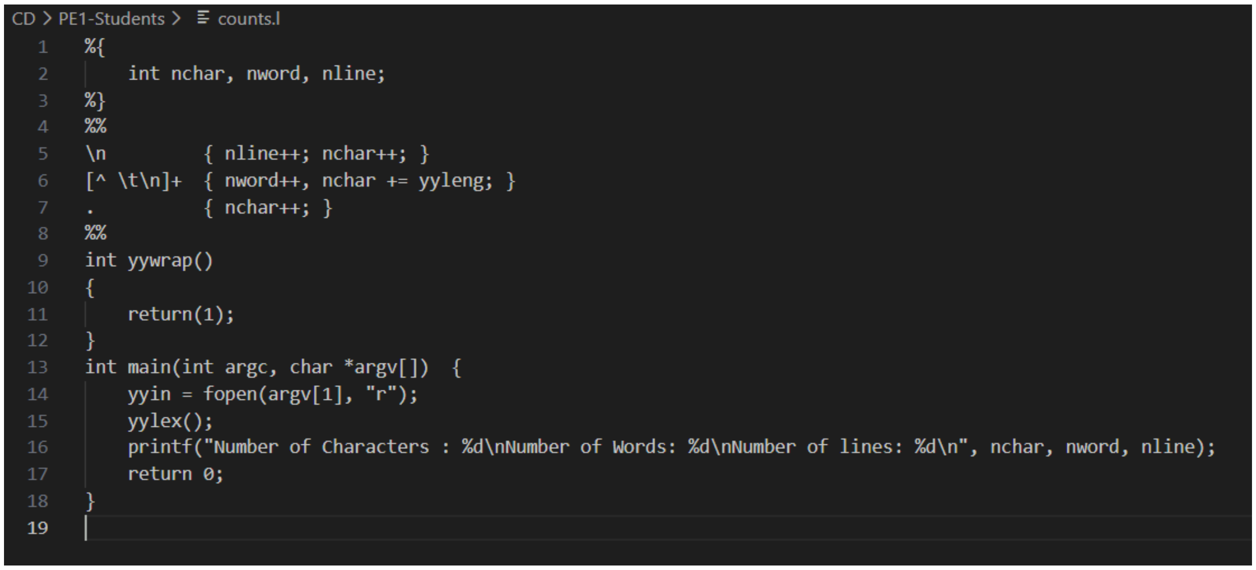
Class - 6H

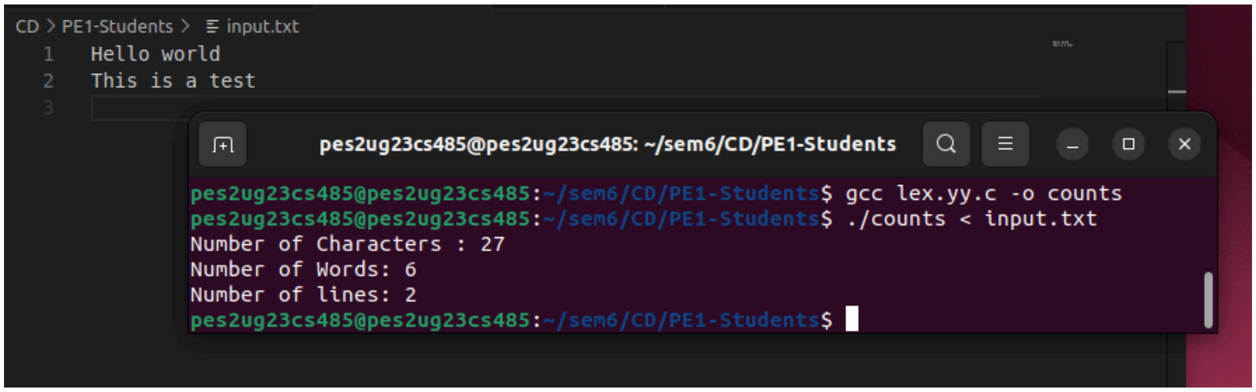
Counts.l



CD > PE1-Students > counts.l

```
%{
    int nchar, nword, nline;
%}
%%
\n          { nline++; nchar++; }
[^ \t\n]+   { nword++, nchar += yyleng; }
.           { nchar++; }
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])  {
    yyin = fopen(argv[1], "r");
    yylex();
    printf("Number of Characters : %d\nNumber of Words: %d\nNumber of lines: %d\n", nchar, nword, nline);
    return 0;
}
```

Valid input



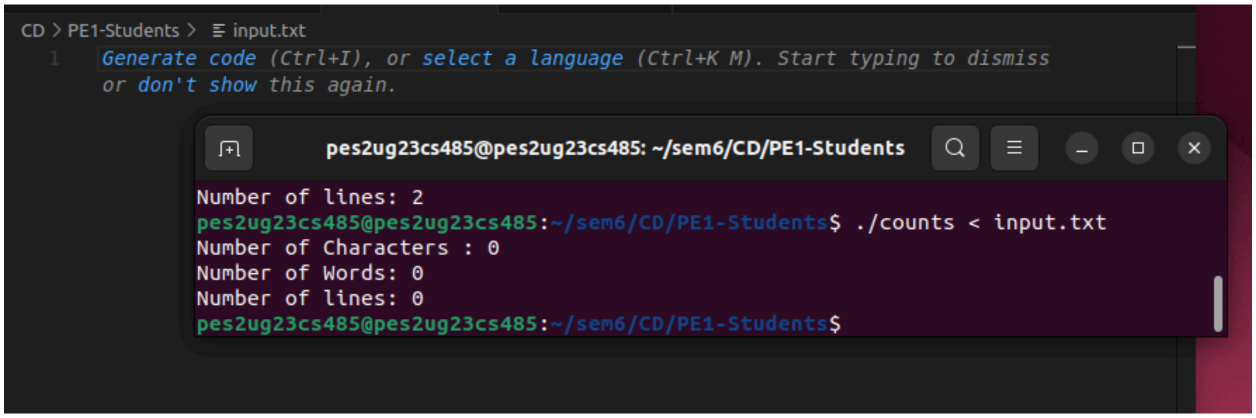
CD > PE1-Students > input.txt

```
Hello world
This is a test
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ gcc lex.yy.c -o counts
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./counts < input.txt
Number of Characters : 27
Number of Words: 6
Number of lines: 2
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

Invalid input



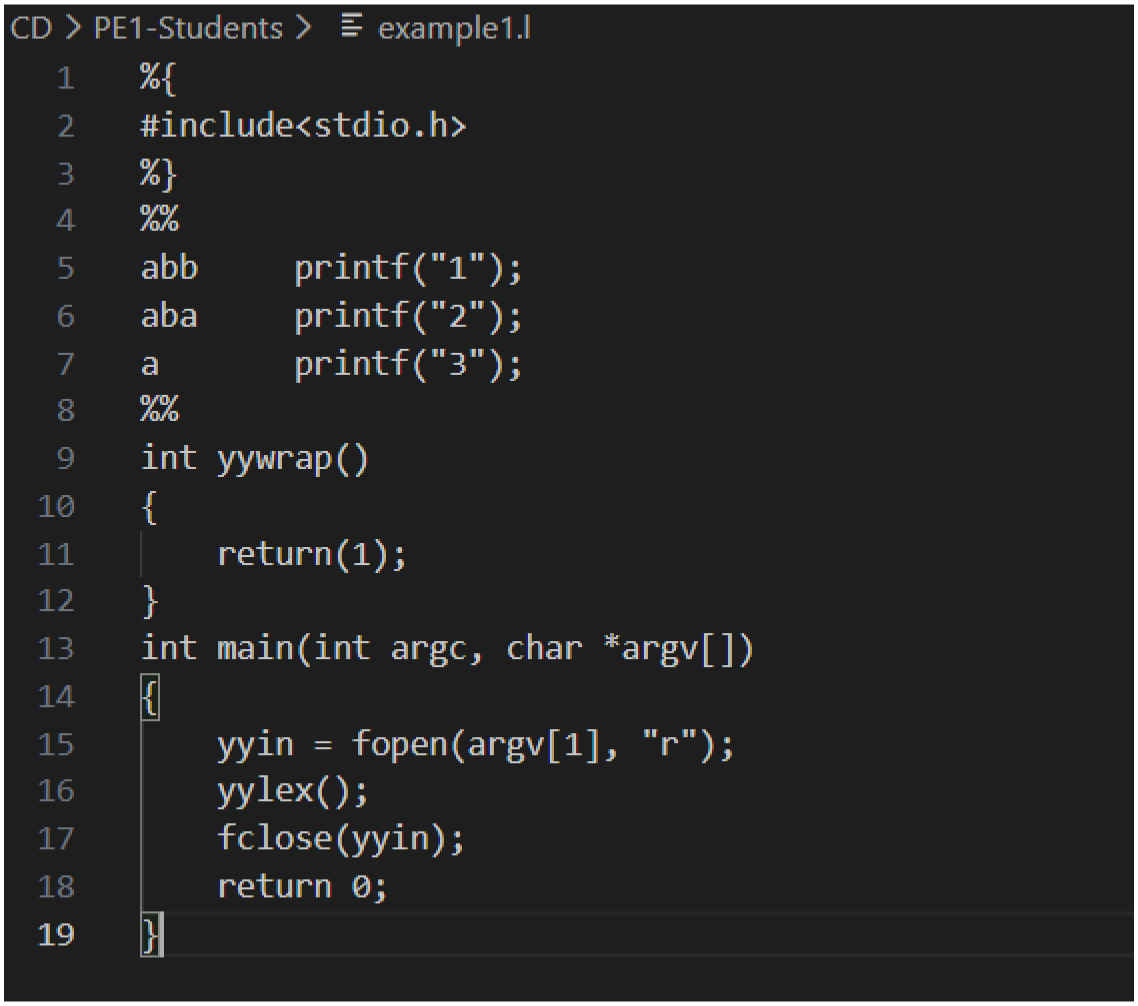
CD > PE1-Students > input.txt

