

Certificate

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Studying in _____

School/College

Class _____ Div. _____ Roll No. 22-CS-18

During the academic year _____

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Principal's signature

Date _____

School/College stamp

NAME: Aakash Kumar

STD: _____ DIV: _____ ROLL NO.: 22-CS-18 YOUVA

SUBJECT: _____

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Write a c Program to Add, subtract, multiply, and divide two numbers, where both variables should be initialized during run time.

```
#include <stdio.h>
int main()
{
    int a,b,c;
    printf ("Enter the value of a and b : \n");
    scanf ("%d %d", &a, &b);
    printf ("Addition of %d and %d = %d \n", a, b, a+b);
    printf ("Subtraction of %d and %d = %d \n", b, a, b-a);
    printf ("multiplication of %d and %d = %d \n", a, b, a*b);
    printf ("division of %d and %d = %d \n", a, b, a/b);
    return 0;
}
```

Teacher's Signature: _____

Enter the value of a and b:

10

20

Addition of 10 and 20 = 30

Subtraction of 20 and 10 = 10

multiplication of 10 and 20 = 200

Division of 10 and 20 = 0

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Write a c Program to Find the area and circum
ference of rectangle.

```
#include<stdio.h>
int main()
{
    int x,y,a,c;
    printf("Enter length of rectangle:");
    scanf(".1.d", &x);
    printf("\nEnter width of rectangle:");
    scanf(".1.d", &y);

    a=x*y;
    c=2*(x+y);

    printf("\n Area of rectangle with length .1.d and
           width .1.d = .1.d \n",x,y,a);
    printf("circumference of rectangle with length .1.d and
           width .1.d = .1.d \n",x,y,c);

    return 0;
}
```

Teacher's Signature: _____

Enter length of rectangle: 5

Enter width of rectangle: 3

Area of rectangle with length 5 and width 3 = 15

Circumference of rectangle with length 5 and width 3 = 16

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Write a c program to calculate simple interest and all required variable should be initialized during run time.

```
#include <stdio.h>
int main()
{
    float P,R,T,S;
    printf("Enter the value of Principle , rate and time (year): \n");
    scanf("%f %f %f", &P, &R, &T);
    S = (P*R*T)/100;
    printf("Simple interest = %.2f", S);
    return 0;
}
```

Teacher's Signature: _____

Enter the value of principle, rate and time (year):

4000.00

5.60

2

Simple interest = 448.00

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Write a C program to Find area and circumference of a circle?

```
#include <stdio.h>
int main()
{
    float r,A,c;
    printf("Enter the radius of circle: ");
    scanf(".1.f", &r);
    A = 3.14 * r * r;
    c = 2 * 3.14 * r;
    printf("\n Area of circle = .1.f\n", A);
    printf("Circumference of circle = .1.f \n", c);
    return 0;
}
```

Teacher's Signature: _____

Enter the radius of circle: 5.0

Area of circle = 78.500000

Circumference of circle = 31.400000

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write a c Program to check the given alphabets is vowel or consonant using switch case statement.

```
# include <stdio.h>
int main()
{
    char ch;
    printf("Enter an alphabet:");
    scanf(".\r", &ch);
    switch (ch)
    {
        case 'a': printf("It is vowel");
                    break;
        case 'e': printf("It is vowel");
                    break;
        case 'i': printf("It is vowel");
                    break;
        case 'o': printf("It is vowel");
                    break;
        case 'u': printf("It is vowel");
                    break;
        default: printf("It is consonant");
    }
    return 0;
}
```

Teacher's Signature: _____

TEST CASE 1

Enter an alphabet : e
It is vowel

TEST CASE 2

Enter an alphabet: g
It is consonant

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Write a C program to Find the square root of a number.

```
# include <stdio.h>
# include <math.h>
int main()
{
    int n;
    printf ("Enter a number to get square root:");
    scanf ("%d", &n);
    printf ("The square root of %d is: %.2f", n, (float) sqrt(n));
    return 0;
}
```

