

1. Write a program that print word in new line when get white space.

The Code:

```
#include <stdio.h>

#include <string.h>

void main()

{

    char sha[500];

    int i=0;

    gets(sha);

    int len=strlen(sha);

    for(i=0;i<len;i++)

    {

        if(sha[i]==' ')

        {

            printf("\n");

        }

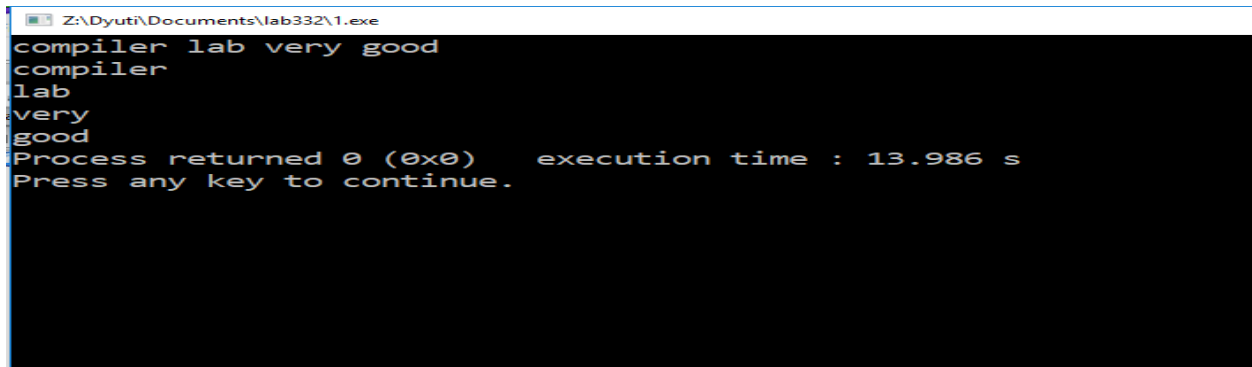
        else

            printf("%c",sha[i]);

    }

}
```

Output of problem-1:



```
Z:\Dyuti\Documents\lab332\1.exe
compiler lab very good
compiler
lab
very
good
Process returned 0 (0x0)   execution time : 13.986 s
Press any key to continue.
```

2. Write a program that print word in new line after removing extra space.

The Code:

```
#include <stdio.h>

#include <string.h>

void main()
{
    char sha[500];

    int i=0;

    gets(sha);

    int len=strlen(sha);

    for(i=0;i<len;i++)
    {
        if(sha[i]==' ')
        {
```

```

        if(sha[i+1]==' ')
        {
            continue;
        }
        printf("\n");
    }
    else
        printf("%c",sha[i]);
}
}

```

Output of problem-2:

```

Z:\Dyuti\Documents\lab332\2.exe
CSE DIU BEST
CSE
DIU
BEST
Process returned 13 (0xD)    execution time : 38.761 s
Press any key to continue.

```

3. Write a program that will count the number of white space in the input string.

The Code:

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

```
int main()
{
    char sha[3000];
    int count=0,i,space=0;

    printf("Enter a string: ");
    gets(sha);


    for(i = 0; sha[i] != '\0'; ++i)
    {
        count++;
    }

    for(i=0;i<count;i++)
    {
        if(sha[i]==' ')
        {
            space++;
        }
    }
}
```

```
printf("The number of white space is: %d\n",space);
```

```
return 0;}
```

Output of problem-3:

 Z:\Dyuti\Documents\lab332\3.exe

```
Enter a string: what are you doing here
The number of white space is: 4

Process returned 0 (0x0)   execution time : 10.308 s
Press any key to continue.
```

4. Write a program to find ASCII code of a character

The code:

```
#include<stdio.h>

int main()
{
    char ch;

    scanf("%c",&ch);

    int i=(int)ch;
```

```
if(i>=48 && i<58)
```

```
{
```

```
    printf("%c is Digit\n",ch);
```

```
    printf("ASCII is: %d ",i);
```

```
}
```

```
else if(i>64 && i<91)
```

```
{
```

```
    printf("%c is upper case\n",ch);
```

```
    printf("ASCII is: %d ",i);
```

```
}
```

```
else if(i>96 && i<123)
```

```
{
```

```
    printf("%c is lower case\n",ch);
```

```
    printf("ASCII is: %d ",i);
```

```
}
```

```
else
```