```
Generate code (Ctrl+I), or select a language (Ctrl+K M). Start typing to dismiss
or don't show this again.
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
Number of lines: 2
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./counts < input.txt
Number of Characters : 0
Number of Words: 0
Number of lines: 0
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

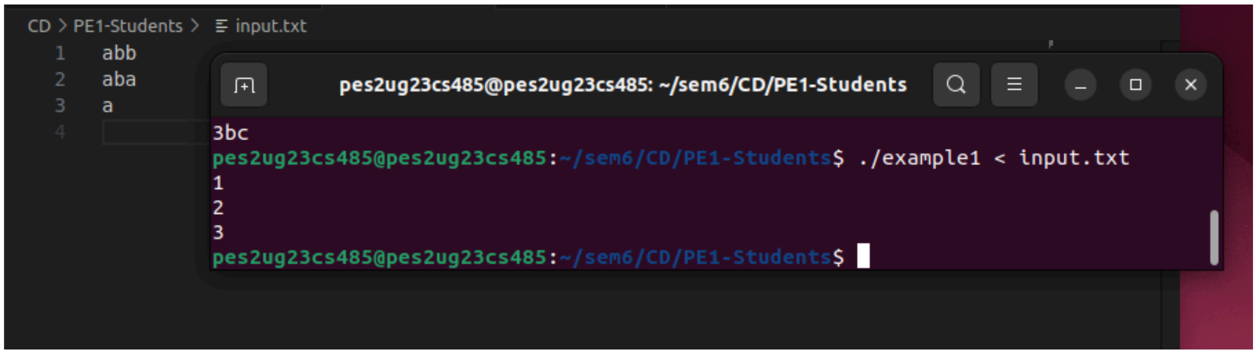
Example1.l



CD > PE1-Students > example1.l

```
%{
#include<stdio.h>
%}
%%
abb     printf("1");
aba     printf("2");
a       printf("3");
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])
{
    yyin = fopen(argv[1], "r");
    yylex();
    fclose(yyin);
    return 0;
}
```

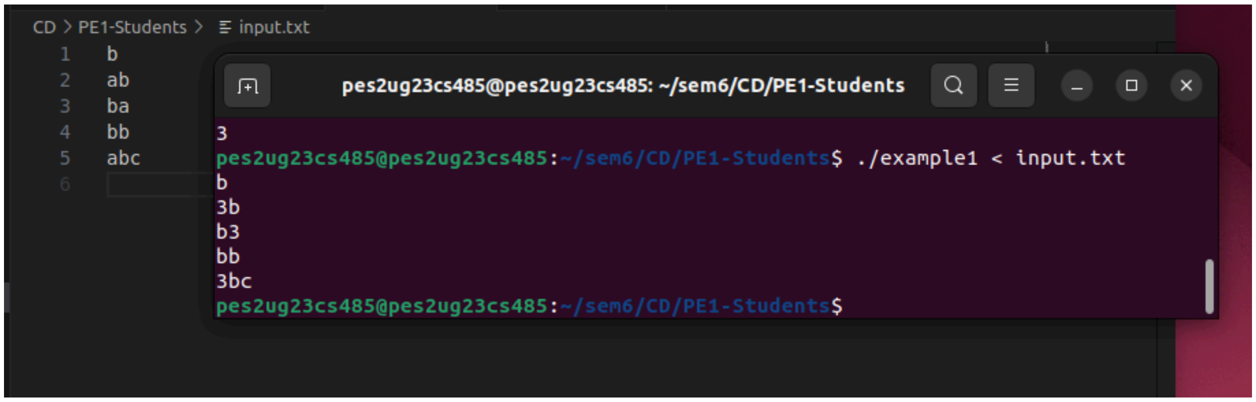
Valid input



```
CD > PE1-Students > input.txt
abb
aba
a
```

```
pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students
3bc
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./example1 < input.txt
1
2
3
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

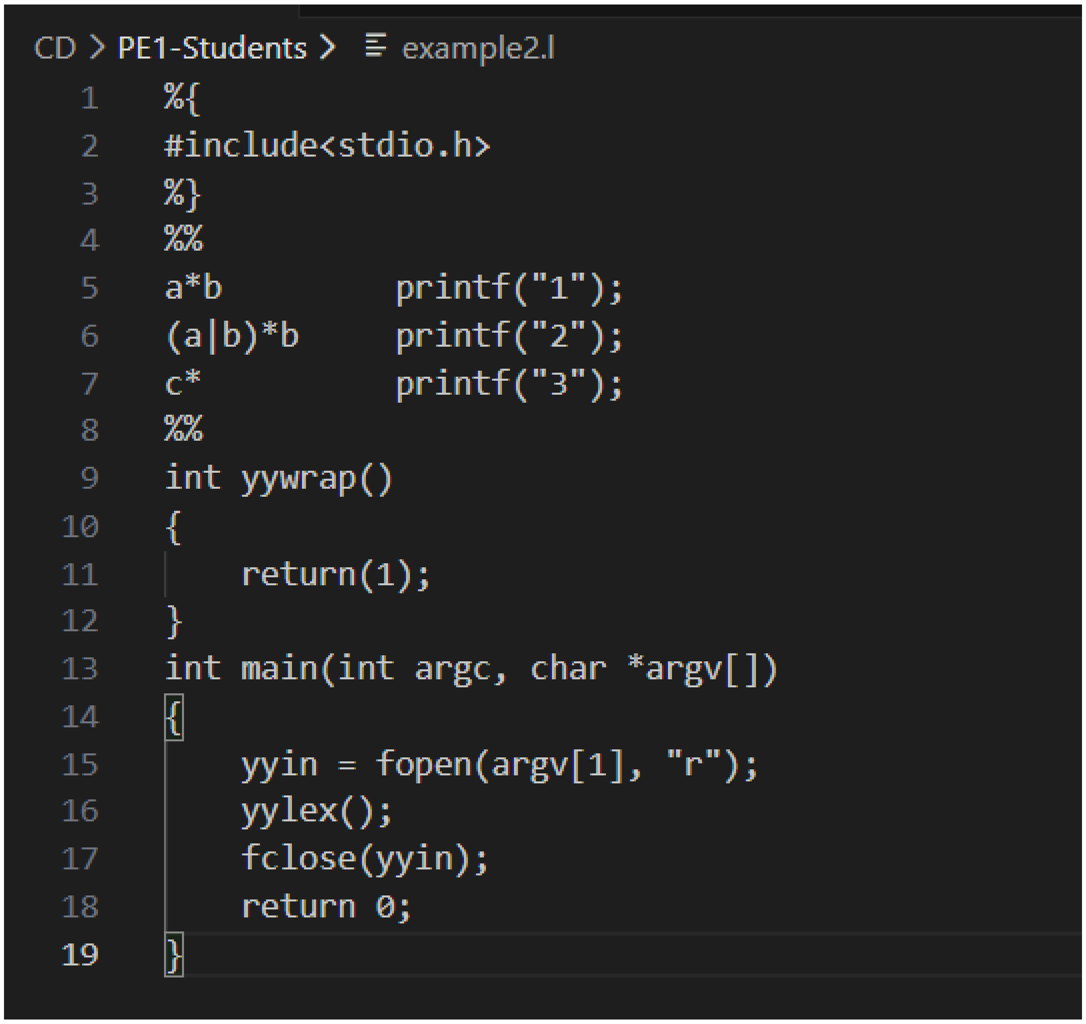
Invalid input