Teacher's Signature: _____

Enter a number to get square root : 5

Square root of 5 : 2.24

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write a C program to find the cube root of a number.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int n;
    printf("Enter a number to get cube root: ");
    scanf("%d", &n);
    printf("cube root of %d is = %.2f", n, (float)cbrt(n));
    return 0;
}
```

Teacher's Signature: _____

Enter a number to get cube root: 64

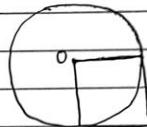
cube root of 64 is = 4.00

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write a c program to find area of a circle with
the help of given figure below, where area of
square oabc is 25.



```
#include <stdio.h>
#include <math.h>
int main()
{
    int Area = 25;
    int side = sqrt(Area);
    float radius = 3.14 * side * side;
    printf("radius of circle = %.d", side);
    printf("Area of circle is = %.f", radius);
    return 0;
}
```

Teacher's Signature: _____

radius of circle = 5 cm
Area of circle is = 78.50000

Radius of circle = 5 cm
Area of circle = πr^2
 $\pi = 3.14$
 $A = 3.14 \times 5^2$
 $A = 3.14 \times 25$
 $A = 78.5$

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write a program to find the factorial of any positive integer, where user will be free to choose the number.

```
#include <stdio.h>
int main()
{
    int n, fact=1, i;
    printf("Enter a number : ");
    scanf("%d", &n);

    for(i=1; i<=n; i++)
    {
        fact = fact * (n-i);
    }
    printf("factorial of %d is = %d", n, fact);
    return 0;
}
```

Teacher's Signature: _____

Ex(4): Enter a number: 6
The factorial of 6 is = 720

```
#include <iostream>
using namespace std;

int main()
{
    int n, fact = 1;
    cout << "Enter a number: ";
    cin >> n;
    for (int i = 1; i <= n; i++)
        fact = fact * i;
    cout << "Factorial of " << n << " is = " << fact;
}
```

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Write a Program to check whether a given no. is prime or not ?.

```
#include<stdio.h>
int main()
{
    int n,i,c=0;
    printf("Enter a number:");
    scanf("%d",&n);
    for(i=2; i<=n; i++)
    {
        if(n%i==0)
            c++;
    }
    if(c==2)
        printf("It is prime no.");
    else
        printf("It is not a Prime no.");
    return 0;
}
```

Teacher's Signature: _____

Test case 1

Enter a number : 11
It is prime no.

Test case 2

Enter a number : 27
It is not a prime no.

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Write a c Program to Print all Prime no. between
1 to 100.

```
#include <stdio.h>
int main()
{
    int i,j,c=0;
    for (i=2 ; i<100 ; i++)
    {
        for (j=2 ; j<i ; j++)
        {
            if (i*j == 0)
            {
                c++;
                break;
            }
        }
        if (c==0)
        {
            printf ("%d\n", i);
            c=0;
        }
    }
    return 0;
}
```

Teacher's Signature: _____

2
3
5
7
11
13
17
19
23
29
31
37
41
43
47
53
59
61
67
71
73
79
83
89
97

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write a C Program to add First seven terms of the following series using for loop?

$$\frac{1}{1!} + \frac{2}{2!} + \frac{3}{3!} + \frac{4}{4!} + \dots + \frac{7}{7!} + \dots$$

```
#include<stdio.h>
int main()
{
    float sum=0; fact=1;
    int i;
    for(i=1; i<8; i++)
    {
        fact = fact * i;
        sum += i/fact;
    }
    printf (" Sum of the series first seven terms = %.f ", sum);
    return 0;
}
```

Teacher's Signature: _____

Sum of the series first seven terms = 2.718056

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write a program to print the table of any positive integer.