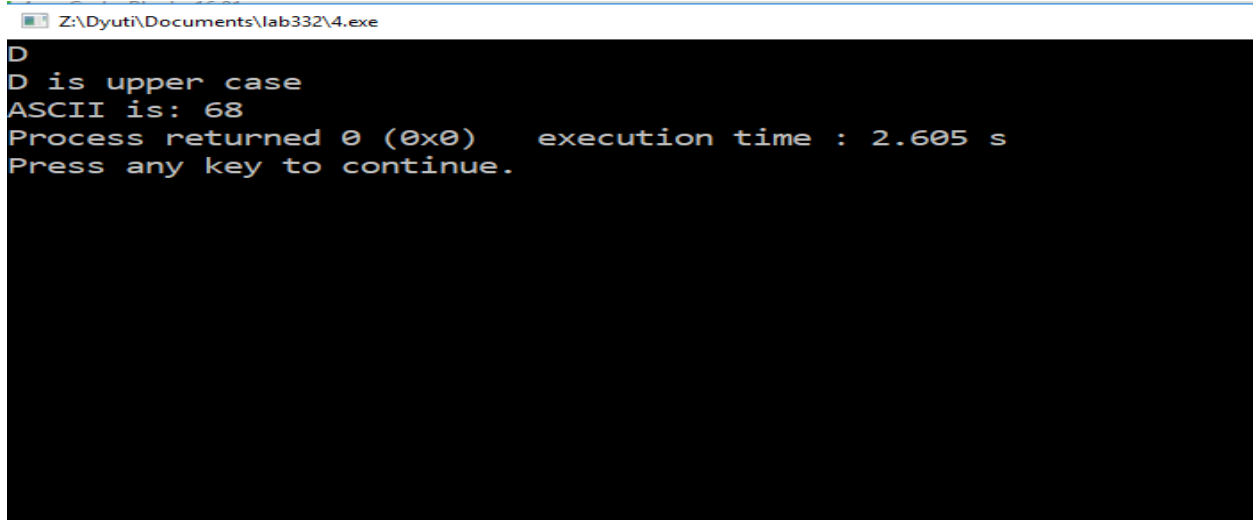
```
{
```

```
    printf("%c is Special Character\n",ch);
```

```
    printf("ASCII is: %d ",i);
```

```
    }  
    return 0;  
}
```

Output of problem-4:



```
Z:\Dyuti\Documents\lab332\4.exe  
D  
D is upper case  
ASCII is: 68  
Process returned 0 (0x0)   execution time : 2.605 s  
Press any key to continue.
```

5. Write a program to copy string without strcpy.

The Code:

```
#include<stdio.h>  
  
#include<string.h>  
  
int main()  
{  
    char c[100];  
  
    gets(c);  
  
    int temp=strlen(c);
```

```
char ch[100];  
  
int i;  
  
for(i=0;i<=temp;i++)  
{  
    ch[i]=c[i];  
}  
for(i=0;i<=temp;i++)  
{  
    printf("%c",ch[i]);  
}  
  
return 0;  
}
```

Output of problem-5:


```
Z:\Dyuti\Documents\lab332\5.exe
DIU best CSE NOT Best
DIU best CSE NOT Best
Process returned 0 (0x0)    execution time : 14.194 s
Press any key to continue.
```

6. Write a program to check input is an alphabet or number or special character.

The Code:

```
#include<stdio.h>

int main()
{
    char ch;
    scanf("%c",&ch);
    int i=(int)ch;
    if(i>=48 && i<58)
    {
        printf("%c is Digit\n",ch);
        printf("ASCII is: %d ",i);
    }

    else if(i>64 && i<91)
```

```
{
    printf("%c is upper case\n",ch);
    printf("ASCII is: %d ",i);
}
else if(i>96 && i<123)
{
    printf("%c is lower case\n",ch);
    printf("ASCII is: %d ",i);
}
else
{
    printf("%c is Special Character\n",ch);
    printf("ASCII is: %d ",i);
}
return 0;
}
```

Output of problem-6:

Z:\Dyuti\Documents\lab332\6.exe

```
9
9 is Digit
ASCII is: 57
Process returned 0 (0x0)   execution time : 3.098 s
Press any key to continue.
```

