# Basic Programming

## 01. Print “Hello, World!”.

#include <iostream>

using namespace std;

int main(){

    cout<<"hello world";

    return 0;

}

Output :

Hello world

## 02. Add Two Integers.

#include <iostream>

using namespace std;

int main(){

    int a,b,c;

    a=20;

    b=20;

    c=a+b;

    cout<<c;

    return 0;

}

Output:

40

## 03.Swap Values of Two Variables.

#include <iostream>

using namespace std;

int main(){

    int a,b,c;

    cout<<"Type the value of a before swap" <<endl;

    cin>>a;

    cout<<"Type the value of b before swap" <<endl;

    cin>>b;

    c=a;

    a=b;

    b=c;

     cout<<"After swap";

     cout<<"The value of a after swap" <<endl;

     cout<<a <<endl;

     cout<<"The value of b after swap" <<endl;

     cout<<b ;

    return 0;

}

Output:

Type the value of a before swap

123

Type the value of b before swap

456

After swapThe value of a after swap

456

The value of b after swap

123

## 04. Multiply two Floating Point Numbers.

#include <iostream>

using namespace std;

int main(){

    float a ,b,c;

    cout<<"Enter your float number for multiply" <<endl;

    cin>>a;

    cin>>b;

    c=a\*b;

    cout<<"Your Answer : " <<c;

    return 0;

}

## 05. perform all arithmetic operations.

#include <iostream>

using namespace std;

int main(){

int a,b,c;

cout<<"perform all arithmetic operations.(+,-,\*,/)" <<endl;

cout<<"Enter Two Number for addition" <<endl;

cin>>a;

cin>>b;

c=a+b;

cout<<"Your Answer : "<<c <<endl;

cout<<"Enter Two Number for sub" <<endl;

cin>>a;

cin>>b;

c=a-b;

cout<<"Your Answer : "<<c <<endl;

cout<<"Enter Two Number for mul" <<endl;

cin>>a;

cin>>b;

c=a\*b;

cout<<"Your Answer : "<<c <<endl;

cout<<"Enter Two Number for div" <<endl;

cin>>a;

cin>>b;

c=a/b;

cout<<"Your Answer : "<<c <<endl; return 0}

output:

Enter Two Number for addition

40

50

Your Answer : 90

Enter Two Number for sub

40

50

Your Answer : -10

Enter Two Number for mul

40

50

Your Answer : 2000

Enter Two Number for div

40

50

Your Answer : 0

**another way**

#include <iostream>

using namespace std;

int main(){

    int number1,number2;

    int add,sub,mul,mod;

    float div;

    cout<<"Enter your First Number : " <<endl;

    cin>>number1;

    cout<<"Enter your Second Number : " <<endl;

    cin>>number2;

    add=number1+number2;

    sub=number1-number2;

    mul=number1\*number2;

    mod=number1%number2;

    div=(float)number1/number2;

    cout<<"add to two number : " <<add <<endl;

    cout<<"sub to two number : " <<sub <<endl;

    cout<<"mul to two number : " <<mul <<endl;

    cout<<"mod to two number : " <<mod <<endl;

    cout<<"div to two number : " <<div <<endl; return 0}

output:

Enter your First Number :

40

Enter your Second Number :

50

add to two number : 90

sub to two number : -10

mul to two number : 2000

mod to two number : 40

div to two number : 0.8

## 06. convert feet to meter.

#include <iostream>

using namespace std;

int main(){

float a, b;

 cout<<"enter your number to convert feet to meter"<<endl;

cin>>a;

b=a / 3.281;

cout<<a <<" feet is equals to :" <<b;

    return 0;

}

Output:

enter your number to convert feet to meter

1

1 feet is equals to :0.304785

## 07. convert celcius to farenheit.

#include <iostream>

using namespace std;

int main(){

  float a,b;

  cout<<"Give number to change celcius to ferenheit"<<endl;

  cin>>a;

  b=(a\*9/5)+32;

  cout<<a <<" degree celcius is equals to :  " <<b <<" ferenheit"<<endl;

    return 0;

}

Output:

Give number to change celcius to ferenheit

10

10 degree celcius is equals to : 50 ferenheit

## 08. convert farenheit to celcius.

#include <iostream>

using namespace std;

int main(){

float F,C;

cout<<"enter your number to change farenheit to celcius." <<endl;

cin>>F;

C=((F-32)\*5)/9;

cout<<F <<" degree farenheit is equals to : " <<C <<" degree celcius";

    return 0;

}

output:

enter your number to change farenheit to celcius.

450

450 degree farenheit is equals to : 232.222 degree celcius

another way

#include<iostream>

using namespace std;

int main()

{

    float celsius, fahrenheit;

    cout << "Please temperature in Fahrenheit: ";

    cin >> fahrenheit;

    celsius = (fahrenheit - 32) \* 5 / 9; // Formula to caltulate Fahrenheit to Celsius

    cout<< "temperature in Celsius : " << celsius;

    return 0;

}

## 09. find the Size of data types.

#include <iostream>

using namespace std;

int main(){ int a;

    string b;

    float c;

    double d;

    char e;

    long f;

    short g;

    cout<<"size of int data type is : "<<sizeof(a) <<endl;

    cout<<"size of string data type is : "<<sizeof(b)<<endl;

    cout<<"size of float data type is : "<<sizeof(c)<<endl;

    cout<<"size of double data type is : "<<sizeof(d)<<endl;

    cout<<"size of char data type is : "<<sizeof(e)<<endl;

    cout<<"size of long data type is : "<<sizeof(f)<<endl;

    cout<<"size of short data type is : "<<sizeof(g)<<endl;

    return 0;}

output:

size of string data type is : 24

size of float data type is : 4

size of double data type is : 8

size of char data type is : 1

size of long data type is : 4

size of short data type is : 2

## 10. Print ASCII Value.

what is ASCII value?

ASCII, in full American Standard Code for Information Interchange, a standard data-encoding format for electronic communication between computers. ASCII assigns standard numeric values to letters, numerals, punctuation marks, and other characters used in computers.

#include <iostream>

using namespace std;

int main(){

    char a;

    cin>>a;

    cout<<"ASCII VALUE OF " <<a <<" is " <<int(a);

     return 0;

}

**output:**

ASCII VALUE OF a  is 96

int(a)  is the value of char a is convert into interger ;

#include <iostream>

using namespace std;

int main(){

    int a;

     cout<<"enter your ascii number to find the corresponding value : " <<endl;

    cin>>a;

    cout<<"ASCII VALUE OF " <<a <<" is " <<char(a);

     return 0;

}

**output:**

enter your ascii number to find the corresponding value :

40

ASCII VALUE OF 40 is (

## 11. Calculate Area of Circle.

#include <iostream>

#define PI 3.141

using namespace std;

int main(){

    float radius ,area;

    cout<<"to find the area of cicle type value of radius : " <<endl;

    cin>>radius;

    area=radius\*PI\*radius;

    cout<<"Area of cicle is : " <<area;

    return 0;

    }

## 12.Calculate Area of Square.

#include <iostream>

using namespace std;

int main(){

    float side ,area\_of\_square ;

    cout<<"enter the side of square : "<<endl;

    cin>>side;

   area\_of\_square=side\*side;

   cout<<"the area of square is : " <<area\_of\_square;

    return 0;

}

## 13. Calculate Area of Rectangle.

#include <iostream>

using namespace std;

int main(){

    float length,width ,area\_of\_rectangle ;

    cout<<"enter the length of square : "<<endl;

    cin>>length;

     cout<<"enter the width of square : "<<endl;

    cin>>width;

   area\_of\_rectangle=length\*width;

   cout<<"the area of rectangle is : " <<area\_of\_rectangle;

    return 0;

}

**output:**

enter the length of square :

10

enter the width of square :

10

the area of rectangle is : 100

## **14. convert days to years, weeks and days**.

#include<iostream>

using namespace std;

int main()

{

    int days, years, weeks;

    cout << "Enter days:";   // Read total number of days from user

    cin >> days;

    years = (days / 365);

    weeks = (days % 365) / 7;

    days  = days - ((years \* 365) + (weeks \* 7));

    cout << "Years : " << years <<endl;

    cout << "weeks : " << weeks <<endl;

    cout << "Days : " << days <<endl;

    return 0;

}

#include<iostream>

using namespace std;

int main()

{

int y,d,w;

cout<<"Enter No. of days:";

cin>>d;

y=d/365;

d=d%365;

w=d/7;

d=d%7;

cout<<"\nYears: "<<y<<"\nWeeks: "<<w<<"\nDays: "<<d;

return 0;

}

**output:**

Enter No. of days:8

Years: 0

Weeks: 1

Days: 1

8 output dia ,matlab january 8 hai , 1 week hai week ka day 1 hai ,

# STRING

## concatenate two strings

#include <iostream>

using namespace std;

int main(){

   string a ,b,c ;

   a="hello ";

   b="world";

   c=a+b;

   cout<<c;

    return 0;

}

**output**: hello world

**another way**

#include <iostream>

using namespace std;

int main(){

   string a,b,c ;

   cout<<"enter your string 1" <<endl;

    getline(cin,a);

   cout<<"enter your string 2" <<endl;

   getline(cin,b);

   c=a+b;

   cout<<c ;

    return 0;

}

**output:**

enter your string 1

amarth patel

enter your string 2

lucky kushwah

amarth patellucky kushwah

## 02. to find string length

#include <iostream>

using namespace std;

int main(){

  string a;

  cout<<"Enter your string" <<endl;

  getline(cin,a);

  cout<<a.length();;

    return 0;

}

output:

Enter your string

amarthpatel

11

## 03. convert a string to Lower case

#include <iostream>

#include <string.h>

using namespace std;

int main()

{

   char string[10];

   cout<<"Input a string to convert to lower case"<<endl;

   cin.getline(string, 10);

   cout<<"Character in lowercase:"<< strlwr(string);

   // strlwr is use to convert upper case character to lower case

   return  0;

}

**OUTPUT:**

Input a string to convert to lower case

AMARTH

Character in lowercase:amarth

## 04. convert a string to Upper case

#include <iostream>

#include <string.h>

using namespace std;

int main(){

 char a[100];

 cout<<"enter your string to convert into upper case"<<endl;

 cin.getline(a,100);

 cout<<strupr(a);

}

output:

enter your string to convert into upper case

amarthpatel

AMARTHPATEL

## 05. change string to upper case without strupr

#include <iostream>

#include <string.h>

using namespace std;

    void functionupper(char []);

    int main()

    {

       char string[100];

       cout<<"Enter a string to convert it into upper case"<<endl;

       cin>>string;

       functionupper(string); // calling functionupper

       cout<<"Entered string in upper case is: "<< string;

       return 0;

    }

  void functionupper(char s[]) {

       int c = 0;

       while (s[c] != '\0') {

          if (s[c] >= 'a' && s[c] <= 'z') {

             s[c] = s[c] - 32;

          }

          c++;}}

## 06. to compare two strings using strcmp

#include <iostream>

#include <string.h>

#define MAX\_SIZE 100 //Maximum size of the string

using namespace std;

int main()

{

char str1[1000], str2[1000];

cout<<"Enter the first string"<<endl;

cin>>str1;

cout<<"Enter the second string"<<endl;

cin>>str2;

if (strcmp(str1,str2) == 0)

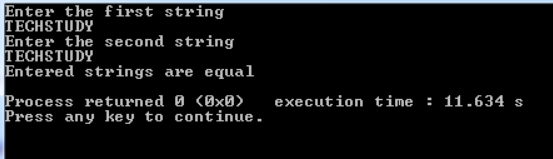
cout<<"Entered strings are equal"<<endl;

else

cout<<"Entered strings are not equal"<<endl;

return 0;

}



# Conditions

## 01.Check whether an integer entered by the user is odd or even

even number are those which reminder is zero ;

odd number are those which reminder isnot zero ;

0 is a even number .