```
#include <stdio.h>
int main()
{
    int n;
    printf("Enter any positive integer: ");
    scanf("%d", &n);
    int i;
    printf("Table of %d is: \n", n);
    for(i=1 ; i<=10 ; i++)
    {
        printf("%d * %d = %d\n", n, i, n*i);
    }
    return 0;
}
```

Teacher's Signature: _____

Enter any Positive Integer: 2

Table of 2 is:

$$2 \times 1 = 2$$

$$2 \times 2 = 4$$

$$2 \times 3 = 6$$

$$2 \times 4 = 8$$

$$2 \times 5 = 10$$

$$2 \times 6 = 12$$

$$2 \times 7 = 14$$

$$2 \times 8 = 16$$

$$2 \times 9 = 18$$

$$2 \times 10 = 20$$

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Write a program to print output given below using do while loop.

Enter a number 5

square of 5 is 25

want to enter another number y/n.

```
#include <stdio.h>
#include <math.h>
int main()
{
    int n;
    char ch;
    do
    {
        printf("Enter a number: ");
        scanf("%d", &n);
        printf("\n square of %d is %d \n", n, pow(n, 2));
        printf("Want to enter another number: y/n? ");
        scanf("%s", &ch);
    } while (ch != 'y');
    return 0;
}
```

Teacher's Signature: _____

Enter a number: 5

Square of 5 is 25

Want to enter another number: y/n?

y

Enter a number: 7

Square of 7 is 49

Want to enter another number: y/n?

y

Enter a number: 9

Square of 9 is 81

Want to enter another number: y/n?

n

[Program finished]

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Write a C Program to Print fibonaccil series upto given number?

```
#include <stdio.h>
int main()
{
    int n, i, n1=0, n2=1, n3;
    printf ("Enter a number: ");
    scanf ("%d", &n);
    if (n<=0)
        printf ("Enter positive number");
    else
    {
        printf ("0,1,");
        for(i=3; n2<n-n1; i++)
        {
            n3 = n1 + n2;
            n1 = n2;
            n2 = n3;
            printf (",", n3);
        }
    }
    return 0;
}
```

Teacher's Signature: _____

1

Test Case 1

Enter a number : 8
0,1,1,2,3,5

Test Case 2

Enter a number : 1000
0,1,1,2,3,5,8,13,21,34,55,89,144,233,377,610,987

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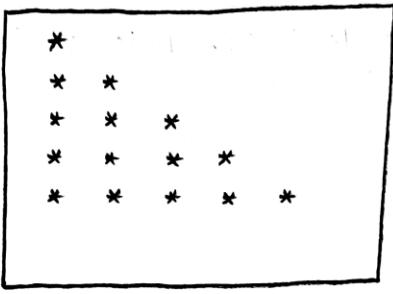
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Write a Program to print star patterns given below
Star Pattern 1

*
* *
* * *
* * * *
* * * * *

```
#include <stdio.h>
int main ()
{
    int i,j;
    for (i=0; i<5; i++)
    {
        for (j=0; j<i; j++)
        {
            printf ("*");
        }
        printf ("\n");
    }
    return 0;
}
```

Teacher's Signature: _____



Conjecture 10: π

(π is a constant)

(π is a ratio)

(π is a ratio of circumference to diameter)

(π is a ratio of circumference to diameter)

(π is a ratio of circumference to diameter)

(π is a ratio of circumference to diameter)

(π is a ratio)

(π is a ratio)

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Star Pattern 2