7. Write a program to find length of string and number of white space in the input string.

The Code:

```
#include <stdio.h>

int main()
{
    char s[1000];
    int count=0,i,space=0;
    printf("Enter a string: ");
    gets(s);

    for(i = 0; s[i] != '\0'; ++i)
    {
        count++;
    }

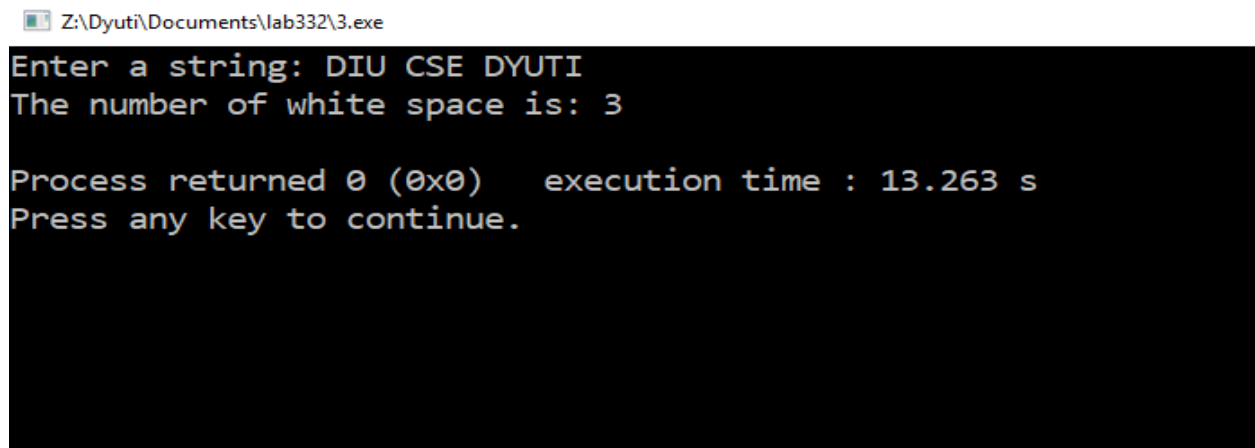
    printf("Length of string: %d\n", count);
```

```
for(i=0;i<count;i++)
{
    if(s[i]==' ')
    {
        space++;
    }
}

printf("The number of empty space is: %d\n",space);

return 0;
}
```

Output of problem-7:



```
Z:\Dyuti\Documents\lab332\3.exe
Enter a string: DIU CSE DYUTI
The number of white space is: 3

Process returned 0 (0x0)   execution time : 13.263 s
Press any key to continue.
```

8. Write a program to make a simple calculator that takes only number as input.

The Code:

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

```
int main()
{
    double a,b;
    double add_result,sub_result,mul_result,div_result;
    scanf("%lf",&a);
    scanf("%lf",&b);
    if((a>=0 && a<=9)&&(b>=0 && b<=9))
    {
        add_result=(a+b);
        if(a>b)
        {
            sub_result=(a-b);
        }
        else
        {
            sub_result=(b-a);
        }
        mul_result=(a*b);
        printf("Add result is = %.2lf\n",add_result);
        printf("Sub result is = %.2lf\n",sub_result);
        printf("Mul result is = %.2lf\n",mul_result);
    }
}
```

```
if(a!=0)
{
    div_result=(a/b);
    printf("Div result is = %.2lf\n",div_result);
}
else
{
    printf("math_error\n");
}
}
else
{
    printf("Invalid_Inputs\n");
}
}
```

Output of problem-8:

```
Z:\Dyuti\Documents\lab332\8.exe
5 5
Add result is = 10.00
Sub result is = 0.00
Mul result is = 25.00
Div result is = 1.00

Process returned 21 (0x15)    execution time : 5.365 s
Press any key to continue.
```

