Output-

Enter the number: 549
The number of digit is 4

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(25) Program to count the number of digits in a number.

```
#include<stdio.h>
int main()
{
  int n, c = 0;
  printf("Enter the number : ");
  scanf("%d", &n);
  while (n != 0)
  {
    n = n/10;
    c++;
  }
  printf("The number of digit is %d", c);
  return 0;
}
```

Output:-

```
Enter the number : 5491
Sum of digit is :19
```

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(26) WAP to find the sum of digits in a number.

```
#include <stdio.h>
int main()
{
    int n, sum = 0;
    Printf("Enter the number: ");
    Scanf("%d", &n);
    while (n != 0)
    {
        sum = sum + (n % 10);
        n = n/10;
    }
    printf("Sum of digit is %d", sum);
    return 0;
}
```

Output :-

```
Enter the number : 5
The factorial is 120
```

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(26) C++ to find the factorial of a number.

```
#include <stdio.h>
int main()
{
    int n, mul = 1;
    printf("Enter the number: ");
    scanf("%d", &n);
    for (int i = 1; i <= n; i++)
    {
        mul = mul * i;
    }
    printf("The factorial is %d", mul);
    return 0;
}
```

Output :

```
Enter the number : 2
The number is prime
```

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(28) WAP to test a number is prime or not.

```
#include <stdio.h>
int main()
{
    int n, c=0;
    printf("\nEnter the number : ");
    scanf("%d", &n);
    for (int i=2; i<n; i++)
    {
        if (n%i==0)
            c++;
    }
    if (c==0)
        printf("The number is prime");
    else
        printf("The number is not prime");
    return 0;
}
```

Output:-

```
Enter the lower range: 6
Enter the upper range: 24
7
11
13
17
19
23
```

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(22) code to display the prime number within range.

```
#include <stdio.h>
int main()
{
    int n1, n2;
    printf("Enter the lower range: ");
    scanf("%d", &n1);
    printf("Enter the upper range: ");
    scanf("%d", &n2);
    for (int i = n1; i <= n2; i++)
    {
        int c = 0;
        for (int j = 2; j < c; j++)
        {
            if (i % j == 0)
                c++;
        }
        if (c == 0)
            printf("%d\n", i);
    }
    return 0;
}
```

output :-

```
Enter the total number of elements: 5
Enter the marks : 90 95 91 92 96
Average is 92
```

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(30) WAP to calculate the average of masks using Array.

```
#include <stdio.h>
int main()
{
    int a[50], n;
    printf("\n Enter the total number of elements");
    scanf("%d", &n);
    printf("Enter the masks: ");
    for(int i=0; i<n; i++)
        scanf("%d", &a[i]);
    int k=0, sum=0;
    for(int i=0; i<n; i++)
    {
        sum = sum + a[i];
        k++;
    }
    printf("Average is %d", (sum/k));
    return 0;
}
```

output :-

Enter the elements: 1 2 3 4 5 6 7 8 9 10 11 12

1 2 3
4 5 6
7 8 9
10 11 12

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(8) LOOP to take input in 2D Array & display it.

```
#include <stdio.h>
int main()
{
int a[4][3];
printf("Enter the elements: ");
for (int i=0; i<4; i++)
  {
    for (int j=0; j<3; j++)
    {
      scanf("%d", &a[i][j]);
    }
  for (int i=0; i<4; i++)
  {
    for (int j=0; j<3; j++)
    {
      printf("%d ", a[i][j]);
    }
    printf("\n");
  }
return 0;
```

Output:-

Enter the elements: 1 2 3 4 5 6 7 8 9 10 11 12

arr[0][0] = 1
arr[0][1] = 2
arr[0][2] = 3
arr[1][0] = 4
arr[1][1] = 5
arr[1][2] = 6
arr[2][0] = 7
arr[2][1] = 8
arr[2][2] = 9
arr[3][0] = 10
arr[3][1] = 11
arr[3][2] = 12

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(12) Displaying the row and column numbers in 2D array.

```
for(int i=0; i<4; i++)
  {
    for(int j=0; j<3; j++)
      printf("arr[%d][%d]=%d\n", i, j, a[i][j]);
  }
```