#include <iostream>

using namespace std;

int main(){

    int a;

    cout<<"enter your number to check is even or odd" <<endl;

    cin>>a;

    if (a%2==0)

    {

        cout<<"number is even";

    }

    else{

        cout<<"number is odd";

    }

        return 0;

}

output:

enter your number to check is even or odd

3

number is odd

#include <iostream>

using namespace std;

int main(){

    int a;

    cout<<"enter your number to check is even or odd"<<endl;

    cin>>a;

    string b =(a%2==0) ? "even":"odd";

    cout<<b;

        return 0;}

 output:

enter your number to check is even or odd

2

even

## 02. find the largest number among three number.

#include <iostream>

using namespace std;

int main() {

    int num1 , num2 , num3;

    cout<<"Enter three Number " <<endl;

    cin>>num1 >>num2 >>num3 ;

    if (num1 >= num2 && num1 >= num3)

    {

        cout<<"the num1 is largest among three : " <<num1;

    }

        if (num2 >= num1 && num2 >= num3)

    {

        cout<<"the num2 is largest among three : " <<num2;

    }

        if (num3 >= num1 && num3 >= num2)

    {

        cout<<"the num3 is largest among three : " <<num3;

    }

    return 0;

}

output:

Enter three Number

10

50

10

the num2 is largest among three : 50

## 03.C++ Program to Find the Largest Number using Conditional Operator.

#include <iostream>

using namespace std ;

int main(){

    int num1 ,num2 ,num3,largest ;

    cout<<"Enter three number : ";

    cin>>num1 >>num2 >>num3 ;

 largest=(num1>num2) ?   (num1 > num3 ? num1 : num3 ) : ( num2>num3 ?num2 :num3);

cout<<"largest number is : " <<largest;

}

output :

Enter three number : 10

20

30

largest number is : 30

## 04.find the Largest among Three Variables using Nested if.

#include <iostream>

using namespace std;

int main(){ int num1 ,num2,num3 ;

cout<<"enter three number : "<<endl;

  cin>>num1 >>num2 >>num3 ;

if (num1>num2)

  {

    if (num1>num3)

    {

        cout<<"largest number is : "<<num1;

    }

    else

    {

        cout<<"largest number is : "<<num3;

    }

  }

if (num2>num1)

{

    if (num2>num3)

    {

        cout<<"largest number is : "<<num2;

    }

    else

    {

        cout<<"largest number is : "<<num3;

    }

}

return 0;

}

output:

enter three number :

30

20

10

largest number is : 30

## 05.check leap year using conditional Operator.

**|| logical or operator Returns true if one of the statements is true**

#include <iostream>

using namespace std;

int main() {

    int year;

    cout << "Enter a year: ";

    cin >> year;

(year % 400 == 0 || (year % 4 == 0 && year % 100 != 0)) ?

cout << year << " is a leap year." : cout << year << " is not a leap year.";

    return 0;

}

OUTPUT:

Enter a year: 2024

2024 is a leap year.

if year % 400 == 0 is true = is a Leap year ;

if year % 4 == 0  is true = is a Leap year ;

 leap year if perfectly divisible by 400

  not a leap year if divisible by 100

  but not divisible by 400

    leap year if not divisible by 100

  but divisible by 4

1900 is not a leap year but it is divided by 4 and 100 ;

#include <iostream>

using namespace std;

int main() {

    int year,b;

    cout<<"enter year" <<endl;

    cin>>year;

   b=year%400;

   cout<<b <<endl;

      cout<<"enter year" <<endl;

    cin>>year;

   b=year%100;

   cout<<b <<endl;

       cout<<"enter year" <<endl;

cin>>year;

   b=year%4;

   cout<<b <<endl;

return 0;

}

output:

enter year 400

1900

300

enter year 100

1900

0

enter year 4

1900

0

## 06.check alphabets using conditional operator

#include<iostream>

using namespace std;

int main()

{

    char a,b;

    cout<<"enter ";

    cin>>a;

    cout<<((( a>='a' && a<='z' ) || (a>='A' && a<='Z' ) ) ? " its a alphbet" : "its not a alphabet");

    return 0;

}

output:

enter a

its a alphbet

## 07.check number is positive, negative or zero.

#include <iostream>

using namespace std;

int main(){

   int a ;

   cout<<"enter your number : " <<endl;

   cin>>a;

   if (a<=-1)

   {

     cout<<"number is negative" <<endl;

   }

   else if (a>=1) {

cout<<"number is postive" <<endl;

   }

   else (

    cout<<"number is zero"

   );

    return 0;}

OUTPUT: enter your number : 1

number is postive

## 08. check uppercase or lowercase alphabets.

#include <iostream>

using namespace std;

int main(){

   char a ;

   cout<<"enter a aphabate" <<endl;

   cin>>a;

   if (a>='a' && a<='z')

   {

    cout<<"lower case alphabate";

   }

   else if (a>='A' && a<='Z'){

cout<<"UPPER case alphabate";

   }

   else{

    cout<<"NOT A alphabate";

   }

    return 0;

}

output:

enter a aphabate

a

lower case alphabate

## 09. check entered character vowel or consonant.

#include <iostream>

using namespace std;

int main(){

   char a, b ;

   cout<<"enter a alphabate to check  character vowel or consonant. : " <<endl;

   cin>>a;

   if (a== 'a' && 'e' && 'i' && 'o'&& 'u' || a=='A' && 'E' && 'I' && 'O'&& 'U')

   {

    cout<<"vowel";

   }

   else{

    cout<<"consonant";

   }

     return 0;

}

// OUTPUT :

enter a alphabate to check  character vowel or consonant. :

A

vowel

## 10.check whether a character is alphabet, digit or special character.

#include <iostream>

using namespace std;

int main(){

   char a;

   cout<<"enter a character : " <<endl;

   cin>>a;

 if (a>='a' && a<='z'|| a>='A'&& a<='Z' )

 {

  cout<<"alphabet";

 }

 else if (a>=0 && a<=9){

    cout<<"digit";

}

else{

    cout<<"special character";

}

     return 0;

}

output :

enter a character :

+

special character

## 11. print day name of week

#include <iostream>

using namespace std;

int main(){

int week;

cout<<"Enter week (1-7) : "<<endl;

cin>>week;

if (week==1)

{

    cout<<"monday";

}

else if (week==2)

{

    cout<<"tuesday";

}

else  if (week==3)

{

    cout<<"wednesday";

}

else if (week==4)

{

    cout<<"thusday";

}

else if (week==5)

{

    cout<<"friday";

}

else if (week==6)

{

    cout<<"saturday";

}

else if (week==7)

{

    cout<<"Sunday";

}

else{

    cout<<"invalid enter";

}

return 0;}

output:

Enter week (1-7) :

5

friday

## 12. to accept two integers and check whether they are equal or not.

#include <iostream>

using namespace std;

int main(){

  int a,b;

  cout<<"enter   two integers and check whether they are equal or not." <<endl;

   cout<<"enter first int"<<endl;

   cin>>a;

   cout<<"enter second int"<<endl;

   cin>>b;

   if (a==b)

   {

    cout<<"integer are equals" <<endl;

   }

   else {

    cout<<"integer are not  equals" <<endl;

   }

return 0;}

output:

enter   two integers and check whether they are equal or not.

enter first int

40

enter second int

50

integer are not  equals

## 13. to detrermine a candidate’s age is eligible for casting the vote or not.

#include <iostream>

using namespace std;

int main(){

  int a;

  cout<<"enter your age "<<endl;

  cin>>a;

  if (a>=18)

  {

    cout<<"you can vote"<<endl;

  }

  else{

    cout<<"you cannot vote";

  }

return 0;}

output:

enter your age

18

you can vote

#include <iostream>

using namespace std;

int main(){

  int a;

  cout<<"enter your age "<<endl;

  cin>>a;

  if (a<18)

  {

    cout<<"you cannot vote"<<endl;

    cout<<"you can vote after " <<18-a <<" years" <<endl;

  }

else{

    cout<<"you cann vote";

  } return 0;}

output:

enter your age

14

you cannot vote

you can vote after 4 years

## 14. to find the eligibility of admission for an engineering course based on the criteria.

Marks in Maths >=65

Marks in Phy >=55

Marks in Chem>=50

Total in all three subject >=180

or

Total in Math and Subjects >=140

#include <iostream>

using namespace std;

int main(){

  int maths , phy , chem , total ,maths\_phy\_total, maths\_chem\_total ;

cout<<"enter your marks in maths " <<endl;

cin>>maths;

cout<<"enter your marks in phy " <<endl;

cin>>phy;

cout<<"enter your marks in chem " <<endl;

cin>>chem;

total=maths+phy+chem;

maths\_phy\_total=maths+phy;

maths\_chem\_total=maths+chem;

cout<<"all three subject total : "<<total <<endl;

cout<<"all maths + phy (140) total : "<<maths\_phy\_total <<endl;

cout<<"all maths + chem( 140) total : "<<maths\_chem\_total <<endl;

if (maths>=65 && phy>=55 && chem>=50)

{

    if (total>=180)

    {

        cout<<"you are eligiabil total of maths phy chem is above 180 : " <<total <<endl;

    }

}

else if (maths\_phy\_total>=140 ){

    cout<<"you are eligiabil  maths + phy  : " <<maths\_phy\_total <<endl;

}

else if (maths\_chem\_total>=140 ){

    cout<<"you are eligiabil maths + chem : " <<maths\_chem\_total <<endl;

}

else{

    cout<<"you are not eligiable";