```
CD > PE1-Students > input.txt
b
ab
ba
bb
abc
```

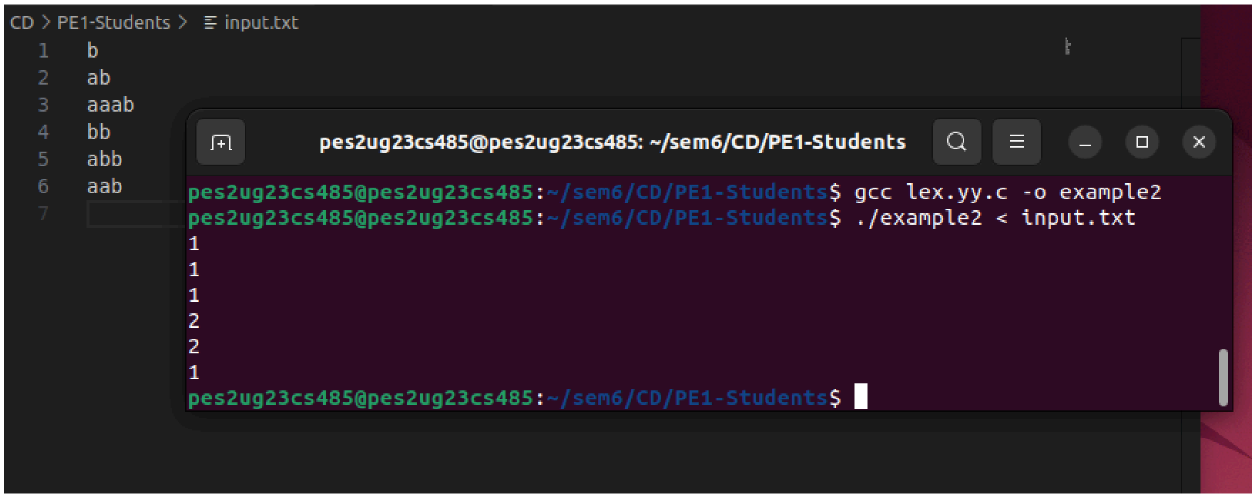
```
pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students
3
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./example1 < input.txt
b
3b
b3
bb
3bc
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

Example2.l



```
%{
#include<stdio.h>
%}
%%
a*b         printf("1");
(a|b)*b     printf("2");
c*          printf("3");
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])
{
    yyin = fopen(argv[1], "r");
    yylex();
    fclose(yyin);
    return 0;
}
```

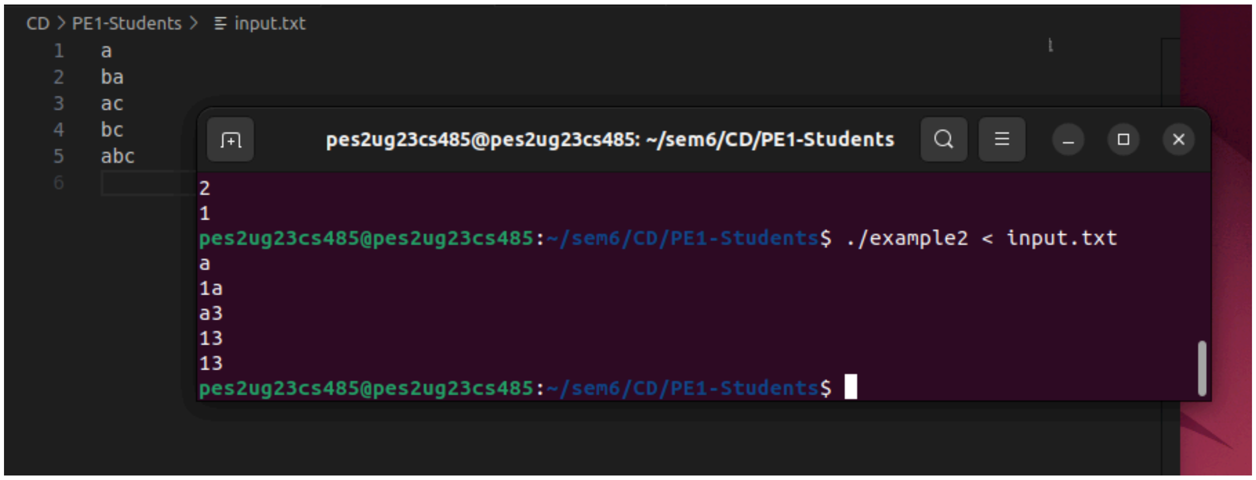
Valid input



```
b
ab
aaab
bb
abb
aab
```

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ gcc lex.yy.c -o example2
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./example2 < input.txt
1
1
1
2
2
1
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