```

* * * * *
* * * *
* * *
* *
*

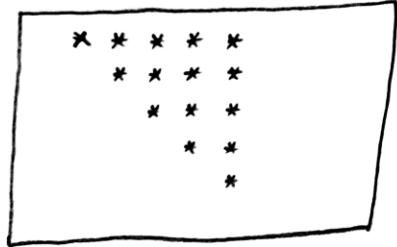
```

```

#include <stdio.h>
int main()
{
    int i, j, k;
    for(i=0; i<5; i++)
    {
        for(j=5; j>i; j--)
        {
            printf(" *");
        }
        printf("\n");
        for(k=0; k<=i; k++)
        {
            printf(" ");
        }
    }
    return 0;
}

```

Teacher's Signature: _____



5 stars in a row

4 stars in a row

3 stars in a row

2 stars in a row

1 star in a row

5 stars in a row

4 stars in a row

3 stars in a row

2 stars in a row

1 star in a row

5 stars in a row

4 stars in a row

3 stars in a row

2 stars in a row

1 star in a row

5 stars in a row

4 stars in a row

3 stars in a row

2 stars in a row

1 star in a row

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Pattern 3

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

#include<stdio.h>

int main()

{

int i,j,k;

for(i=1; i<=5; i++)

{

for(j=1; j<=i; j++)

{

printf("%d",j);

}

printf("\n");

}

return 0;

{

Teacher's Signature: _____

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

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Pattern 4

```
A B C D F
A B C D
A B C
A B
A
```

```
#include <stdio.h>
int main()
{
    int i, j;
    char ch = 'A';
    for (i = 1; i <= 5; i++)
    {
        for (j = 5; j >= i; j--)
            printf("%c", ch);
        ch++;
    }
    printf("\n");
}
return 0;
```

Teacher's Signature: _____

A	B	C	D	E
A	B	C	D	
A	B	C		
A	B			
A				

• $\{A\}$ is a subset of $\{B, C, D, E\}$

• $\{A, B\}$ is a subset of $\{A, B, C, D, E\}$

• $\{A, B, C\}$ is a subset of $\{A, B, C, D, E\}$

• $\{A, B, C, D\}$ is a subset of $\{A, B, C, D, E\}$

• $\{A, B, C, D, E\}$

• $\{A, B, C, D, E\}$ is a subset of $\{A, B, C, D, E\}$

• \emptyset

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Write a C Program to perform below operations on given array?

[0]	[1]	[2]	[3]	[4]	[5]	[6]	
A[7] =	10	20	15	11	25	13	51

a) Insert element at Position given by user.

```
#include<stdio.h>
int main()
{
    int i, n, m;
    int arr[7] = {10, 20, 15, 11, 25, 13, 51};
    printf ("Given array elements: \n");
    for(i=0; i<7; i++)
    {
        printf ("%d", arr[i]);
    }
    printf ("Which position you want to insert element: ");
    scanf ("%d", &n);
    printf ("\nEnter your element: \n");
    scanf ("%d", &m);
    for(i=7; i>=n; i--)
    {
        arr[i] = arr[i-1];
    }
    arr[n-1] = m;
    for(i=0; i<7; i++)
    {
        printf ("%d", arr[i]);
    }
    return 0;
}
```

Teacher's Signature: _____

Given array elements:

10, 20, 15, 11, 25, 13, 51

which position you want to insert element: 3

Enter your element: 7

10, 20, 7, 15, 11, 25, 13, 51

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⑥ Delete elements in given array at position given by user.

```
#include <stdio.h>
int main()
{
    int i, num;
    int arr[7] = {10, 20, 15, 11, 25, 13, 51};
    printf("Given array : \n");
    for(i=0; i<7; i++)
    {
        printf(".%d, ", arr[i]);
    }
    printf("\n In which position of element you want to delete: ");
    scanf("%d", &num);
    printf("In Now array after deleting element: \n");
    for(i=num-1; i<6; i++)
    {
        arr[i] = arr[i+1];
    }
    for(i=0; i<6; i++)
    {
        printf(".%d, ", arr[i]);
    }
    return 0;
}
```

Teacher's Signature: _____

Given array:

10, 20, 15, 11, 25, 13, 51

which position of element you want to delete : 5

Now, array After deleting element

10, 20, 15, 11, 13, 51

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Write a C Program to print transpose of a matrix given below:

1	2	3	4	5	6	1	4
			2	5	3	6	

```
#include <stdio.h>
int main()
{
    int i, j;
    int arr[2][3] = {{1, 2, 3}, {4, 5, 6}};
    printf("Given matrix: \n");
    for(i=0; i<2; i++)
    {
        for(j=0; j<3; j++)
            printf("%.1d ", arr[i][j]);
        printf("\n");
    }
}
```