}

return 0;}

OUTPUT :

enter your marks in maths

17

enter your marks in phy

15

enter your marks in chem

70

all three subject total : 102

all maths + phy (140) total : 32

all maths + chem( 140) total : 87

you are not eligiable

## 15. calculate the total marks, percentage and division of student.

#include <iostream>

using namespace std;

int main(){

string name;

int physics , chem , maths , IT , total ;

float percentage ;

cout<<"Enter Your Name" <<endl;

getline(cin,name);

cout<<"Enter number of  physics , chem , maths , IT in sequence  " <<endl;

cin>>physics >>chem >>maths >>IT ;

total=physics + chem + maths + IT;

percentage=total/4.0;

if (percentage>=60  )

{

    cout<<"first division" <<endl;

}

else if (percentage <60 || percentage>=45)

{

    cout<<"second division" <<endl;

}

else if(percentage<45 || percentage>=35){

        cout<<"third division" <<endl;

}

else{

    cout<<"you are fail " <<endl;

 }

cout<<"your name is : " <<name <<endl;

cout<<"number in physics : " <<physics <<endl;

cout<<"number in chem : " <<chem <<endl;

cout<<"number in it : " <<IT <<endl;

cout<<"total marks : " <<total <<endl;

cout<<"your percentage is :" <<percentage <<endl;

    return 0;

}

**anothrt way**

#include<iostream>

#include<string.h>

using namespace std;

int main()

{ int rollno, phy, che, it, total;

    float percentage;

    char name[20], div[10];

    cout << "Input the Roll Number of the student :";

    cin >> rollno;

    cout << "Input the Name of the Student :";

    cin >> name;

    cout << "Input the marks of Physics, Chemistry and Information Technology: ";

    cin >> phy >> che >> it;

    total = phy + che + it;

    percentage = total/3.0;

    if (percentage >= 60)

    strcpy(div, "First");

    else

    if (percentage < 60 && percentage >= 48)

        strcpy(div,"Second");

    else

        if (percentage <48 && percentage >= 36)

        strcpy(div, "Pass");

         else

        strcpy(div, "Fail");

       cout << "Roll No : " << rollno <<endl << "Name of Student : " << name <<endl;

       cout << "Marks in Physics : " << phy << endl;

       cout << "Marks in Chemistry : " << che << endl;

       cout << "Marks in Information Technology : " << it << endl;

       cout << "Total Marks = " << total <<endl;

       cout << "Percentage = " << percentage <<endl;

       cout << "Division = " << div <<endl }

## 16. enter month number and print number of days in month.

#include <iostream>

using namespace std;

int main(){

      int month;

      cout<<"enter month number (1-12)" <<endl;

      cin>>month;

      if (month==1)

      {

        cout<<"january";

      }

      else if (month==2)

      {

        cout<<"feb";

      }

        else if (month==3)

      {

        cout<<"mar";

      }

        else if (month==4)

      {

        cout<<"april";

      }

        else if (month==5)

      {

        cout<<"may";

      }

        else if (month==6)

      {

        cout<<"june";

      }

        else if (month==7)

      {

        cout<<"june";

      }

        else if (month==8)

      {

        cout<<"aug";

      }

        else if (month==9)

      {

        cout<<"sep";

      }

        else if (month==10)

      {

        cout<<"oct";

      }

        else if (month==11)

      {

        cout<<"nov";

      }

        else if (month==12)

      {

        cout<<"dec";

      }

      else{

        cout<<"invalid number";

      }

    return 0;

}

output:

enter month number (1-12)

15

invalid number

## 17.to count total number of notes in entered amount.

#include<iostream>

using namespace std;

int main()

{

    int amount;

    int note1, note2, note5, note10, note20, note50, note100, note500;

    note1 = note2 = note5 = note10 = note20 = note50 = note100 = note500 = 0;

    cout << "Enter amount: "<<endl;

    cin >> amount;

    if(amount >= 500)

    {

        note500 = amount/500;

        amount -= note500 \* 500;

    }

    if(amount >= 100)

    {

        note100 = amount/100;

        amount -= note100 \* 100;

    }

    if(amount >= 50)

    {

        note50 = amount/50;

        amount -= note50 \* 50;

    }

    if(amount >= 20)

    {

        note20 = amount/20;

        amount -= note20 \* 20;

    }

    if(amount >= 10)

    {

        note10 = amount/10;

        amount -= note10 \* 10;

    }

    if(amount >= 5)

    {

        note5 = amount/5;

        amount -= note5 \* 5;

    }

    if(amount >= 2)

    {

        note2 = amount /2;

        amount -= note2 \* 2;

    }

    if(amount >= 1)

    {

        note1 = amount;

    }

    cout << "Total number of notes" <<endl;

    cout << "500 = " << note500 <<endl;

    cout << "100 = " << note100 <<endl;

    cout << "50 = " << note50 <<endl;

    cout << "20 = " << note20 <<endl;

    cout << "10 = " << note10 <<endl;

    cout << "5 = " << note5 <<endl;

    cout << "2 = " << note2 <<endl;

    cout << "1 = " << note1 <<endl;

    return 0;}

OUTPUT:

Enter amount:

500

Total number of notes

500 = 1

100 = 0

50 = 0

20 = 0

10 = 0

5 = 0

2 = 0

1 = 0

## 18. check whether a triangle can be formed by the given value for the angles.

what is triangle

the sum of 3 angle is 180 degree;

#include <iostream>

using namespace std;

int main (){

 int a,b,c,total;

 cout<<"enter first angle of triangle : " <<endl;

 cin>>a;

  cout<<"enter second angle of triangle : " <<endl;

 cin>>b;

  cout<<"enter third angle of triangle : " <<endl;

 cin>>c;

 total = a+b+c;

 if (total==180)

 {

    cout<<"triangle can formed";

 }

 else{

    cout<<"triangle cannot formed";

 }

    return 0;

}

OUTPUT:

enter first angle of triangle :

60

enter second angle of triangle :

60

enter third angle of triangle :

60

triangle can formed

# LOOP

## 01.to print alphabets from a to z

#include <iostream>

using namespace std;

int main(){

    for (char i = 'a'; i <= 'z'; i++)

    {

        cout<<i<<" ";

    }

return 0;

}

output:

a b c d e f g h i j k l m n o p q r s t u v w x y z

## 02. Write C++ program to print ASCII values of all characters

#include <iostream>

using namespace std;

int main(){

    char i;

    for ( i = 'a'; i <= 'z'; i++)

    {

        cout<<"ASCII value of  : "<<i <<" = " <<int(i) <<endl ;

    }

    for ( i = 'A'; i <= 'Z'; i++)

    {

        cout<<"ASCII value of  : "<<i <<" = " <<int(i) <<endl ;

    }

return 0;}

OUTPUT:

ASCII value of  : a = 97

ASCII value of  : b = 98

ASCII value of  : c = 99

ASCII value of  : d = 100

ASCII value of  : e = 101

ASCII value of  : f = 102

ASCII value of  : g = 103

ASCII value of  : h = 104

ASCII value of  : i = 105

ASCII value of  : j = 106

ASCII value of  : k = 107

ASCII value of  : l = 108

ASCII value of  : m = 109

ASCII value of  : n = 110

ASCII value of  : o = 111

ASCII value of  : p = 112

ASCII value of  : q = 113

ASCII value of  : r = 114

ASCII value of  : s = 115

ASCII value of  : t = 116

ASCII value of  : u = 117

ASCII value of  : v = 118

ASCII value of  : w = 119

ASCII value of  : x = 120

ASCII value of  : y = 121

ASCII value of  : z = 122

ASCII value of  : A = 65

ASCII value of  : B = 66

ASCII value of  : C = 67

ASCII value of  : D = 68

ASCII value of  : E = 69

ASCII value of  : F = 70

ASCII value of  : G = 71

ASCII value of  : H = 72

ASCII value of  : I = 73

ASCII value of  : J = 74

ASCII value of  : K = 75

ASCII value of  : L = 76

ASCII value of  : M = 77

ASCII value of  : N = 78

ASCII value of  : O = 79

ASCII value of  : P = 80

ASCII value of  : Q = 81

ASCII value of  : R = 82

ASCII value of  : S = 83

ASCII value of  : T = 84

ASCII value of  : U = 85

ASCII value of  : V = 86

ASCII value of  : W = 87

ASCII value of  : X = 88

ASCII value of  : Y = 89

ASCII value of  : Z = 90

## 03. print multiplication table of a given number

#include <iostream>

using namespace std;

int main(){

int a ,i;

cout<<"Enter your number for table" <<endl;

cin>>a;

for ( i = 1 ; i <= 10 ; i++)

{

    cout<<a <<" x " <<i <<" = " <<i\*a <<endl;

}

return 0;

}

output:

Enter your number for table

2

2 x 1 = 2

2 x 2 = 4

2 x 3 = 6

2 x 4 = 8

2 x 5 = 10

2 x 6 = 12

2 x 7 = 14

2 x 8 = 16

2 x 9 = 18

2 x 10 = 20

## 04.print all natural numbers in reverse order

#include <iostream>

using namespace std;

int main(){

    int a ,i;

    cout<<"enter number " <<endl;

    cin>>a;

    for ( i = a; i >=1 ; i--)

    {

        cout<<i <<endl;

    }

    return 0;

}

output:

enter number

10

10

9

8

7

6

5

4

3

2

1

## 05. find sum of even numbers between 1 to n

#include<iostream>

using namespace std;

int main()

{

    int a ,i,sum=0;

   cout<<"enter your number " <<endl;

   cin>>a;

   for ( i = 2; i <= a; i+=2)

   {

     sum +=i;

   }

cout<<sum;

return 0;

}

## 06. find sum of odd numbers between 1 to n

#include<iostream>

using namespace std;

int main()

{

    int a ,i,sum=0;

   cout<<"enter your number " <<endl;

   cin>>a;

   for ( i = 1; i <= a; i+=2)

   {

     sum +=i;

   }

cout<<sum;

     return 0;

}

enter your number

10

25

## 07.reverse a number using while & for loop

 #include <iostream>

 using namespace std;

 int main(){

  int input\_number ,reminder,reverse=0;

  cout<<"enter your number to reverse"<<endl;

cin>>input\_number;

while (input\_number !=0)

{   reminder=input\_number%10;

    reverse=reverse\*10+reminder;

    input\_number=input\_number/10;

  }

  cout<<"Reverse number is : " <<reverse;

    return 0;

 }

 output:

 enter your number to reverse

123456

Reverse number is : 654321

reverse code explain :

1.first we take a number example 1234

2.than we divide the number 1234 by 10 and reminder save in reminder variable using modul % (the reminder is 4).

3.than we find reverse value using reminder value number using formula  reverse=reverse\*10+reminder; (reverse value is 4)

4.now we have to remove last digit of our number 123[4] .