Invalid input



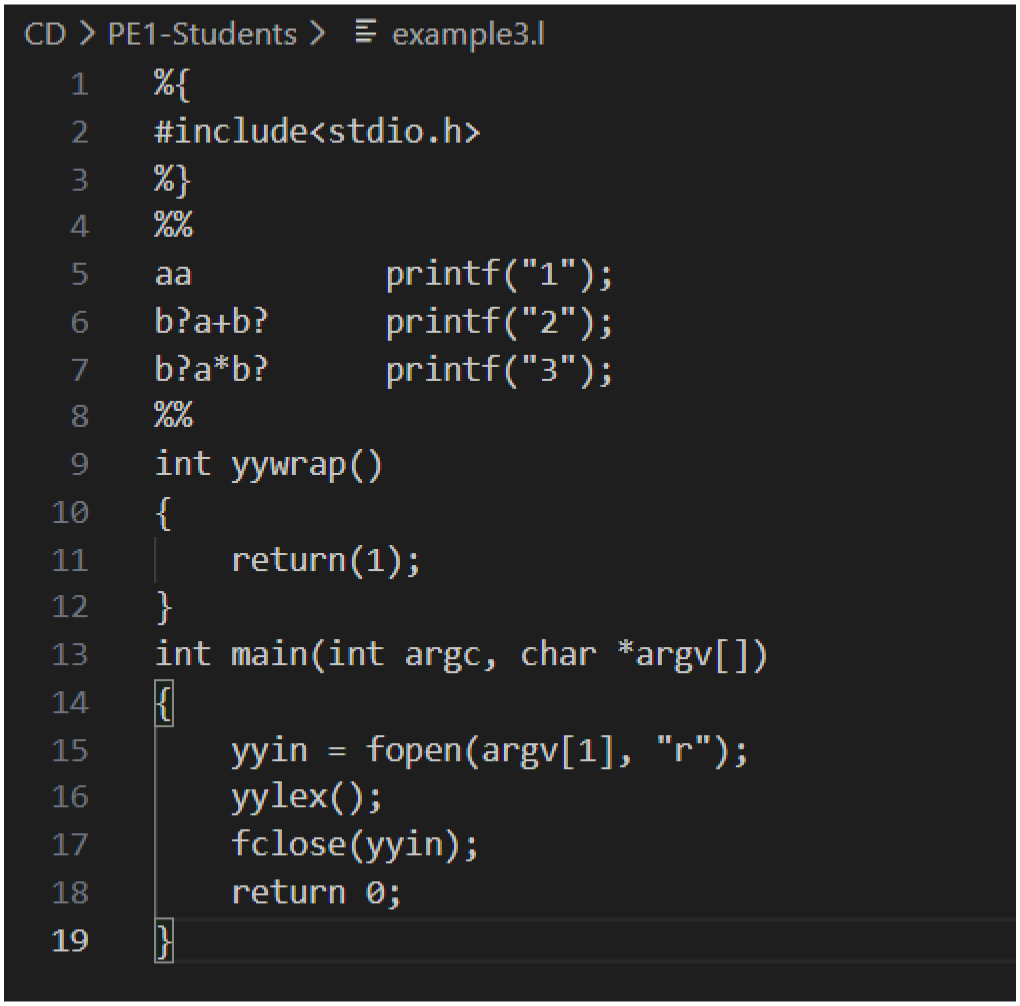
CD > PE1-Students > input.txt

```
a
ba
ac
bc
abc
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
2
1
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./example2 < input.txt
a
1a
a3
13
13
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

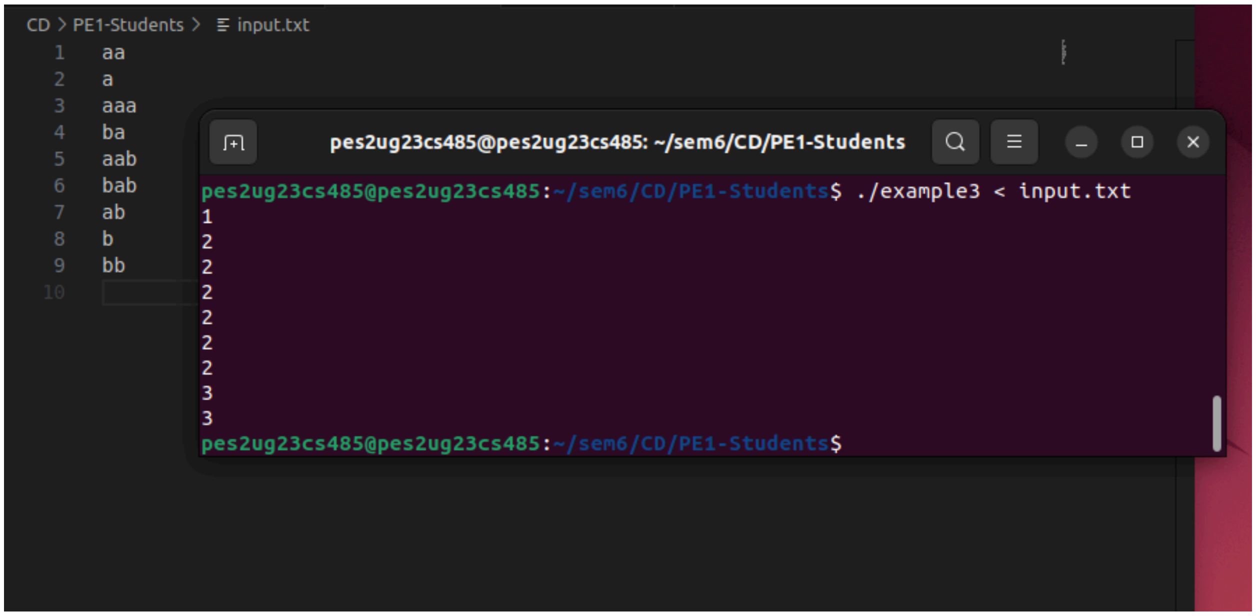
Example3.l



CD > PE1-Students > example3.l

```
%{
#include<stdio.h>
%}
%%
aa          printf("1");
b?a+b?      printf("2");
b?a*b?      printf("3");
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])
{
    yyin = fopen(argv[1], "r");
    yylex();
    fclose(yyin);
    return 0;
}
```

Valid input

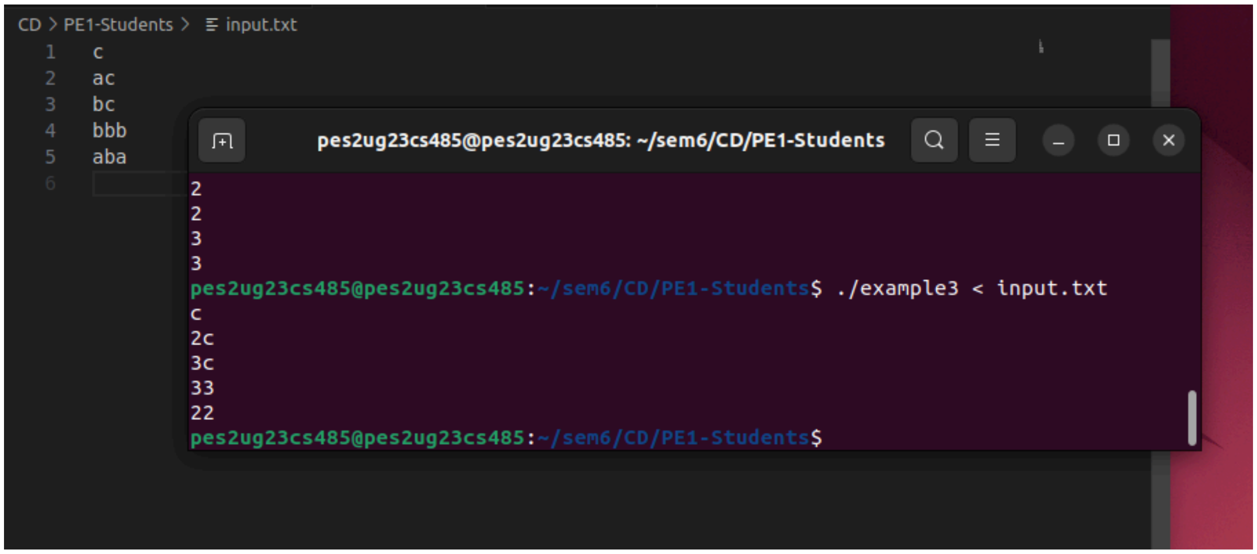