```
printf("Transpose of the matrix is: \n");
for(j=0; j<3; j++)
{
    for(i=0; i<2; i++)
        printf("%.1d ", arr[i][j]);
    printf("\n");
}
```

```
return 0;
```

Teacher's Signature:

Given matrix:

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$$

transpose of the matrix is:

$$\begin{bmatrix} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{bmatrix}$$

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write a program to find the average of area of circle, circumference of a circle and area of square using function?

NOTE:- r must be equal to a ($r=a$), where r = radius of circle, a = side of square.

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

```
int average (float, float ,float);
```

```
int main()
```

```
{
```

```
float a;
```

```
printf("Enter side of square: ");
```

```
scanf ("%.1f", &a);
```

```
float AreaC = 3.14 * a * a;
```

```
float Circum = 2 * 3.14 * a;
```

```
float Areas = a * a;
```

```
printf ("\n Area of circle = %.f ", AreaC);
```

```
printf ("\n Area of square= %.f ", Areas);
```

```
printf ("\n circumference of circle = %.f ", Circum);
```

```
average (AreaC, Areas, Circum);
```

```
return 0;
```

```
}
```

```
int average (float a, float b ,float c)
```

```
{
```

```
float avg = (a+b+c)/3;
```

```
printf ("average of area of circle, circumference of a  
circle and area of square = %.f ", avg);
```

```
return 0;
```

```
}
```

Teacher's Signature: _____

Enter side of square: s

Area of circle = 78.500000

Area of square = 25.000000

Circumference of circle = 31.400000

Average of area of circle, circumference of a circle
and area of square = 44.966667

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Write a C Program to check whether a given number is perfect number or not, using function.

```
#include <stdio.h>
int Perfect(int);
int main()
{
    int n;
    printf("Enter a number: ");
    scanf(".1.d", &n);
    Perfect(n);
    return 0;
}

int Perfect(int x)
{
    int i, sum=0
    for(i=1; i<x; i++)
    {
        if(x/i == 0)
        {
            sum += i;
        }
    }
    if(sum == x)
        printf("%d is perfect number");
    else
        printf("%d is not a perfect number");
    return 0;
}
```

Teacher's Signature:

Test case 1

Enter a number: 6

It is perfect Number

Test case 2

Enter a number: 8

It is not a perfect Number

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Write a Program in C to find the factorial of any number using function.

```
#include <stdio.h>
int factorial(int);
int main()
{
    int x;
    printf("Enter a number:");
    scanf("%d", &x);
    printf("%d", factorial(x));
    return 0;
}
```

```
int factorial(int n)
{
    int i, fact = 1;
    for(i=1; i<=n; i++)
    {
        fact = fact * i;
    }
    return fact;
}
```

Teacher's Signature: _____

Enter a number: 4

factorial = 24

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Write a C Program to check weather a given number is prime or not using function?

```
#include <stdio.h>
int Prime(int);
int main()
{
    int n;
    printf("Enter a number:");
    scanf("%d", &n);
    Prime(n);
}

int Prime(int x)
{
    int i, c=0;
    for(i=2; i<x; i++)
    {
        if(x*i == 0)
        {
            c++;
        }
    }
    if(c==0)
        printf("Prime");
    else
        printf("Not Prime");
    return 0;
}
```

Teacher's Signature:

Test case 1

Enter a number: 29

Prime

Test case 2

Enter a number: 33

Not Prime

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write a program in C to check whether a given number is Armstrong or not using the function.