5.we use formula   input\_number=input\_number/10;   1234/10 =123.4 the valriable is int it will remove .4

6.now our number is 123 .

7.this conntinue untill complete reverse.

 #include <iostream>

 using namespace std;

 int main(){

  int number ,reminder,reverse=0;

  cout<<"enter your number to reverse"<<endl;

  cin>>number;

   for ( ; number!=0 ; number=number/10 )

   {  reminder=number %10;

      reverse=reverse\*10+reminder;

   }

   cout<<reverse;

return  0;}

## 08. calculate power using while & for loop

Exponentiation is a mathematical operation, written as bⁿ, involving two numbers, the base b and the exponent or power n, and pronounced as "b to the n".

5 ki power 3 = 5\*5\*5 =125

using for loop

#include <iostream>

using namespace std;

int main(){

  int number , power=1 , exponent;

  cout<<"enter your number" <<endl;

  cin>>number;

  cout<<"enter your exponent" <<endl;

  cin>>exponent;

for (int  i = 1; i <= exponent ; i++)

{

    power=power\*number;

}

cout<<power;

}

#include <iostream>

using namespace std;

int main(){

      int number , power=1 , exponent ,i=1;

  cout<<"Enter your number" <<endl;

  cin>>number;

  cout<<"Enter your exponent" <<endl;

  cin>>exponent;

  while (i<=exponent)

  {

    power=power\*number;

   i=i+1;

  }

cout<<power;

  return 0;}

output:

enter your number

5

enter your exponent

3

125

## 09. to find factorial of any number

**Factorial Symbol**

The factorial function (symbol: !) says to multiply all whole numbers from our chosen number down to 1.

Examples:

4! = 4 × 3 × 2 × 1 = 24

7! = 7 × 6 × 5 × 4 × 3 × 2 × 1 = 5040

1! = 1

#include <iostream>

using namespace std;

int main(){

      int nummber , fact=1 , i=1;

      cout<<"enter your number :" <<endl;

      cin>>nummber;

      for ( i = 1; i <= nummber; i++)

      {

        fact=fact\*i;

      }

      cout<<"factorial of : " <<nummber <<" is = "<<fact;

 return 0;

}

output;

enter your number :

4

factorial of : 4 is = 24

#include <iostream>

using namespace std;

int main(){

      int nummber , fact=1 , i=1;

           cout<<"enter your number :" <<endl;

          cin>>nummber;

       while (i<=nummber)

       {

        fact=fact\*i;

        i++;

       }

     cout<<"factorial of : " <<nummber <<" is = "<<fact;

      }

      output:

      enter your number :

4

factorial of : 4 is = 24

## 10.check a number is Armstrong number or not

Narcissistic Number or armstrong number .

An n-digit number that is the sum of the nth powers of its digits is called an n-narcissistic number. It is also sometimes known as an Armstrong number.

An Armstrong number of three digits is **an integer such that the sum of the cubes of its digits is equal to the number itself**. For example, 371 is an Armstrong number since 3\*\*3 + 7\*\*3 + 1\*\*3 = 371.

#include <iostream>

using namespace std;

int main(){

  int number , reminder, sum=0 , temp;

  cout<<"enter your number to check it is armstrong or not : " <<endl ;

   cin>>number;

   temp=number;

   while (number>0)

   {

    reminder=number%10;

    sum=sum+(reminder\*reminder\*reminder);

    number=number/10;

   }

   if (temp==sum)

   {

    cout<<"armstrong";

   }

   else{

    cout<<"not armstrong";

   }

    return 0;

}

output:

enter your number to check it is armstrong or not :

153

armstrong

#include <iostream>

using namespace std;

int main(){

  int number , reminder, sum=0 , temp ,i;

  cout<<"enter your number to check it is armstrong or not : " <<endl ;

   cin>>number;

   temp=number;

 for ( i = 0 ; i < number; number=number/10)

 {

        reminder=number%10;

        sum=sum+(reminder\*reminder\*reminder);

 }

   if (temp==sum)

   {

    cout<<"armstrong";

   }

   else{

    cout<<"not armstrong";

   }

    return 0;

}

## 11. Fibonacci series?

The Fibonacci sequence is a type series where each number is the sum of the two that precede it. It starts from 0 and 1 usually. The Fibonacci sequence is given by 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, and so on. The numbers in the Fibonacci sequence are also called Fibonacci numbers.

#include <iostream>

using namespace std;

int main(){

int t1 ,t2 ,t3 ,input\_times ;

 t1=0;

 t2=1;

 cout<<"Enter your number n number of time you want  " <<endl;

 cin>>input\_times;

 cout<<t1 <<"\t" <<t2 <<"\t" ;

for (int i = 2; i < input\_times ; i++)

{

    t3=t1+t2;

    cout<<t3 <<"\t";

    t1=t2;

    t2=t3;

}

return 0;

}

output:

Enter your number n number of time you want

10

0       1       1       2       3       5       8       13      21      34

## 12. check a number is Prime number or not using while loop

Prime number is a number that can be divided exactly only by itself and 1, for example 7, 17 and 41

a prime number has to factor  1 or itself means two factor

composite number has more than two factor .

1 is neither prime nor composite

#include <iostream>

using namespace std;

int main(){

   int input ,count=0;

    cout<<"enter a number to check a number  is prime or not "<<endl;

    cin>>input;

    for (int  i = 1; i <= input; i++)

    {

        if (input%i==0)

        {

            count++;                                          //count++

        }

    }

    if (count==2)

    {

        cout<<"number is prime";

    }

    else{

        cout<<"number is not prime";

    }

    return 0;

}

**EXPLAIN**

we made input variable to input a number .

we made count variable to count factor coz prime number have only two factor intial value or count is 0.

for example we input a number 3

(int  i = 1; i <= input; i++)=

(int  i = 1; 1 <= 3; i++)-

intial value of i is one so the loop start from one .

1 is less than or equal to 3 condtion is true so loop start.

it will go in if condtion now if (input%i==0) if (3%1==0)

(3%1==0) % is used to find remainder (0==0) condition true .

so our condition is true it the count value increase to 1 .

than it will again go to loop .

(int  i = 1; 2 <= 3; i++)-

2 is less than or equal to 3 condtion is true so loop start.

it will go in if condtion now if (input%i==0) if (3%2==0)

(3%2==0) % is used to find remainder (1==0) condition false .

so our condition is false ,the count value not increase is still 1 .

than it will again go to loop .

(int  i = 1; 3 <= 3; i++)-

3 is less than or equal to 3 condtion is true so loop start.

it will go in if condtion now if (input%i==0) if (3%2==0)

(3%3==0) % is used to find remainder (0==0) condition true .

so our condition is true ,the count value increase by 1 ,now count value is 2 .

than it will again go to loop .

(int  i = 1; 4 <= 3; i++)- condition false loop will not execute .

it will come to if (count==2) condtion

our count value is 2 so this condition is true

cout<<"number is prime" will execute.

using while loop

#include <iostream>

using namespace std;

int main(){

    int input,count=0 ,i=1;

    cout<<"enter a number to check its prime or not" <<endl;

    cin>>input;

     while (i<=input)

     {

        if (input%i==0)

        {

            count++;

        }

        i++;

     }

     if (count==2)

     {

        cout<<"prime number";

     }

     else{

        cout<<"not a prime number";

     }

    return 0;

}

## 13. check a number is palindrome or not

A palindromic number (also known as a numeral palindrome or a numeric palindrome) is a number (such as 16461) that remains the same when its digits are reversed. In other words, it has reflectional symmetry across a vertical axis.

#include <iostream>

using namespace std;

int main(){

  int input , remainder  , reverser , sum =0;

  cout<<"enter number"<<endl;

  cin>>input;

  reverser=input;

  while (input>0)

  {

     remainder=input%10;

     sum=remainder+(sum\*10);

     input=input/10;

    }

  if (reverser==sum)

  {

    cout<<"palindrome";

  }

  else{

    cout<<"not palindrome";

  }

    return 0;

}

#include <iostream>

using namespace std;

int main(){

  int input , remainder  , reverser , sum =0;

  cout<<"enter number"<<endl;

  cin>>input;

  reverser=input;

for (int i = 0; input > 0 ;input=input/10 )

{ remainder=input%10;

     sum=remainder+(sum\*10);

}

  if (reverser==sum)

  {

    cout<<"palindrome";

  }

  else{

    cout<<"not palindrome";

  }

    return 0;

}

for example 121

first we find remainder of input number .

than store in variable

formula -(sum=0) sum=remainder+(sum\*10)

than remove last value of input

formula input = input/10;

## 14. HCF calculation - HCF Definition

The full form of HCF in Maths is Highest Common Factor.

As the rules of mathematics dictate, the greatest common divisor or the gcd of two or more positive integers happens to be the largest positive integer that divides the numbers without leaving a remainder. For example, take 8 and 12. The H.C.F. of 8 and 12 will be 4 because the highest number that can divide both 8 and 12 is 4.

#include <iostream>

using namespace std;

int main()

{

    int i, num1, num2, min, HCF=1;

    //Read two numbers from user

    cout<<"Enter any two numbers:";

    cin>>num1;

    cin>>num2;

    // Find min number between two numbers

    min = (num1<num2) ? num1 : num2;

    for(i=1; i<=min; i++)

    {

        if(num1%i==0 && num2%i==0)

        {

            HCF = i;

        }

        cout<<HCF<<endl;;

    }

    cout<<"HCF of "<<num1<< " and "<< num2<< " is: " <<HCF;

    return 0;

}

output:

Enter any two numbers:12

6

1

2

3

3

3

6

HCF of 12 and 6 is: 6

explaNAtion

 min = (num1<num2) ? num1 : num2;

  min = (12<6) ? 12 : 6;

  12 is less than 6 conditon is false so 6 is min

  min=6

  for(i=1; i<=min; i++) = for(i=1; i<=6; i++)

 1 is less than or equal to 6 condition is true loop will exectue .

 if(num1%i==0 && num2%i==0) = if(12%1==0 && 6%1==0)

 hcf=i haf=1;

 2 is less than or equal to 6 condition is true loop will exectue .

 if(num1%i==0 && num2%i==0) = if(12%2==0 && 6%2==0)

 hcf=i haf=2;

  3 is less than or equal to 6 condition is true loop will exectue .

 if(num1%i==0 && num2%i==0) = if(12%3==0 && 6%3==0)

 hcf=i haf=3;

 4 is less than or equal to 6 condition is true loop will exectue .

 if(num1%i==0 && num2%i==0) = if(12%4==0 && 6%4==0)

 hcf=i haf=3;

  5 is less than or equal to 6 condition is true loop will exectue .

 if(num1%i==0 && num2%i==0) = if(12%5==0 && 6%5==0)

 hcf=i haf=3;

  6 is less than or equal to 6 condition is true loop will exectue .