```
CD > PE1-Students > input.txt
aa
a
aaa
ba
aab
bab
ab
b
bb
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./example3 < input.txt
1
2
2
2
2
2
2
3
3
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

Invalid input

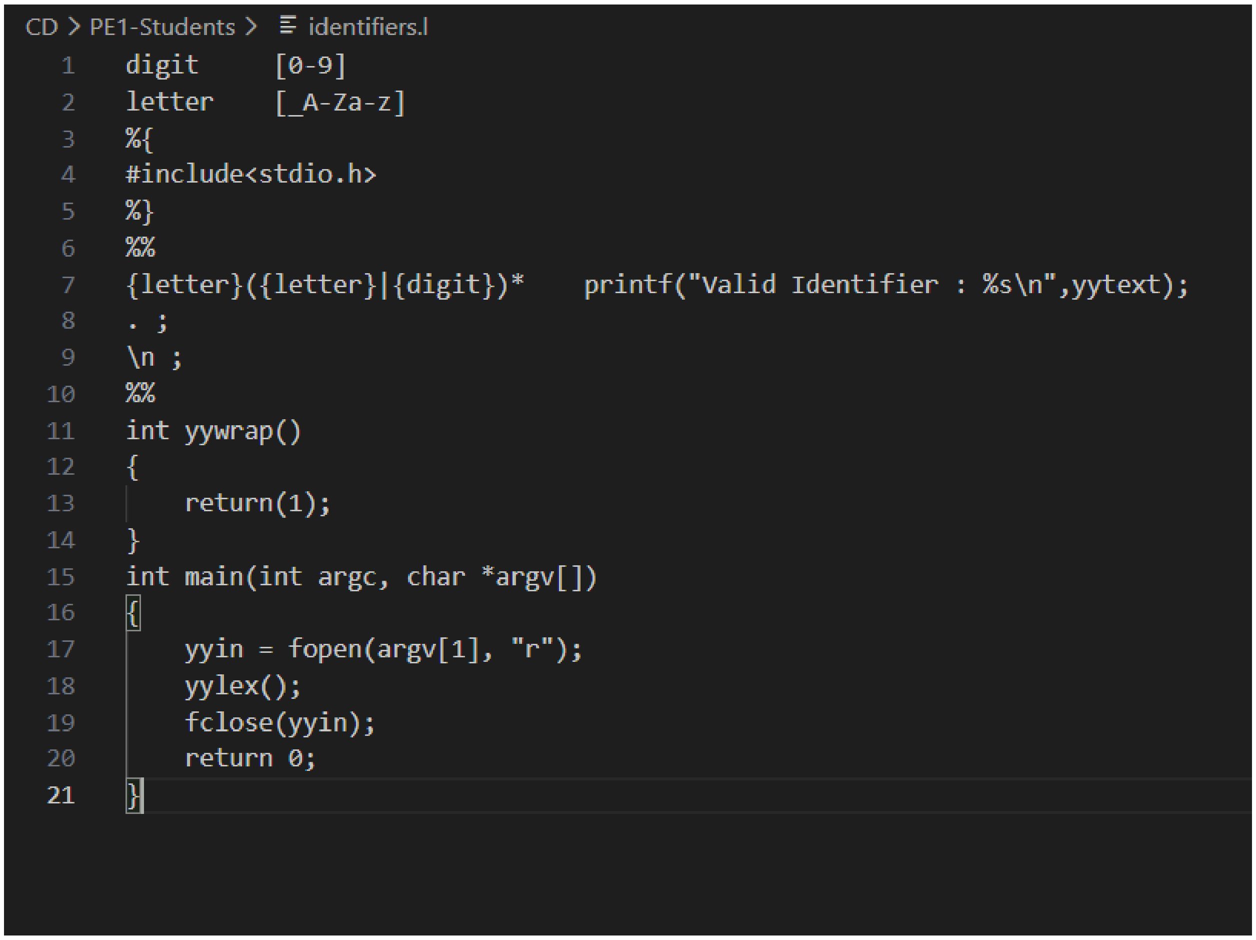


```
CD > PE1-Students > input.txt
c
ac
bc
bbb
aba
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

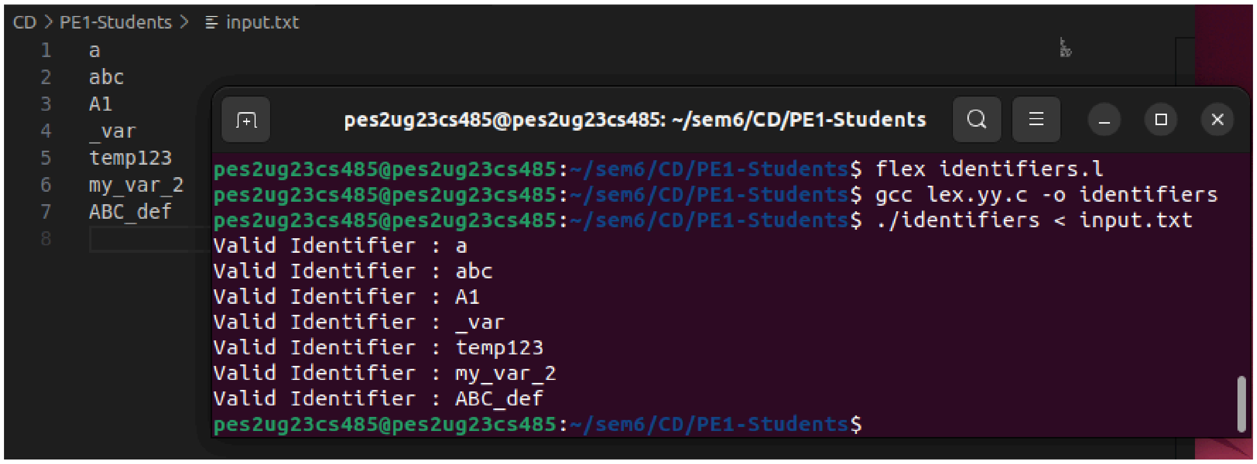
```
2
2
3
3
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./example3 < input.txt
c
2c
3c
33
22
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

Identifiers.l



```
digit     [0-9]
letter    [_A-Za-z]
%{
#include<stdio.h>
%}
%%
{letter}({letter}|{digit})*    printf("Valid Identifier : %s\n",yytext);
. ;
\n ;
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])
{
    yyin = fopen(argv[1], "r");
    yylex();
    fclose(yyin);
    return 0;
}
```