9. Write a program that will count number of vowel, consonant and digit and whitespace.

The Code:

```
#include<stdio.h>

#include<string.h>

void main()
{
    char str[10000];

    int space=0,vowel=0,conso=0,i,j,len,num=0;

    printf("Enter String:\n");

    gets(str);

    len=strlen(str);

    for(i=0;i<len;i++)
    {
        if(str[i]==' ')
```

```

    {
        space++;
    }
}

for(j=0;j<len;j++)
{
    if(str[j]=='A' ||
str[j]=='a' || str[j]=='E' || str[j]=='e' || str[j]=='I' || str[j]=='i' || str[j]=='O' || str[j]=='
o' || str[j]=='U' || str[j]=='u')
    {
        vowel++;
    }

    else if(str[j]=='0' ||
str[j]=='1' || str[j]=='2' || str[j]=='3' || str[j]=='4' || str[j]=='5' || str[j]=='6' || str[j]=='
7' || str[j]=='8' || str[j]=='9')
        num++;

    else
        conso++;
}

printf("Number of vowels: %d\n",vowel);

printf("Number of consonants: %d\n",conso-space);

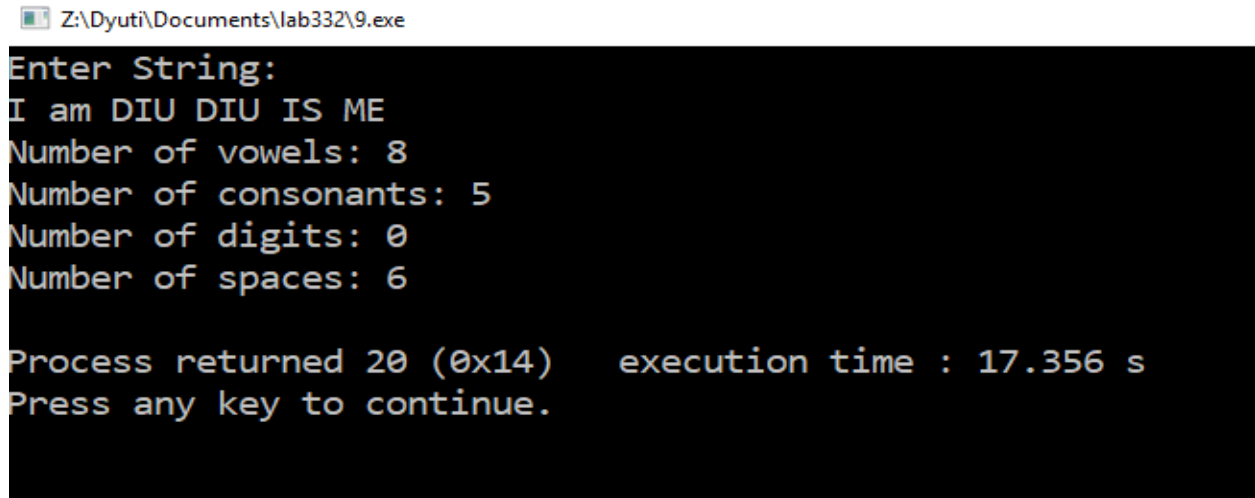
printf("Number of digits: %d\n",num);

```



```
printf("Number of spaces: %d\n",space);  
}
```

Output of problem-9:



```
Z:\Dyuti\Documents\lab332\9.exe  
Enter String:  
I am DIU DIU IS ME  
Number of vowels: 8  
Number of consonants: 5  
Number of digits: 0  
Number of spaces: 6  
  
Process returned 20 (0x14)    execution time : 17.356 s  
Press any key to continue.
```

10. Write a program that will take a string as input and print whether this is a comment or not.

The Code:

```
#include<stdio.h>  
  
#include<string.h>  
  
void main()  
{  
    char str[1000];  
  
    int i,len;  
  
    gets(str);  
  
    len=strlen(str);  
  
    for(i=len;i>=0;i--)
```

```

{
    if(str[len-1]=='*')
    {
        break;
    }
    if(str[i]=='*' && str[i+1]=='*' && str[i+2]=='*')
    {
        printf("This is a single line comment\n");
    }
}
for(i=0;i<len;i++)
{
    if((str[i]=='*' && str[i+1]=='*' && str[i+2]=='*') && (str[len-1]=='*' && str[len-2]=='*' && str[len-3]=='*'))
    {
        printf("This is a multi-line comment\n");
    }
}

```

Output of problem-10:

```
Z:\Dyuti\Documents\lab332\10.exe
*****coment or not
This is a single line comment
This is a single line comment
This is a single line comment

Process returned 19 (0x13)    execution time : 7.516 s
Press any key to continue.
```