 if(num1%i==0 && num2%i==0) = if(12%6==0 && 6%6==0)

 hcf=i haf=6;

hcf of 12 and 6 is 6

**you can also write this code ANOTHER WAY**

#include <iostream>

using namespace std;

int main()

{

    int i, num1, num2, min, HCF=1;

    //Read two numbers from user

    cout<<"Enter any two numbers:";

    cin>>num1;

    cin>>num2;

    // Find min number between two numbers

    // min = (num1<num2) ? num1 : num2;

    for(i=1; i<=num1; i++)

    {

        if(num1%i==0 && num2%i==0)

        {

            HCF = i;

        }

        cout<<HCF<<endl;;

    }

    cout<<"HCF of "<<num1<< " and "<< num2<< " is: " <<HCF;

    return 0;

}

output:

Enter any two numbers:32

12

1

2

2

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

4

HCF of 32 and 12 is: 4

another way

// a=39;b=12

the bigger number excute only

a=a-b ; b=b-a

a=39-12 ;b=12

a=27   ;b=12

a=a-b ; b=b-a

a=27-12 ; b=12

a=15 ;b=12

a=a-b ; b=b-a

a=15-12 ;b=12

a=3; b;12

a=a-b ; b=b-a

b=12-3 ; a=3

b=9 ; a=3

b=9-3 ;a=3

b=6 ;a=3

b=6-3 ;a=3

b=3 ; a=3

hcf of 12 and 27 is 3

#include <iostream>

using namespace std;

int main(){ int num1,num2;

    cin>>num1;

    cin>>num2;

    while (num1!=num2)

    {

        if (num1>num2)

        {

            num1=num1-num2;

        }

        else{

            num2=num2-num1;

        } }

    cout<<num1;            //you can also print num2

    cout<<num2; }

## 15.FIND LCM OF TWO NUMBER

LCM is the short form for “Least Common Multiple.” The least common multiple is defined as the smallest multiple that two or more numbers have in common.

For example: Take two integers, 2 and 3.

Multiples of 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20….

Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30 ….

6, 12, and 18 are common multiples of 2 and 3. The number 6 is the smallest. Therefore, 6 is the least common multiple of 2 and 3.

So, what is LCM in math? The LCM of two numbers is the smallest number divisible by both numbers.

TO find the Lcm , we have to find hcf first .

formula

lcm x hcf = a x b .

lcm= (axb)hcf.

#include <iostream>

using namespace std;

int main(){

    int a ,b ,lcm,hcf,x,y;

    cout<<"enter A number " <<endl;

    cin>>a;

    cout<<"enter B number " <<endl;

    cin>>b;

    x=a;

    y=b;

    while (a!=b)

    {

         if (a>b)

         {

            a=a-b;

         }

         else{

            b=b-a;

         }

        }

    hcf=a;              //you can also write b .

    lcm=(x\*y)/hcf;

   cout<<lcm;

}

# Star pattern

## 01.Right Triangle Star Pattern

#include <iostream>

using namespace std;

int main(){

int a;

cout<<"enter raw number : ";

cin>>a;

for (int i = 1; i <= a; i++)         // raw

{

    for (int j = 1; j <= i; j++)     //column

    {

        cout<<" \* ";

    }

    cout<<"\n";

}

return 0;

}

**output:**

**enter raw number : 5**

**\***

**\*  \***

**\*  \*  \***

**\*  \*  \*  \***

**\*  \*  \*  \*  \***

## 02.inverted half star pyramid pattern (Downward Triangle Star Pattern)

#include <iostream>

using namespace std;

int main(){

int a;

cout<<"enter raw number : ";

cin>>a;

for (int i = 0; i < a; i++) // first loop  raw

{

  for (int j = a; j >i; j--) // second loop columns

  {

    cout<<" \* ";

  }

     cout<<"\n";}}

1.Enter a number for  example we enter 3 . a=3.

first loop will  ,  for(int i=0;i<3;i++) ,the initial value of i is 0 (i=0) , i < a (0 < 3 )  zero is less than three condition true .

Enter in second loop where for( int j =a ; j >i ; j-- ) , for( int j =3 ; j >0 ; j-- ) ,  the value of j is 3 , j>0 ( 3 > 0) 3 is bigger than zero condition true loop execute , cout << " \* " will print ,

than j-- decrement  means now the value of j will  decrease j < i ( 2 > 0) two is bigger than zero this condition is also true the cout<< " \*" will execute . this goes untill the second loop contion become false

output:

enter raw number : 3

 \*  \*  \*

 \*  \*

 \*

## 03.Left Triangle Star Pattern

#include <iostream>

using namespace std;

int main()

{

 int a;

 cout<<"enter row number : ";

 cin>>a;

 for (int i = 1; i <= a; i++)               //   raw

    {

    for (int j =i; j <a; j++)             // space

     {

    cout<<" ";

     }

    for (int k = 1; k <= i; k++)           // column

    {

        cout<<"\*";

    }

    cout<<"\n";

    }

}

enter row number : 4

   \*

  \*\*

 \*\*\*

\*\*\*\*

**Explanation**

to give space in pyramid three for loop used.

we take a =4 input from user

raw loop = for (int i = 1; i <= a; i++) = (int i = 1; 1 <= 4; i++)

intial point is i = 1 , 1 is less than or equal to 4 condition true ,went to second loop

second loop is used to give space = for (int j =i; j <a; j++)= (int j =1; j <4; j++)

      j=i means j = 1 , j <a means 1 < 4 , condition true

      cout<<" "; execute one time  one space made ,

than j++ increment = j <a means 2 < 4     condition true

      cout<<" "; execute second time  second space made ,

than j++ increment = j <a means 3 < 4     condition true

      cout<<" "; execute second time  third space made ,

 than j++ increment = j <a means 4 < 4  four is less than four    condition fALSE

      cout<<" "; NOT execute  .

IT COMES TO THIRD FOR LOOP   for (int k = 1; k <= i; k++) = for (int k = 1; k <= 1; k++)

 INITIAL start k =1 , k<=i means 1 is less than or equal to 1 conditon true

     cout<<"\*"; will execute ,

k++ increament

k<=1 ( 2<=1) condtion false ,

 cout<<"\n"; will execute .

than again come to first loop . this will continue untill the first loop condition become false

## 04.Right down Mirror Star Pattern

#include <iostream>

using namespace std;

int main()

{

 int a;

 cout<<"enter raw number : ";

 cin>>a;

 for (int i = 1; i <= a; i++)               //   raw

    {

    for (int j =1; j <i; j++)             // space

     {

    cout<<" ";

     }

    for (int k = i; k <= a; k++)           // column

    {

        cout<<"\*";

    }

    cout<<"\n";

    }

}

enter raw number : 5

\*\*\*\*\*

 \*\*\*\*

  \*\*\*

   \*\*

    \*

**input 3 a=3**

**first for loop for raw =**

for (int i = 1; i <= a; i++) = (int i = 1; i <= 3; i++)

initial i =1 ,

i<=a = (1<=3 ) one is less than or equal to three condition true

it will go to second loop

**second for loop**

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

j < 1 ( one is less than one ) condition false,

cout<<" "; not execute

**third loop**

for (int k = i; k <= a; k++)=(int k = 1; 1 <= 3; k++)

1 <= 3 ( one is less than or equal to three ) conditionn true

 cout<<"\*" will execute .

 than k++ increment ,

 again come to third loop (int k = 1; 2 <= 3; k++)

 2<=3 ( two is less than or equal to three) condition true

 cout<<"\*" will execute .

 than k++ increment ,

 again come to third loop (int k = 1; 3 <= 3; k++)

 3<=3 ( three is less than or equal to three) condition true

 cout<<"\*" will execute .

 than k++ increment

  again come to third loop (int k = 1; 4 <= 3; k++)

 4<=3 ( four is less than or equal to three) condition false

 cout<<"\*" will not execute .

**than again come to first loop**

first for loop for raw =

for (int i = 1; i <= a; i++) = (int i = 1; 2 <= 3; i++)

now i = 2 ,

i<=a = (2<=3 )  is two less than or equal to three condition true

it will go to second loop

**second for loop**

for (int j =1; j <i; j++) = (int j =1; j <2; j++)

j=1 , j<2 (1 < 2) ( one is less than two ) condition true,

cout<<" "; will execute

**again second loop**

for (int j =1; j <i; j++) = (int j =1; 2 <2; j++)

j=1 , 2<2  ( two is less than two ) condition false,

cout<<" "; will not execute

**came to third loop .**

# SWITCH CASE

## 01. print number of days in a month using switch case

#include <iostream>

using namespace std;

int main (){

 int month\_day;

 cout<<"Enter a month number to find  how many days it has " <<endl;

 cin>>month\_day;

 switch (month\_day)

 {

 case 1:

 cout<<"you enter 1 ,january have 31 days";

break;

case 2:

 cout<<"you enter 2 ,feb have 28 days";

break;

 case 3:

 cout<<"you enter 3 ,mar have 30 days";

break;

 case 4:

 cout<<"you enter 4 ,april have 31 days";

break;

 case 5:

 cout<<"you enter 5 ,may have 30 days";

break;

 case 6:

 cout<<"you enter 6 ,june have 30 days";

break;

 case 7:

 cout<<"you enter 7 ,july have 31 days";

break;

 case 8:

 cout<<"you enter 8 ,aug have 31 days";

break;

 case 9:

 cout<<"you enter 9 sep have 30 days";

break;

 case 10:

 cout<<"you enter 10 ,oct have 31 days";

break;

 case 11:

 cout<<"you enter 11 ,nov have 30 days";

break;

 case 12:

 cout<<"you enter 12 ,dec have 31 days";

break;

 default:

 cout<<"enter wrong month number";

    break;

 }

}

output:

Enter a month number to find  how many days it has

12

you enter 12 ,dec have 31 days

## 02. create simple calculator using switch Statement

#include <iostream>

using namespace std;

int main (){

    char maths\_operator;

    int num1 , num2;

    cout<<"what you want to do  (+  , - , \* , / )" <<endl;

    cin>>maths\_operator;

    cout<<"enter num1"<<endl;

    cin>>num1;

    cout<<"enter num2"<<endl;

    cin>>num2;

switch (maths\_operator)

{

case '+' :

cout<<num1+num2;

    break;

case '-' :

cout<<num1-num2;

    break;

case '/' :

cout<<num1/num2;

    break;

case '\*' :

cout<<num1\*num2;

    break;

default:

cout<<"enter correct operator";

    break; }}

output:

what you want to do  (+  , - , \* , / )

+

enter num1

40

enter num2

40

80

## 03. check even or odd number using switch case

#include <iostream>

using namespace std;

int main (){

 int  a ;

 cout<<"enter a number to check it is even or odd "<<endl;

 cin>>a;

switch (a%2)