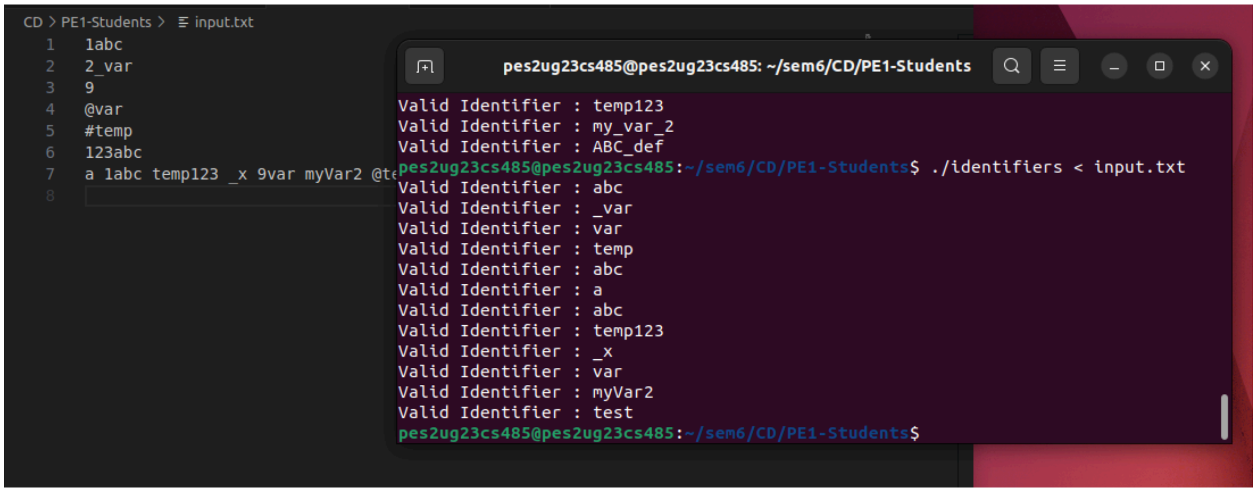
Valid input


CD > PE1-Students > input.txt
pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
a
abc
A1
_var
temp123
my_var_2
ABC_def
```

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ flex identifiers.l
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ gcc lex.yy.c -o identifiers
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./identifiers < input.txt
Valid Identifier : a
Valid Identifier : abc
Valid Identifier : A1
Valid Identifier : _var
Valid Identifier : temp123
Valid Identifier : my_var_2
Valid Identifier : ABC_def
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

invalid input



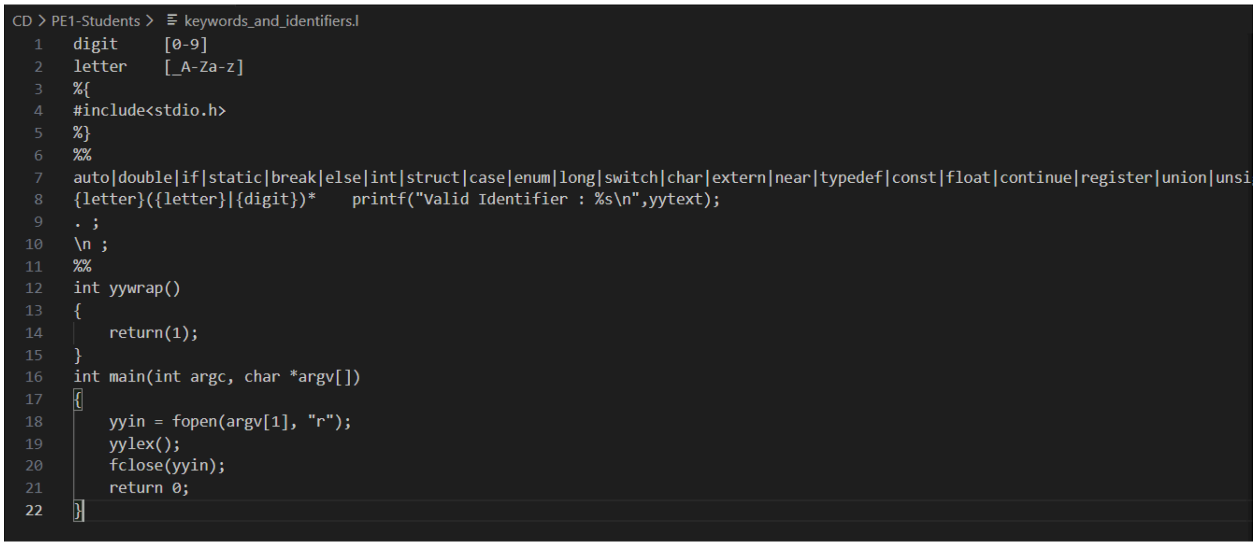
CD > PE1-Students > input.txt

```
1abc
2_var
9
@var
#temp
123abc
a 1abc temp123 _x 9var myVar2 @te
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

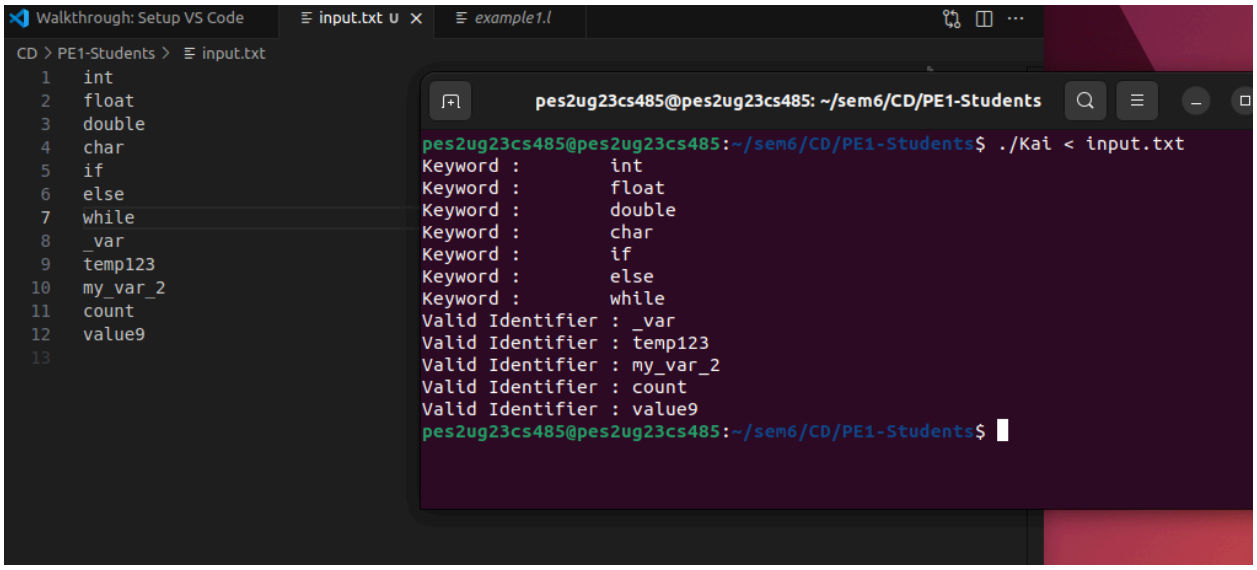
```
Valid Identifier : temp123
Valid Identifier : my_var_2
Valid Identifier : ABC_def
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./identifiers < input.txt
Valid Identifier : abc
Valid Identifier : _var
Valid Identifier : var
Valid Identifier : temp
Valid Identifier : abc
Valid Identifier : a
Valid Identifier : abc
Valid Identifier : temp123
Valid Identifier : _x
Valid Identifier : var
Valid Identifier : myVar2
Valid Identifier : test
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

Keywords_and_identifiers.l