11. Write a program that will take a line as input and print the line with removing extra space.

The Code:

```
#include <stdio.h>

#include <string.h>

void main()
{
    char s[100];

    int i=0;


    gets(s);

    int a=strlen(s);

    for(i=0;i<a;i++)
    {
        if(s[i]==' ')
```

```
{  
    if(s[i+1]==' '  
    {  
        continue;  
    }  
    printf(" ");  
}  
else  
    printf("%c",s[i]);  
}  
}
```

Output of problem-11:

 Z:\Dyuti\Documents\lab332\11.exe

```
DIUIDIUIR you  
DIUIDIUIR you  
Process returned 14 (0xE)   execution time : 9.195 s  
Press any key to continue.
```

12. Write a program for symbol table.

The Code:

```
#include <bits/stdc++.h>
```

```
using namespace std;
```

```
char operators[] = {'+', '-', '*', '/', '=', '(', ')', '!'};
```

```
string keyWords[100] = {"printf", "int", "float", "double", "scanf", "for",  
"return", "char", "string", "if"};
```

```
string header[100] = {"<stdio.h>", "<conio.h>", "<string.h>",  
"<math.h>", "<bits/stdc++.h>"};
```

```
bool isOperator(char c)
```

```
{
```

```
    for (int i = 0; i < 7; i++)
```

```
        if (operators[i] == c)
```

```
            return true;
```

```
    return false;
```

```
}
```

```
bool isKeyWord(string s)
```

```
{
```

```
    for (int i = 0 ; i < 10; i++)
```

```
        if (keyWords[i] == s)
            return true;
    return false;
}
```

```
bool isHeader (string s)
{
    for (int i = 0; i < 5; i++){
        if (s == header[i])
            return true;
    }
    return false;
}
```

```
int main ()
{
    string expression;
    getline (cin, expression);
    bool started = false;
    set <char> found;
    for (int i = 0; i < expression.size(); i++){
        if (isOperator(expression[i])){
```

```

        found.insert(expression[i]);

        expression[i] = ' ';
    }
}

cout << "Operators" << endl;

for (set<char>::iterator it = found.begin(); it != found.end(); it++)
    cout << *it << endl;

cout << endl;

set<string> keywordFound;

set<string> headerFound;

istringstream iss(expression);

vector<string> results((istream_iterator<string>(iss),
istream_iterator<string>()));

for (int i = 0; i < results.size(); i++){
    if (isKeyWord(results[i]))
        keywordFound.insert(results[i]);

    if (results[i] == "#include" && isHeader(results[i+1])){
        headerFound.insert(results[i+1]);
    }
}

cout << "Keywords" << endl;

```

```

    for (set<string>::iterator it = keywordFound.begin(); it !=
keywordFound.end(); it++)

        cout << *it << endl;

    cout << endl;

    cout << "Header" << endl;

    for (set<string>::iterator it = headerFound.begin(); it !=
headerFound.end(); it++)

        cout << *it << endl;

    cout << endl;

    return 0;

}

```

Output of problem-12:

```

Z:\Dyuti\Documents\lab332\12.exe
#include<stdio.h> int main () a=4 ;b =3;
Operators
(
)
=
Keywords
int
Header

Process returned 0 (0x0)   execution time : 31.387 s
Press any key to continue.

```

13. Write a program for identify token.

The Code:

```
#include<stdio.h>

#include<string.h>

# define NO_OF_CHARS 256

# define bool int

void main()

{

    char str[100];

    char op[100];

    int k,no=1,no1=1,no2=1,no3=1;

    gets(str);

    int l=strlen(str);

    for(k=0;k<l;k++)

    {

        if(str[k]=='+' ||str[k]=='-' ||str[k]=='*' ||str[k]=='/')

        {

            op[k]=str[k];

        }

        else op[k]='\0';

    }

    for(k=0;k<l;k++)
```

```
{  
    if(op[k]=='\0')  
    {  
        continue;  
    }  
    if(op[k]=='+' && no==1)  
    {  
        printf("%c",op[k]);  
        no++;  
    }  
    if(op[k]=='-' && no1==1)  
    {  
        printf("%c",op[k]);  
        no1++;  
    }  
    if(op[k]=='*' && no2==1)  
    {  
        printf("%c",op[k]);  
        no2++;  
    }  
    if(op[k]=='/' && no3==1)
```

```

    {
        printf("%c",op[k]);

        no3++;
    }
}
}

```

Output of problem-13:

```

Z:\Dyuti\Documents\lab332\13.exe
4-9*5-3+5
-*+
Process returned 10 (0xA)   execution time : 24.225 s
Press any key to continue.