{

case 0:

    cout<<"number is even";

    break;

  case 1:

    cout<<"number is odd";

    break;

default:

cout<<"enter correct number";

    break;

}

}

enter a number to check it is even or odd

14

number is even

## 04. check vowel or consonant using switch case

#include <iostream>

using namespace std;

int main (){

 char  a ;

  cout<<"enter a alphabet"<<endl;

  cin>>a;

  switch (a)

  {

  case 'a':

  case 'e':

  case 'i':

  case 'o':

  case 'u':

  case 'A':

  case 'E':

  case 'I':

  case 'O':

  case 'U':

    cout<<"vowel";

    break;

  default:

  cout<<"consonant";

    break;

  }}

  OUTPUT:

enter a alphabet

Z

consonant

## 05. print gender Male Female program

 #include <iostream>

using namespace std;

int main(){

    char gender;

    //Reading gender from user

    cout<<"Enter gender (M/m or F/f): ";

    cin>>gender;

    switch(gender)

    {

        case 'M':

        case 'm':

            cout<<"Male";

            break;

        case 'F':

        case 'f':

             cout<<"Female";

            break;

        default:

             cout<<"Unspecified Gender"<<endl;

    }

    return 0;

}

## 06.find maximum number using switch case

#include <iostream>

using namespace std;

int main(){

   int num1, num2;

    //Reading two numbers from user

    cout<<"Enter two numbers to find maximum number: ";

    cin>>num1;

    cin>>num2;

    //Condition to check maximum number

    switch(num1 > num2)

    {

        case 0: cout<<num2<<" is Maximum number";           //0(FALSE)

            break;

         case 1: cout<<num1<<" is Maximum number";             //1(TRUE)

            break;

    }

    return 0;

}

# ARRAY

#include <iostream>

using namespace std;

int main (){

    string car[4];

    cin>>car[0];

    cin>>car[1];

    cin>>car[2];

    cin>>car[3];

    cout<<car[0] <<" " <<car[1]<<" "  <<car[2]<<" "  <<car[3];

}

**OUTPUT:**

AMARTH

PATEL

LUCKY

PATEL

AMARTH PATEL LUCKY PATEL

#include <iostream>

using namespace std;

int main (){

    int number[]={1,2,3,4};

    cout<<number[0];

}

output:

1

#include <iostream>

using namespace std;

int main (){

    int number[]={1,2,3,4};

    number[0]={100};

    cout<<number[0];

}

**output:**

100

|  |
| --- |
| #include <iostream>  using namespace std;  int main (){  int x[5];  for (int i = 0; i < 5; i++)  {      cout<<"enter array value " <<i <<":";      cin>>x[i];  }  for (int i = 0; i < 5; i++)  {      cout<<"value of cell "<<i<<":";      cout<<x[i] <<endl;  }  }  output:  enter array value 0:00  enter array value 1:10  enter array value 2:20  enter array value 3:30  enter array value 4:40  value of cell 0:0  value of cell 1:10  value of cell 2:20  value of cell 3:30  value of cell 4:40 |

|  |
| --- |
| **another way**  #include <iostream>  using namespace std;  int main (){  int x[5];  for (int i = 0; i < 5; i++)  {      cout<<"enter array value " <<i <<":";      cin>>x[i];        cout<<"value of cell "<<i<<":";      cout<<x[i] <<endl;        cout<<endl;  }  }  output:  enter array value 0:00  value of cell 0:0  enter array value 1:10  value of cell 1:10  enter array value 2:20  value of cell 2:20  enter array value 3:30  value of cell 3:30  enter array value 4:40  value of cell 4:40 |

## 01.enter array value through for loop

## 02.loop through a array

#include <iostream>

using namespace std;

int main (){

    string car[]={"BMW" , "AUDI" , "TATA ","SUZUKI"};

    for (int i = 0; i < 4 ; i++)

    {

         cout<<"index" <<" = " <<i <<" : " <<car[i] <<endl;;

    }

}

output:

index = 0 : BMW

index = 1 : AUDI

index = 2 : TATA

index = 3 : SUZUKI

#include <iostream>

using namespace std;

int main (){

    int number[4]={11 , 22 , 33 , 44};

    for (int i = 0; i < 4 ; i++)

    {

         cout<<"index" <<" = " <<i <<" : " <<number[i] <<endl;;

    }

}

// output:

index = 0 : 11

index = 1 : 22

index = 2 : 33

index = 3 : 44

## 03.sizeof() array , and loop

#include <iostream>

using namespace std;

int main (){

    int number[]={01 , 02 , 03 , 04 ,05};

     cout<<sizeof(number);

}

**output** : 20  coz  ( 1 int store in 4 byte = 4\*5=20)

#include <iostream>

using namespace std;

int main (){

    int number[]={01 , 02 , 03 , 04 ,05};

     cout<<"size of array is = " <<sizeof(number)/sizeof(int);

}

**output:** size of array is = 5

#include <iostream>

using namespace std;

int main (){

    int number[]={11 , 22 , 33 , 44 ,55};

     for (int i = 0; i < sizeof(number)/sizeof(int); i++)

     {

         cout<<"index "<<i <<" = " <<number[i] <<endl;

         }

}

**output:**

index 0 = 11

index 1 = 22

index 2 = 33

index 3 = 44

index 4 = 55

## 04. for each loop in array

#include <iostream>

using namespace std;

int main (){

    int number[]={11 , 22 , 33 , 44 ,55};

     for (int i :number)

     {

         cout<<i <<"\n";

         }

}

**output:**

11

22

33

44

55

## 05.2d array

#include <iostream>

using namespace std;

int main (){

    int number[2][2]={

                       {11,22},

                       {33,44}

                    };

cout<<number[0][0];                //output :11

cout<<number[0][1];                 //output :22

cout<<number[1][0];               //output :33

cout<<number[1][1];                //output :44

}

## 06. 3d array or multi dimenational

#include <iostream>

using namespace std;

int main (){

int ay[2][2][2]{

                     {

                      {11,22},

                         {33,44}

                     },

                       {

                          {55,66},

                           {77,88}

                        }

                 };

cout<<ay[0][0][0] <<endl;   //output :11

cout<<ay[0][0][1] <<endl;   //output :22

cout<<ay[0][1][0] <<endl;   //output :33

cout<<ay[0][1][1] <<endl;   //output :44

cout<<ay[1][0][0] <<endl;   //output :55

cout<<ay[1][0][1] <<endl;   //output :66

cout<<ay[1][1][0] <<endl;   //output :77

cout<<ay[1][1][1] <<endl;   //output :88

## 07.loop through 2d  array .

|  |
| --- |
| #include <iostream>  using namespace std;  int main(){     int number[2][4]={ {1,2,3,4},{5,6,7,8}   };        for(int i=0 ;i < 2;i++)      {          for (int j = 0; j < 4; j++)          {              cout<<number[i][j] <<"\n";          }          }; } |

output:

1

2

3

4

5

6

7

8

|  |
| --- |
| **output:**  amarth patel lucky patel |

|  |
| --- |
| #include <iostream>  using namespace std;  int main(){   string name[2][2]={      {"amarth","patel"},      {"lucky","patel"}      };  for (int i = 0; i < 2; i++)  {      for (int j= 0; j< 2; j++)      {          cout<<name[i][j] <<" ";      }    }; }  output:amarth patel lucky patel |

|  |
| --- |
| **output:**  **Printing a 2D Array:**  **10      11**  **20      21**  **30      31**  **40      41** |

|  |
| --- |
| #include<iostream>  using namespace std;  main( )  {   int arr[4][2] = {          { 10, 11 },          { 20, 21 },          { 30, 31 },          { 40, 41 }          } ;      int i,j;      cout<<"Printing a 2D Array:\n";      for(i=0;i<4;i++)      {          for(j=0;j<2;j++)          {                cout<<"\t"<<arr[i][j];          }          cout<<endl;      } } |

## 08.2d matrix

#include<iostream>

using namespace std;

main( )

{

      int  s[2][2];

      int  i, j;

      cout<<"\n2D Array Input:\n";

      for(i=0;i<2;i++)

      {

        for(j=0;j<2;j++)

        {

            cout<<"\ns["<<i<<"]["<<j<<"]=  ";

            cin>>s[i][j];

        }

      }

      cout<<"\nThe 2-D Array is:\n";

      for(i=0;i<2;i++)

      {

        for(j=0;j<2;j++)

        {

            cout<<"\t"<<s[i][j];

        }

        cout<<endl;

      }

}

**output:**

**2D Array Input:**

**s[0][0]=  1**

**s[0][1]=  2**

**s[1][0]=  3**

**s[1][1]=  4**

**The 2-D Array is:**

**1       2**

**3       4**

## 09.3d loop array

#include <iostream>

using namespace std;

int main (){

    int number [2][2][4]={

        {{1,2,3,4},{5,6,7,8}},

        {{9,10,11,12},{13,14,15,16}},

    };

    for (int i = 0; i < 2; i++)

    {

        for (int j = 0; j < 2; j++)

        {

            for (int z = 0; z < 4; z++)

            {

                cout<<number[i][j][z] <<" ";

            }

        }

    }

}

**output: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16**

## 10.input array value in 3d array

#include <iostream>

using namespace std;

int main (){

    int number [2][2][4];

    for (int i = 0; i < 2; i++)

    {

        for (int j = 0; j < 2; j++)

        {

            for (int z = 0; z < 4; z++)

            {

                cout<<"enter array value : ";

                cin>>number[i][j][z];

            }

        } }

        for (int i = 0; i < 2; i++)

    {

        for (int j = 0; j < 2; j++)

        {

            for (int z = 0; z < 4; z++)

            {

                 cout<<number[i][j][z] <<" ";

            } }

    } ; }

**output:**

**enter array value : 1**

**enter array value : 2**

**enter array value : 3**

**enter array value : 4**

**enter array value : 5**

**enter array value : 6**

**enter array value : 7**

**enter array value : 8**

**enter array value : 9**

**enter array value : 10**

**enter array value : 11**

**enter array value : 12**

**enter array value : 13**

**enter array value : 14**

**enter array value : 15**

**enter array value : 16**

**1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16**

## 11.adding two  array through loop

|  |
| --- |
| **output:**  **enter array a value :**  **1**  **2**  **3**  **4**  **5**  **enter array b value :**  **1**  **2**  **3**  **4**  **5**  **adding a + b : 2**  **adding a + b : 4**  **adding a + b : 6**  **adding a + b : 8**  **adding a + b : 10** |

|  |
| --- |
| #include <iostream>  using namespace std;  int main (){  int a[5] ,b[5] ,c[5];  cout<<"enter array a value : \n";  for (int i = 0; i < 5; i++)  {      cin>>a[i];  }  cout<<"enter array b value : \n";  for (int i = 0; i < 5; i++)  {      cin>>b[i];  }  for (int i = 0; i < 5; i++)  {      c[i]=a[i]+b[i];  }  for (int i = 0; i < 5; i++)  {      cout<<"adding a + b : "<<c[i] <<endl;  }  } |