(13) COAP to create structure taking name, roll-numbers and fees of a student input & display it.

```
#include<stdio.h>
  Struct student
  {
    Char name[50];
    int roll no;
    float fees;
  } sdt;
  int main()
    {
      Printf("Enter the following data....\n");
      Printf("Enter the student name: ");
      gets(sdt.name);
      Printf("Enter the roll number: ");
      Scanf("%d", &sdt.roll_no);
      Printf("Enter the fees:");
```

output :-

```
Enter the following data.....
Enter the student Name : Ram
Enter the Roll Number : 101.
Enter the fees : 200.
The inputted results are...
Student name : Ram.
Student Roll Number : 101.
Student fees : 200.
```

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```
printf(
scanf("%f", &sdt.fees);
printf("The inputted results are.....\n");
Printf("student name: %s\n", sdt.name);
Printf("Student Roll number: %d\n", sdt.rollno);
Printf("Student fees; %f\n", sdt.fees);
return 0
}
```

output:

```
Enter the information:
Enter the Student name: Ram
Enter age: 19
Enter fees: 200.
Enter the student name: Shyam
Enter age: 19.
Enter fees: 300.
Enter the student name: Hari.
Enter age: 20.
Enter fees: 500.
Displaying the content...
Ram
19
200
Shyam
19
300
Hari
20
500
```

(24) Array of Structure:

```
struct student
{
    char name[10];
    int age;
    float fees;
} std[3];
int main()
{
    printf("Enter the information:\n");
    for(int i=0; i<3; i++)
    {
        printf("Enter the student name:");
        fflush(stdin);
        gets(std[i].name);
        scanf("Enter age: %d\n", &std[i].age);
        scanf("Enter fee: %f\n", &std[i].fees);
    }
    printf("Displaying the content...\n");
    for(int i=0; i<3; i++)
    {
        puts(std[i].name);
        printf("%d\n", std[i].age);
        printf("%f\n", std[i].fees);
    }
    return 0;
}
```

Output :-

```
Enter the number of rows: 2
Enter the number of column: 2
Enter the first matrix:  10  10
                         20  30
Enter the second matrix: 20  10
                         30  20
the added matrix is:     30  30
                         50  50
```

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(15) Matrix addition.

```
int main()
{
    int a[10][10], b[10][10], c[10][10], row, column;
    printf("Enter the number of rows:");
    scanf("%d", &row);
    printf("Enter the number of rows:");
    scanf("%d", &column);
    printf("Enter the first matrix.");
    for(int i=0; i<row; i++)
    {
        for(int j=0; j<column; j++)
            scanf("%d", &a[i][j]);
    }
    printf("Enter the second matrix:");
    for(int i=0; i<row; i++)
    {
        for(int j=0; j<column; j++)
            scanf("%d", &b[i][j]);
    }
    for(int i=0; i<row; i++)
    {
        for(int j=0; j<column; j++)
            c[i][j] = a[i][j]+b[i][j];
    }
```

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```
printf("The added matrix is: \n");
for(int i=0; i<row; i++)
{
    for(int j=0; j<column; j++)
    {
        printf("%d", c[i][j]);
        printf("\t");
    }
    printf("\n");
}
return 0;
}
```

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Enter number to find sum of
first and last digit = 4657.

Sum of first and last digit = 11

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36. If four digit number is given by the user, then find the sum of first and last digit of that number.

→

```
int main().
{
    int n, Sum=0, firstDigit, lastDigit;
    Printf("Enter number to find sum of first and
            last digit:= ");
    Scanf("%d", &n);

    lastDigit = n % 10;
    while (n)>=10)
    {
        n = n/10;
    }
    firstDigit = n;
    Sum = firstDigit + lastDigit;
    printf("Sum of first and last digit = %d", Sum);
    return 0;
}
```

Enter two numbers

25

45

GCD of 25 & 45 = 5.

LCM of 25 & 45 = 225.

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37. WAP to find the G.C.D. and LCM of two numbers.

→

```
#include <stdio.h>
void main()
{
  int num1, num2, gcd, lcm, remainder, numerator,
                                        denominator;
  printf("Enter two numbers\n");
  scanf("%d%d", &num1, &num2);
  if (num1 > num2)
    {
      numerator = num1;
      denominator = num2;
    }
  else
  {
    numerator = num2;
    denominator = num1;
  }
  remainder = numerator % denominator;
while (remainder != 0)
  {
    numerator = denominator;
    denominator = remainder;
    remainder = numerator % denominator;
```

```
    }
    gcd = denominator;
    lcm = num1 * num2 / gcd;
    printf("GCD of %d & %d = %d\n",
                num1, num2, gcd);
    printf("LCM of %d & %d = %d\n",
                num1, num2, lcm);
}
```

Enter the two number: 20
100
GCD of 20.