```

14. Write a program to find the first & follow of grammar.

The Code:

```

#include<stdio.h>
int n, m = 0, p, i = 0, j = 0;
char a[10][10], f[10];
void follow(char c);
void first(char c);
int main() {

    int i, z;
    char c, ch;

```

```

printf("Enter the no of productions: ");
scanf("%d", & n);
printf("Enter the productions:\n");
for (i = 0; i < n; i++)
    scanf("%s%c", a[i], &ch);
do {
    m = 0;
    printf("Enter the elements whose first & follow is to be found: ");
    scanf("%c", & c);
    first(c);
    printf("First(%c)={", c);
    for (i = 0; i < m; i++)
        printf("%c ", f[i]);
    printf("}\n");

    m = 0;
    follow(c);
    printf("Follow(%c)={", c);
    for (i = 0; i < m; i++)
        printf("%c ", f[i]);
    printf("}\n");
    printf("Continue(0/1)?");
    scanf("%d%c", & z, & ch);
} while (z == 1);
return (0);
}

```

```

void first(char c) {
    int k;
    if (!isupper(c))
        f[m++] = c;
    for (k = 0; k < n; k++) {
        if (a[k][0] == c) {
            if (a[k][2] == '$')
                follow(a[k][0]);

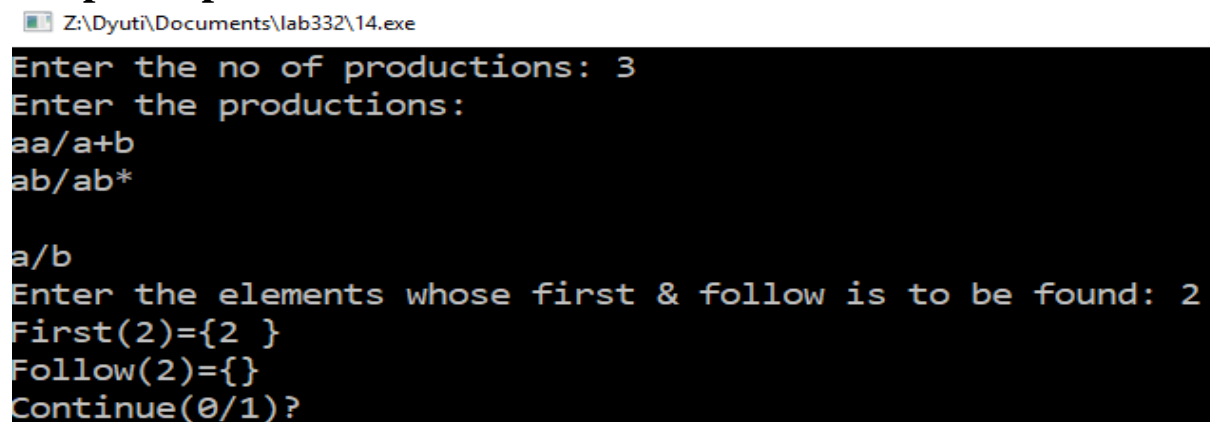
```

```

        else if (islower(a[k][2]))
            f[m++] = a[k][2];
        else first(a[k][2]);
    }
}
}
void follow(char c) {
    if (a[0][0] == c)
        f[m++] = '$';
    for (i = 0; i < n; i++) {
        for (j = 2; j < strlen(a[i]); j++) {
            if (a[i][j] == c) {
                if (a[i][j + 1] != '\0')
                    first(a[i][j + 1]);
                if (a[i][j + 1] == '\0' && c != a[i][0])
                    follow(a[i][0]);
            }
        }
    }
}
}

```

Output of problem-14:



```

Z:\Dyuti\Documents\lab332\14.exe
Enter the no of productions: 3
Enter the productions:
aa/a+b
ab/ab*

a/b
Enter the elements whose first & follow is to be found: 2
First(2)={2 }
Follow(2)={}
Continue(0/1)?

```