```
#include<stdio.h>
#include <math.h>
int armstrong(int);
int main()
{
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);
    armstrong(n);
}

int armstrong(int n)
{
    int d=0, i, sum=0, A, B, X;
    for(i=1; ; i*=10)
    {
        if (n/i != 0)
        {
            d++;
        }
        else
            break;
    }
    for(i=1; i<=d; i++)
    {
        X = pow(10, i);
```

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```
A = n*i*x;  
B = A/POW(10, i-1);  
Sum+ = POW(B, d);  
if (sum==n)  
    printf ("It is an armstrong number");  
else  
    printf ("It is not an armstrong number");  
return 0;
```

Teacher's Signature: _____

Test Case 1

Enter a number: 9474

It is an armstrong number

Test Case 2

Enter a number: 1675

It is not an armstrong number

Test Case 3

Enter a number: 153

It is an armstrong number

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write a c Program to input string and print it?

```
#include <stdio.h>
int main()
{
    char str[100];
    printf ("Input String:- ");
    fgets (str, 100, stdin);
    printf ("Output String:- %s ", str);
    return 0;
}
```

Input string:- hello world, welcome!

Output string:- hello world, welcome!

[Program finished]

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write a program in c to find the length of a string without using library function and with library function?

```
#include <stdio.h>
// without using library function
int main()
{
    int i, c=0;
    char str[100];
    printf("Input String :- ");
    fgets(str, 100, stdin);
    for(i=0; str[i]!='\0'; i++)
    {
        c++;
    }
    printf("Length of String = .%.d", c-1);
    return 0;
}
```

```
#include <stdio.h>
#include <string.h>
// with using library function
int main()
{
    char str[100];
    printf("Input String :- ");
    fgets(str, 100, stdin);
    printf("Length of String = .%.d", strlen(str));
    return 0;
}
```

Teacher's Signature:

without using library function

Input string:- Hello world

length of string = 11

with using library function

Input string:- Hello world

length of string = 11

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Write a C Program to total number of words in a String ?.

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

```
Void main()
```

```
{
```

```
    Char s[20];
```

```
    int count = 0, i;
```

```
    printf(" Enter the String: \n");
```

```
    fgets(s, 20, stdin);
```

```
    for(i=0; s[i]!='\0'; i++)
```

```
{
```

```
    if (s[i] == ' ' && s[i+1] != ' ' && s[i+2] != '\0')
```

```
{
```

```
        Count ++;
```

```
}
```

```
}
```

```
    printf(" Number of words in given string : %.d ", count+1);
```

Teacher's Signature: _____

Enter the String:

Hello world, welcome to Pushara

Number of words in given string:

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write a C program to count total number of alphabets, digits and other (like - special characters, space, other symbol's including null value) of a string.

```
#include <stdio.h>
#include <string.h>
void main()
{
    char str[50];
    int a,d,s,i;
    a=d=s=0;
    printf("Input the string: ");
    fgets(str,50,stdin);
    for(i=0; str[i] != '\0'; i++)
    {
        if((str[i] >='a' && str[i] <='z') || (str[i] >='A' && str[i] <='Z'))
            a++;
        else if (str[i] >='0' && str[i] <='9')
            d++;
        else
            s++;
    }
    printf("Number of alphabets: %d\n",a);
    printf("Number of digits: %d\n",d);
    printf("Number of special characters: %d\n",s);
}
```

Teacher's Signature.....

Input the string: hello I'm Alkash

Number of Alphabets: 11

Number of digits: 1

Number of special character: 5

[Program Finished]

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Write a C Program to count total number of vowel and consonant in a string?

```
#include <stdio.h>
#include <string.h>
int main()
{
    int i, v=0, c=0;
    char str[200];
    printf ("Enter your content: \n");
    fgets (str, 200, stdin);
    for (i=0; str[i] != '\0'; i++)
    {
        if (str[i] == 'a' || str[i] == 'e' || str[i] == 'i' || str[i] == 'o' ||
            str[i] == 'u' || str[i] == 'A' || str[i] == 'E' || str[i] == 'I' ||
            str[i] == 'O' || str[i] == 'U')
            v++;
        else if (str[i] == ' ')
            continue;
        else
            c++;
    }
    printf ("vowel = %d \n", v);
    printf ("consonant = %d \n", c-1);
    return 0;
}
```

Teacher's Signature:-

Enter your content:

hello world

vowel = 3

consonant = 7

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Write a C program to implement linear search on unsorted array using function?

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