#include <iostream>

using namespace std;

int main (){

int a[5] ,b[5] ,c[5];

cout<<"enter array a value : \n";

for (int i = 0; i < 5; i++)

{

    cin>>a[i];

}

cout<<"enter array b value : \n";

for (int i = 0; i < 5; i++)

{

    cin>>b[i];

}

for (int i = 0; i < 5; i++)

{

    c[i]=a[i]+b[i];

    cout<<"adding a +b :" <<c[i] <<"\n";

}

}

**output:**

**enter array a value :**

**1**

**2**

**3**

**4**

**5**

**enter array b value :**

**1**

**2**

**3**

**4**

**5**

**adding a +b :2**

**adding a +b :4**

**adding a +b :6**

**adding a +b :8**

**adding a +b :10**

making single matrix

#include<iostream>

using namespace std;

main( )

{

      int  s[2][2];

      int  i, j;

      cout<<"\n2D Array Input:\n";

      for(i=0;i<2;i++)

      {

        for(j=0;j<2;j++)

        {

            cout<<"\ns["<<i<<"]["<<j<<"]=  ";

            cin>>s[i][j];

        }

      }

      cout<<"\nThe 2-D Array is:\n";

      for(i=0;i<2;i++)

      {

        for(j=0;j<2;j++)

        {

            cout<<"\t"<<s[i][j];

        }

        cout<<endl;

      }

}

**output:**

**2D Array Input:**

**s[0][0]=  1**

**s[0][1]=  2**

**s[1][0]=  3**

**s[1][1]=  4**

**The 2-D Array is:**

**1       2**

**3       4**

## 12.making two matrix

|  |
| --- |
| #include<iostream>  using namespace std;  main( )  {        int  s[2][2] , z[2][2];        int  i, j;        cout<<"\n first 2D Array Input:\n";        for(i=0;i<2;i++)        {          for(j=0;j<2;j++)          {              cout<<"\ns["<<i<<"]["<<j<<"]=  ";              cin>>s[i][j];          }        }          cout<<"\nThe 2-D Array is:\n";        for(i=0;i<2;i++)        {          for(j=0;j<2;j++)          {              cout<<"\t"<<s[i][j];          }          cout<<endl;        }        cout<<"\n second 2D Array Input:\n";        for(i=0;i<2;i++)        {          for(j=0;j<2;j++)          {              cout<<"\nz["<<i<<"]["<<j<<"]=  ";              cin>>z[i][j];          }        } |

   cout<<"\nThe 2-D Array is:\n";

      for(i=0;i<2;i++)

      {

        for(j=0;j<2;j++)

        {

            cout<<"\t"<<z[i][j];

        }

        cout<<endl;

      }

}

**output:**

**first 2D Array Input:**

**s[0][0]=  1**

**s[0][1]=  2**

**s[1][0]=  3**

**s[1][1]=  4**

**The 2-D Array is:**

**1       2**

**3       4**

**second 2D Array Input:**

**z[0][0]=  1**

**z[0][1]=  2**

**z[1][0]=  3**

**z[1][1]=  4**

**The 2-D Array is:**

**1       2**

**3       4**

## 13.adding two matrix

#include<iostream>

using namespace std;

main()

{

      int  m1[5][5], m2[5][5], m3[5][5];

      int  i, j, r, c;

      cout<<"Enter the no.of rows of the matrices to be added(max 5):";

      cin>>r;

      cout<<"Enter the no.of columns of the matrices to be added(max 5):";

      cin>>c;

      cout<<"\n1st Matrix Input:\n";

      for(i=0;i<r;i++)

      {

        for(j=0;j<c;j++)

        {

            cout<<"\nmatrix1["<<i<<"]["<<j<<"]=  ";

            cin>>m1[i][j];

        }

      }

      cout<<"\n2nd Matrix Input:\n";

      for(i=0;i<r;i++)

      {

        for(j=0;j<c;j++)

        {

            cout<<"\nmatrix2["<<i<<"]["<<j<<"]=  ";

            cin>>m2[i][j];

        }

      }

      cout<<"\nAdding Matrices...\n";

      for(i=0;i<r;i++)

      {

        for(j=0;j<c;j++)

        {

            m3[i][j]=m1[i][j]+m2[i][j];

        }

      }

      cout<<"\nThe resultant Matrix is:\n";

      for(i=0;i<r;i++)

      {

        for(j=0;j<c;j++)

        {

            cout<<"\t"<<m3[i][j];

        }

        cout<<endl;

      }

}

**output:**

**Enter the no.of rows of the matrices to be added(max 5):2**

**Enter the no.of columns of the matrices to be added(max 5):2**

**1st Matrix Input:**

**matrix1[0][0]=  1**

**matrix1[0][1]=  2**

**matrix1[1][0]=  3**

**matrix1[1][1]=  4**

**2nd Matrix Input:**

**matrix2[0][0]=  1**

**matrix2[0][1]=  2**

**matrix2[1][0]=  3**

**matrix2[1][1]=  4**

**Adding Matrices...**

**The resultant Matrix is:**

**2       4**

**6       8**

## 14.reverse a number array

#include <iostream>

using namespace std;

int main (){

    int a[5];

    cout<<"enter number(max 4)" <<endl;

    for (int i = 1; i <= 4; i++)

    {

        cin>>a[i];

    }

    for (int i = 4; i > 0; i--)

    {

        cout<<"\t"<<a[i];

    }}

## 15.print all negative elements in an array

#include <iostream>

#define MAX\_SIZE 100

using namespace std;

int main (){

    int arry[MAX\_SIZE];

    int  number ;

   cout<<"enter size of array ";

   cin>>number;

   for (int i = 0; i < number; i++)

   {

     cin>>arry[i];

   }

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

   {

      if (arry[i]<0)

      {

        cout<<" all negative element  : "<<arry[i];

      }

   }

}

**output:**

**enter size of array 5**

**1**

**2**

**-4**

**4**

**5**

**all negative element  : -4**

## 16.to count total number of negative elements in array

// program to print all negative elements in an array

#include <iostream>

#define MAX\_SIZE 100

using namespace std;

int main (){

    int arry[MAX\_SIZE];

    int  number  , count=0;

   cout<<"enter size of array ";

   cin>>number;

   for (int i = 0; i < number; i++)

   {

     cin>>arry[i];

   }

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

   {

      if (arry[i]<0)

      {

        count++;

      }

   }

   cout<<"number of negative element : "<<count;

}

**output:**

**enter size of array 5**

**1**

**2**

**-7**

**-8**

**-9**

**number of negative element : 3**

## 17.to find sum of all elements of an array

#include <iostream>

#define MAX\_SIZE 100

using namespace std;

int main (){

    int arry[MAX\_SIZE];

    int  number  , sum=0;

   cout<<"enter size of array ";

   cin>>number;

   cout<<"you enter " <<number <<"array size "<<endl;

   for (int i = 0; i < number; i++)

   {

     cin>>arry[i];

   }

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

   {

      sum=sum+arry[i];

   }

   cout<<"sum of all number in array : "<<sum;

}

**output:**

**enter size of array 5**

**you enter 5array size**

**1**

**2**

**3**

**4**

**5**

**sum of all number in array : 15**

## 18.to count even & odd elements

#include <iostream>

#define MAX\_SIZE 100

using namespace std;

int main (){

    int arry[MAX\_SIZE];

    int  number  , even=0 ,odd=0;

   cout<<"enter size of array ";

   cin>>number;

   cout<<"you enter " <<number <<"array size "<<endl;

   for (int i = 0; i < number; i++)

   {

     cin>>arry[i];

   }

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

   {

     if (arry[i]%2==0)

     {

       even++;

     }

     else{

             odd++;

     }

     }

     cout<<"even :" <<even <<endl;

      cout<<"odd : "<<odd;

}

**output:**

**enter size of array 5**

**you enter 5array size**

**1**

**2**

**3**

**4**

**5**

**even :2**

**odd : 3**

## 19.find maximum and minimum element in array

#include <iostream>

#define MAX\_SIZE 100

using namespace std;

int main (){

int arry[MAX\_SIZE];

    int  number ,min ,max  ;

   cout<<"enter size of array ";

   cin>>number;

   cout<<"you enter " <<number <<"array size "<<endl;

   for (int i = 0; i < number; i++)

   {

     cin>>arry[i];

   }

max=arry[0] ;

min=arry[0];

    for (int i = 0; i < number; i++)

   {

     if (arry[i] >max)

     {

     max=arry[i];

     }

     if (arry[i]<min)

     {

        min=arry[i];

     }

     }

     cout<<"maximun :" <<max <<endl;

      cout<<"minimun : "<<min;

}

**output:**

**enter size of array 5**

**you enter 5array size**

**1**

**2**

**3**

**4**

**5**

**maximun :5**

**minimun : 1**

## 20. to insert an element in array

#include <iostream>

using namespace std;

int main(){

  int array[100],size ,number,postion;

  cout<<"enter the size of array " <<endl;

  cin>>size;

  for (int i = 0; i < size; i++)

  {

    cin>>array[i];

  }

  cout<<"array before  insert new element " <<endl;

 for (int i = 0; i < size; i++)

  {

    cout<<"\t"<<array[i];

  }

cout<<endl;

cout<<"enter the number you want to update in array "<<endl;

cin>>number;

cout<<"enter the postion you want this number  update in array "<<endl;

cin>>postion;

if (postion >=size + 1 || postion<=0 ) //if position is greater than or equal to size + 1 or position is less than or equal to 0

{

    cout<<"invalid";

}

else{

    for (int i = 5; i >= postion; i--)

    {

        array[i]=array[i-1];

    }

    array[postion-1]=number;

    size++;

}

 cout<<"array after  insert new element "<<endl;

 for (int i = 0; i < size; i++)

  {

    cout<<"\t"<<array[i];

  }}

output:

enter the size of array

5

1

2

3

5

4

array before  insert new element

        1       2       3       5       4

enter the number you want to update in array

45

enter the postion you want this number  update in array

2

array after  insert new element

        1       45      2       3       5       4

## 21. To Sort An Array In Ascending Order

#include <iostream>

using namespace std;

int main(){

    int a[100] ,size ,temp;

    cout<<"enter size of array " <<endl;

    cin>>size;

 cout<<"enter value of array " <<endl;

    for (int i = 0; i < size; i++)

    {

        cin>>a[i];

    }

    cout<<"before chnge into ascending order"<<endl;

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

    {

        cout<<"\t"<<a[i];