```
digit     [0-9]
letter    [_A-Za-z]
%{
#include<stdio.h>
%}
%%
auto|double|if|static|break|else|int|struct|case|enum|long|switch|char|extern|near|typedef|const|float|continue|register|union|unsi
{letter}({letter}|{digit})*    printf("Valid Identifier : %s\n",yytext);
. ;
\n ;
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])
{
    yyin = fopen(argv[1], "r");
    yylex();
    fclose(yyin);
    return 0;
}
```

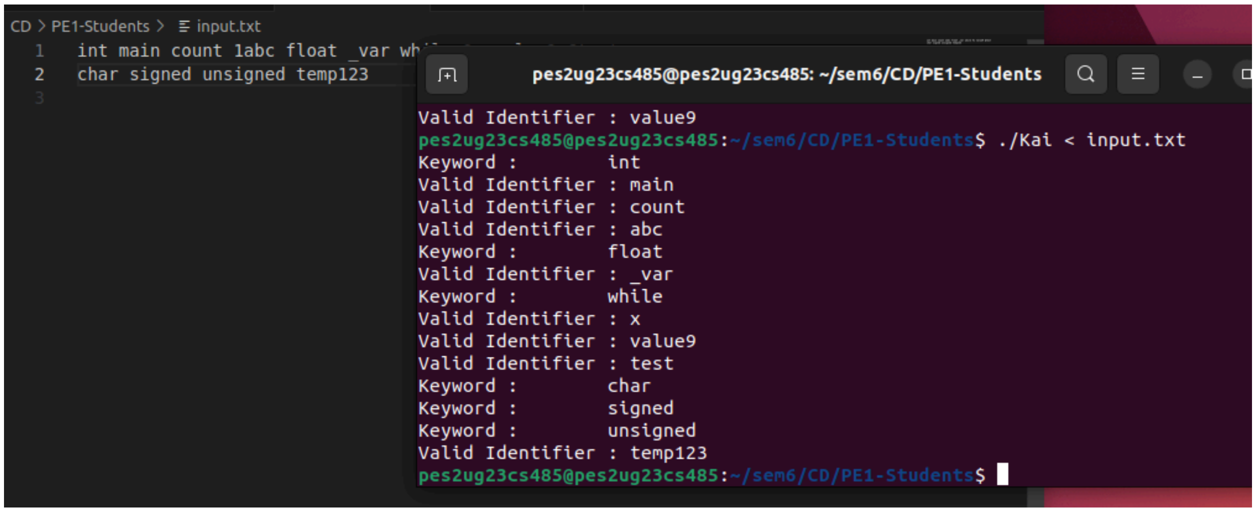
Valid input


Walkthrough: Setup VS Code
input.txt U
example1.l
CD > PE1-Students > input.txt
pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
int
float
double
char
if
else
while
_var
temp123
my_var_2
count
value9
```

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./Kai < input.txt
Keyword :        int
Keyword :        float
Keyword :        double
Keyword :        char
Keyword :        if
Keyword :        else
Keyword :        while
Valid Identifier : _var
Valid Identifier : temp123
Valid Identifier : my_var_2
Valid Identifier : count
Valid Identifier : value9
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

Invalid input



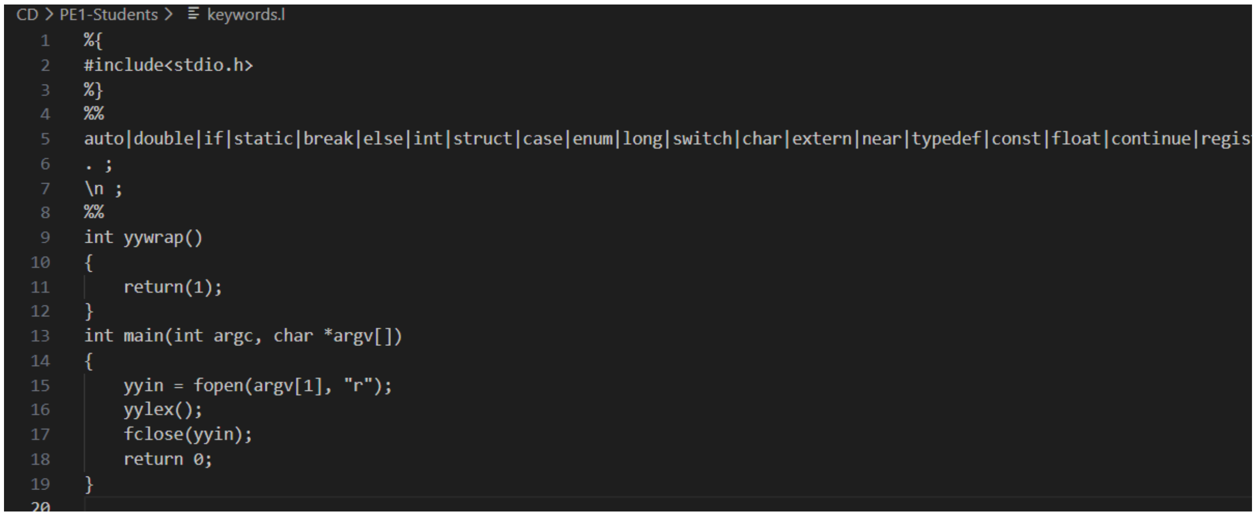
CD > PE1-Students > input.txt

```
int main count 1abc float _var wh
char signed unsigned temp123
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
Valid Identifier : value9
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./Kai < input.txt
Keyword :        int
Valid Identifier : main
Valid Identifier : count
Valid Identifier : abc
Keyword :        float
Valid Identifier : _var
Keyword :        while
Valid Identifier : x
Valid Identifier : value9
Valid Identifier : test
Keyword :        char
Keyword :        signed
Keyword :        unsigned
Valid Identifier : temp123
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

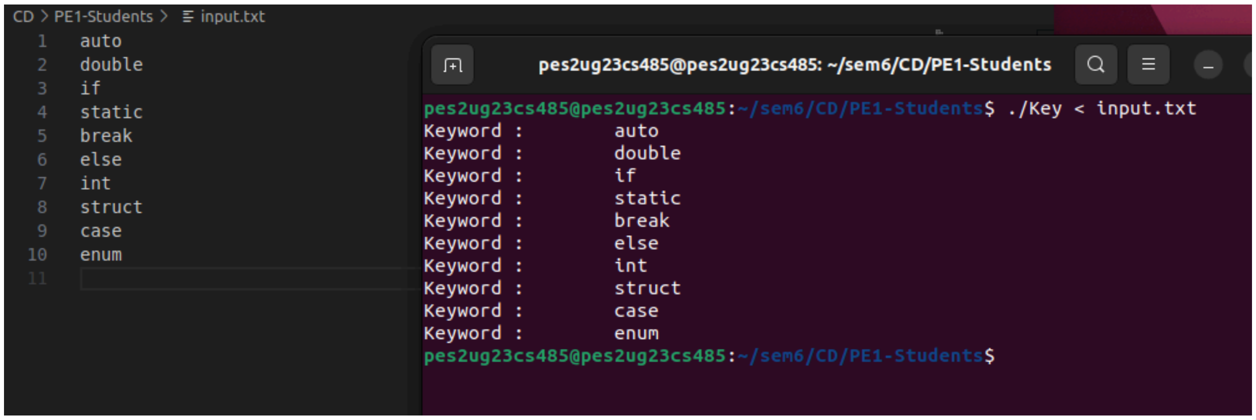
Keywords.l



CD > PE1-Students > keywords.l