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38. Find GCD of two numbers using recursive & non-recursive method.

→
```
# include <stdio.h>
int gcdnonR (int i, int j)
{
    int rem;
    rem = i - (i/j * j);
    if (rem == 0)
        return j;
    else
        gcdnonR (j, rem);
}
void main()
{
    int a, b;
    printf ("Enter the two numbers:");
    scanf ("%d%d", &a, &b);
    printf ("GCD of %d", gcdnonR (a, b));
    getch ();
}
```

Enter a year: 2024.

2024 is a leap year.

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39. WAP to check whether a number is leap year or not (leap year is divisible by 4 & divisible by 100 or 400).

→
```
#include <stdio.h>
int main()
{
    int year;
    printf("Enter a year:");
    scanf("%d", &year);
    if (year % 400 == 0)
    {
        printf("%d is a leap year.", year);
    }
    else if (year % 100 == 0)
    {
        printf("%d is not a leap year.", year);
    }
    else if (year % 4 == 0)
    {
        printf("%d is a leap year.", year);
    }
    else
    {
        printf("%d is not a leap year.", year);
    }
    return 0;
}
```

Enter the upper value: 5
Natural numbers with difference 2
ranging between 5 to 1 are:
5 3 1.

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10, WAP to print a number in reverse order with a difference of 2.

→
```
#include<stdio.h>
int main()
{
    int num, i;
    printf("Enter the upper value: ");
    scanf("%d", &num);

    printf("\nNatural numbers with differ-
            ence 2 ranging between %d to
            1 are: \n", num);
    for(i=num; i>=1; i-=2)
    {
        Printf("%d", i);
    }
    return 0;
}
```

Enter the number of elements : 5.
Input the array elements: 2 6 8 10 12
The smallest elements is 2
The largest elements is 12.

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41. WAP to find the largest & smallest elements in an array.

→
```
int main()
{
    int a[50], i, n, large, small;
    printf("\n Enter the number of elements: ");
    scanf("%d", &n);
    printf("\n Input the array elements: ");
    for(i=0; i<n; ++i)
        scanf("%d", &a[i]);
    large = small = a[0];

    for(i=1; i<n; ++i)
    {
        if(a[i] > large)
            large = a[i];
        if(a[i] < small)
            small = a[i];
    }
    printf("\n The smallest element is
            %d\n", small);
    printf("\n The largest elements is
            %d\n", large);
    return 0;
}
```

42. WAP to search an elements in a array.

```
#include <stdio.h>
int main()
{
    int nbr, i, n, arr[30];
    printf("Enter the number of elements in
        the array : ");
    scanf("%d", &nbr);
    printf("Enter the array elements: ");
    for (i=0; i<nbr; i++)
    {
        scanf("%d", &arr[i]);
    }
    printf("Enter the item to be searched: ");
    scanf("%d", &n);
    i = 0;
    while (i<nbr && n != arr[i])
    {
        i++;
    }
    if (i<nbr)
    {
        printf("The element is found
            in the position = %d", i+1);
    }
```

Enter the number of elements in the array: 5

Enter the array elements: 1 6 9 12 15.

Enter the item to be searched: 10.

Element not found.

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```
else
    {
        printf("Elements not found!");
    }
return 0;
}
```

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43. WAP to reverse the elements.

→ #include <stdio.h>

#include <stdlib.h>

#define n 6.

int main ()

{

int arr[n] = {9, 8, 7, 0, 4, 3};

int temp;

for (int i = 0; i<n/2; i++)

{

temp = arr[i];

arr[i] = arr[n-i-1];

arr[n-i-1] = temp;

}

for (int i = 0; i<n; i++)

{

printf ("%d,", arr[i]);

}

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44. WAP to delete an element in an array from the specified location.

→
```
#include<stdio.h>
int main()
{
    int arr[30],num,i,loc;
    printf("\n Enter the no of elements :");
    scanf("%d",&num);
    printf("\n Enter %d elements :",num);
    for(i=0;i<num;i++)
    {
        scanf("%d",&arr[i]);
    }
    printf("\n location of the element
            to be deleted :");
    scanf("%d",&loc);
    while(loc<num)
    {
        arr[loc-1]=arr[loc];
        loc++;
    }
    num--;
```

Enter no. of elements: 4

Enter 4 elements: 2 5 7 8

Location of the element to be deleted: 3

2

5

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```
for(i=0; i<num; i++)
    printf("\n%d", arr[i]);
return 0;
}
```