    }

cout<<endl;

    for (int i = 0; i < size; i++)

    {

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

        {

            if (a[i]>a[j])

            {

                temp=a[i];

                a[i]=a[j];

                a[j]=temp;

            }

        }

    }

    cout<<"after chnge into ascending order"<<endl;

    for (int i = 0; i < size; i++)

    {

        cout<<"\t"<<a[i];

    }

}

**output:**

**enter size of array**

**5**

**enter value of array**

**88**

**99**

**44**

**55**

**1**

**before chnge into ascending order**

**88      99      44      55      1**

**after chnge into ascending order**

**1       44      55      88      99**

size =5 ,enter value = 21345=(2(0),1(1),3(2),4(3),5(4))

          for (int i = 0; i <5; i++)

    {

        for (int j = 0+1; j < 5; j++)

        {

            if (a[0]>a[1])       //   condition true

            {

                temp=a[i];        // temp= a[0]

                a[i]=a[j];        // a[0]=a[1]

                a[j]=temp;        // a[1]=temp

            }}}

in temp store a[i]=a[0]=a(2), now a[i] is empty means temp store = 2 ;

a[i] store a[j] means a[j] empty now , so the value of a[i]is 1;

now value of temp =2 , is store in a[j] = a[1]

again loop

    for (int i = 0; i <5; i++)

    {

        for (int j = 1+1; j < 5; j++)

        {

            if (a[1]>a[2])       //(21345)  condition false

            {

                temp=a[i];

                a[i]=a[j];

                a[j]=temp;

            }}}

## 22.To Sort An Array In decending Order

#include <iostream>

using namespace std;

int main(){

    int a[100] ,size ,temp;

    cout<<"enter size of array " <<endl;

    cin>>size;

 cout<<"enter value of array " <<endl;

    for (int i = 0; i < size; i++)

    {

        cin>>a[i];

    }

    cout<<"before chnge into decending order"<<endl;

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

    {

        cout<<"\t"<<a[i];

    }

cout<<endl;

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

 { for (int j = i+ 1; j < size; j++)

|  |
| --- |
| **output:**  **enter value of array**  **1**  **2**  **77**  **55**  **12**  **before chnge into decending order**  **1       2       77      55      12**  **after chnge into decending order**  **77      55      12      2       1** |

    { if (a[i]<a[j])

       { temp=a[i];

          a[i]=a[j];

           a[j]=temp;

         }

      }

    }

cout<<"after chnge into decending order"<<endl;

    for (int i = 0; i < size; i++)

    {

        cout<<"\t"<<a[i];

    }

}

# POINTER

## 01. nrml reference program

#include <iostream>

using namespace std;

int main (){

          string food="mango";

     string &khana=food;

cout<<food <<"\n";     //output:mango

cout<<khana <<"\n";    //output:mango

cout<<&food <<"\n";    //output:0x61fef0             ram memory address

cout<<&khana;          //output:0x61fef0             ram memory address

}

#include <iostream>

using namespace std;

int main (){

    int food=500;

    int &khana=food;

cout<<food <<"\n";     //output:500

cout<<khana <<"\n";    //output:500

cout<<&food <<"\n";    //output:0x61ff08             ram memory address

cout<<&khana;          //output:0x61ff08            ram memory address

}

#include <iostream>

using namespace std;

int main (){

    string food="mango";

    string\* ptr= &food;

    cout<<\*ptr <<endl;         //output:mango

    cout<<food <<endl;         //output:mango

    cout<<&food <<endl;        //output:0x61fef0

    cout<<ptr <<endl;           //output:0x61fef0

}

## 02.modify the pointer value

#include <iostream>

using namespace std;

int main (){

    string food="mango";

    string\* ptr= &food;

    cout<<\*ptr <<endl;         //output:mango

    cout<<food <<endl;         //output:mango

    cout<<&food <<endl;        //output:0x61fef0

    cout<<ptr <<endl;           //output:0x61fef0

   \*ptr="apple";

    cout<<\*ptr <<endl;         //output:apple

    cout<<food <<endl;         //output:apple

    cout<<&food <<endl;        //output:0x61fef0

    cout<<ptr <<endl;           //output:0x61fef0

}

#include <iostream>

using namespace std;

int main(){

    int i=10;

    int \*ptr;

    ptr=&i;

    cout<<i<<endl;              //output:10

    cout<<\*ptr;                 //output:10

    return 0;

}

#include <iostream>

using namespace std;

    int main(){

    int i=10;

    int k=20;

    int \*ptr;

     ptr=&i;

    cout<<i<<endl;                      //output:10

    cout<<\*ptr<<endl;                   //output:10

    cout<<ptr<<endl;                    //output:0x61ff08

   cout<<"address of i "<<&i;           //address of i 0x61ff08

  cout<<endl;cout<<endl;

   ptr=&k;

    cout<<i<<endl;                   //output:10

    cout<<\*ptr<<endl;                //output:20

    cout<<ptr<<endl;                 //output:0x61ff04

   cout<<"address of i "<<&k;        //address of i 0x61ff04

    return 0;}

## 03.How to print value of a Variable using its memory address?

#include <iostream>

using namespace std;

int main() {

    int a;

    a=444;

    cout<<&a<<"\n";

    cout<<\*reinterpret\_cast<int\*>(0x61ff0c);        //output:444

    return 1;

}

|  |
| --- |
| output:  Enter value  for  cell 0 : 10  Enter value  for  cell 1 : 20  Enter value  for  cell 2 : 30  Enter value  for  cell 3 : 40  Enter value  for  cell 4 : 50  10  0x61fef4   value for cell 0:10   value for cell 1:20   value for cell 2:30   value for cell 3:40   value for cell 4:50 |

## 04.Array and loop in pointer

#include <iostream>

using namespace std;

int main(){

int i[5],x ,\*ptr;

ptr=i;

for( x=0;x<5;x++)

{ cout<< "Enter value  for  cell " <<x <<" : ";

  cin>>i[x];

}

cout<<\*ptr <<endl;

cout<<ptr <<endl;

for ( x = 0; x < 5; x++)

{ cout<<"\n value for cell\t" <<x <<":";

  cout<<i[x];

 }

return 0;}

#include <iostream>

|  |
| --- |
| output:  Enter value  for  cell 0 : 10  Enter value  for  cell 1 : 20  Enter value  for  cell 2 : 30  Enter value  for  cell 3 : 40  Enter value  for  cell 4 : 50   value for cell 0:10   address of cell 0 : 0x61fef4   value for cell 1:20   address of cell 1 : 0x61fef8   value for cell 2:30   address of cell 2 : 0x61fefc   value for cell 3:40   address of cell 3 : 0x61ff00   value for cell 4:50   address of cell 4 : 0x61ff04 |

using namespace std;

int main(){

int i[5],x ,\*ptr;

ptr=i;

for( x=0;x<5;x++)

{ cout<< "Enter value  for  cell " <<x <<" : ";

 cin>>i[x];

}

for ( x = 0; x < 5; x++)

{

cout<<"\n value for cell\t" <<x <<":";

cout<<\*ptr;

cout<<"\n address of cell " <<x <<" : " <<ptr;

ptr++;}

    return 0; }

## 05.to swap two numbers using pointers

#include <iostream>

using namespace std;

int main (){

    int number1 , number2 ,temp;

    int\* n1=&number1;

    int\* n2=&number2;

    cout<<"enter one number"<<endl;

    cin>>number1;

    cout<<"enter second number"<<endl;

    cin>>number2;

    temp=\*n1;

    \*n1=\*n2;

    \*n2=temp;

    cout<<\*n1 <<"\n";     //output:2

    cout<<\*n2;            //output:1

}

#include <iostream>

using namespace std;

void swap(int\* n1,int\* n2 ){

    int temp;

    temp=\*n1;

    \*n1=\*n2;

    \*n2=temp;

    cout<<"value of number1 is :"<<\*n1 <<endl;

    cout<<"value of number2 is :"<<\*n2 <<endl;

}

int main (){

    int number1=5 , number2=95;

    swap(&number1,&number2);

}

output:

value of number1 is :95

value of number2 is :5

## 06. add two numbers using pointers

#include <iostream>

using namespace std;

void add(int\* n1,int\* n2 ){

    int sum;

    sum=\*n1 + \*n2;

    cout<<"sum of number1 and  number2 is :"<<sum;

}

int main (){

    int number1=5 , number2=95;

    add(&number1,&number2);

}

output:sum of number1 and  number2 is :100

#include <iostream>

using namespace std;

int main (){

     int number1=50,number2=50,\*ptr1,\*ptr2;

    ptr1=&number1;

    ptr2=&number2;

    cout<<\*ptr1+\*ptr2;         //output:100

}

## 07. Find Sum of Array Elements

#include <iostream>

using namespace std;

int main (){

     int a[5],sum=0 ,\*ptr;

|  |
| --- |
| output:  10  10  10  10  10  total : 50 |

     for (int i = 0; i < 5; i++)

     {

        cin>>a[i];

     }

      ptr=a;

    for (int i = 0; i < 5; i++)

     {

        sum=sum + \*(ptr+i);

     }

cout<<"total : "<<sum;

}

## 08.to find length of string using pointer

#include <iostream>

using namespace std;

int main (){

     string a="amarth";

     int len=0;

     for (int i = 0; a[i] !='\0' ; i++)

     {

        len++;

     }

     cout<<len;          //output:6

}

#include <iostream>

using namespace std;

int main (){

     string a="amarth";

     int len=0 ,i=0;

     while (a[i]!='\0')

     {

        len++;

        i++;

     }

     cout<<len } ;          //output:6

#include <iostream>

using namespace std;

int main() {

    char str[100];

|  |
| --- |
| output:  Enter a string: amarth  Length of the string is 6 |

    char \*p = str;

    int len = 0;

    cout << "Enter a string: ";

    cin >> str;

    while (\*p != '\0') {

        len++;

        p++; }

    cout << "Length of the string is " << len << endl;

}

## 09.to copy one string to another string

#include <iostream>

using namespace std;

int main (){

     char a [100], b[100] ;

     char \*p1=a;

     char \*p2=b;

     cin>>a;                            //input:amarth

     while (\*(p2++)=\*(p1++));

     cout<<b;                          //output: amarth

}

## 10.Print Elements Of Array In Revers Order Using Pointer for loop

#include <iostream>

using namespace std;

 int main() {

   int arr[5]={1,2,3,4,5};

     int \*p;

     p=&arr[4];

     for(int i=0;i<5;i++){

        cout<<\*p;

        p--;} } //outpput:54321

using namespace std;

 int main() {

   int arr[5]={1,2,3,4,5};

     int \*p;

     p=&arr[4];

     while( p>=arr){

        cout<<\*p;                  //54321

        p--;

        }

     return 0;

}

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