```
%{
#include<stdio.h>
%}
%%
auto|double|if|static|break|else|int|struct|case|enum|long|switch|char|extern|near|typedef|const|float|continue|regis
. ;
\n ;
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])
{
    yyin = fopen(argv[1], "r");
    yylex();
    fclose(yyin);
    return 0;
}
```

valid



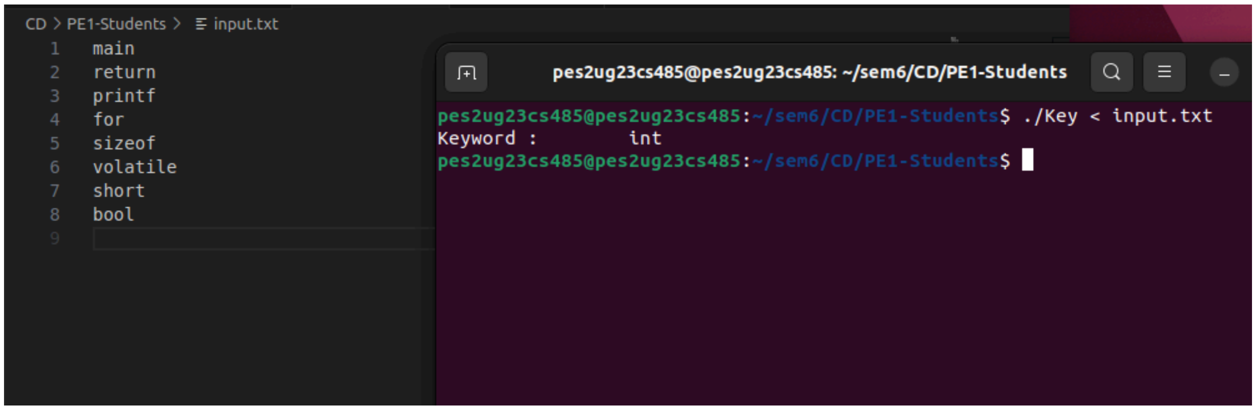
CD > PE1-Students > input.txt

```
auto
double
if
static
break
else
int
struct
case
enum
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./Key < input.txt
Keyword :        auto
Keyword :        double
Keyword :        if
Keyword :        static
Keyword :        break
Keyword :        else
Keyword :        int
Keyword :        struct
Keyword :        case
Keyword :        enum
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```

invalid

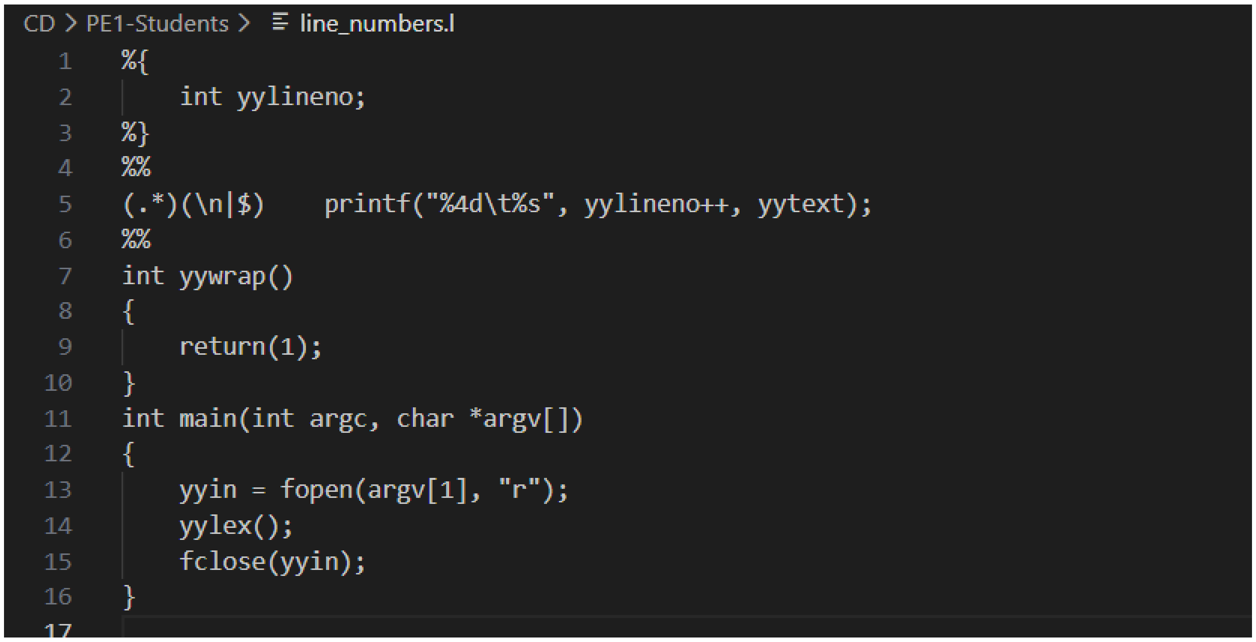

CD > PE1-Students > input.txt

```
main
return
printf
for
sizeof
volatile
short
bool
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

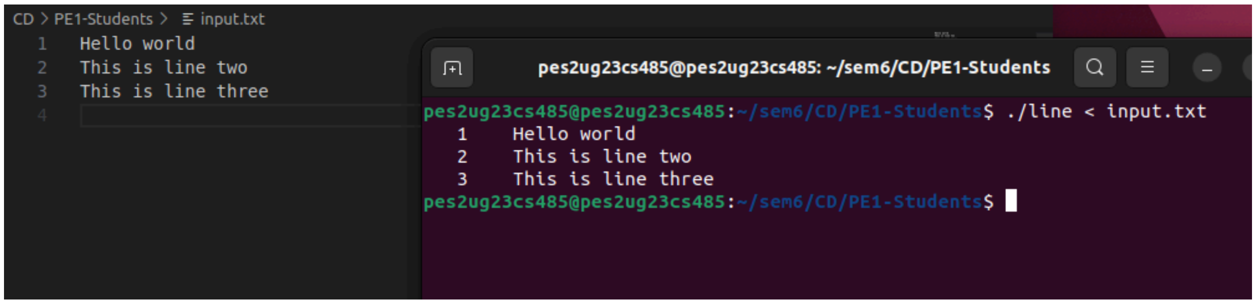
```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./Key < input.txt
Keyword :        int
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ 
```

Line_numbers.l


CD > PE1-Students > line_numbers.l

```
%{
    int yylineno;
%}
%%
(.*)(\n|$)     printf("%4d\t%s", yylineno++, yytext);
%%
int yywrap()
{
    return(1);
}
int main(int argc, char *argv[])
{
    yyin = fopen(argv[1], "r");
    yylex();
    fclose(yyin);
}
```

Valid

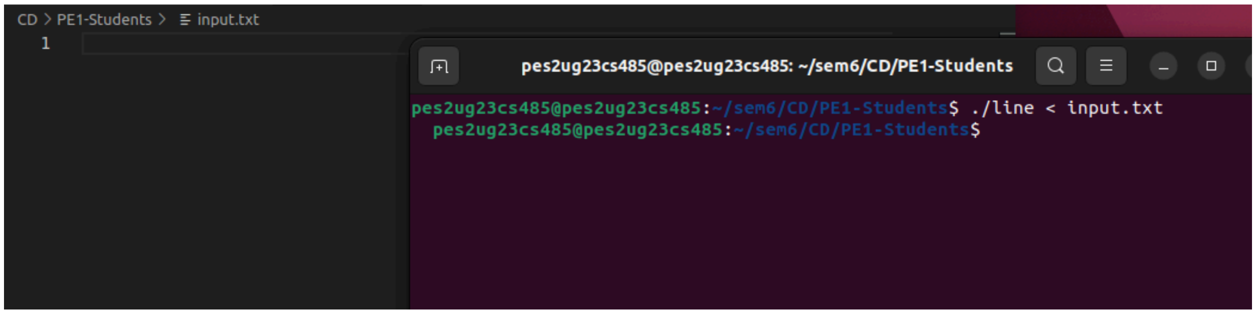

CD > PE1-Students > input.txt

```
Hello world
This is line two
This is line three
```

pes2ug23cs485@pes2ug23cs485: ~/sem6/CD/PE1-Students

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./line < input.txt
   1    Hello world
   2    This is line two
   3    This is line three
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ 
```

invalid



CD > PE1-Students > input.txt

```
pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$ ./line < input.txt
  pes2ug23cs485@pes2ug23cs485:~/sem6/CD/PE1-Students$
```