Content

01.WAP to print "Welcome to Cybrom"

```
#include <iostream>
using namespace std;
int main()
{     cout<<"welcome to cybrom"; }
output:welcome to cybrom
```

02.WAP to print your name 4 time

```
#include <iostream>
using namespace std;
int main()
{cout<<"amarth" <<endl;
cout<<"amarth"<<endl;
cout<<"amarth"<<endl;
cout<<"amarth"<<endl;
      return 0;
}
```

03.wap to take any interger from user and print it

```
#include <iostream>
using namespace std;
int main()
{ int a;
cout<<"enter any number";
cin>>a;
cout<<"your number is "<<a;
}
output:enter any number20
your number is 20
```

04.wap to take character from user and print it

```
#include <iostream>
using namespace std;
int main()
{    char  a;
        cout<<"write any character"<<endl;
        cin>>a;
        cout<<"your character is "<<a;
}
output:write any character
a
your character is a
```

05.WAP to take any decimal value from user and print it

```
#include <iostream>
using namespace std;
int main()
{   float a;
cout<<"enter any decimal number"<<endl;
cin>>a;
cout<<"your number is " <<a;
 return 0;
}
output:enter any decimal number
10.22
your number is 10.22
```

06.wap add two number

```
#include <iostream>
using namespace std;
int main()
{  int a ,b ,c;
cout<<"enter first number"<<endl;
cin>>a;
cout<<"enter second number"<<endl;
cin>>b;
cout<<"sum to two number is " <<a+b;
      return 0;
}
output:
enter first number
10
enter second number
10
sum to two number is 20
```

07.wap to take two number from user and perform mathematical calculation

```
#include <iostream>
using namespace std;
int main()
{int a,b;
cout<<"enter first number"<<endl;
cin>>a;
cout<<"enter second number"<<endl;
cin>>b;
cout<<"sum to two number is "<<a+b <<endl;
cout<<"sub to two number is "<<a-b <<endl;
cout<<"mul to two number is "<<a*b <<endl;
cout<<"div to two number is "<<a/b <<endl;
cout<<"rem to two number is "<<a%b <<endl;
}
output:
enter first number
80
enter second number
40
sum to two number is 120
sub to two number is 40
mul to two number is 3200
div to two number is 2
rem to two number is 0
```

08.wap calculate simple interest formula simple interest =((principal * rate of interest * time in year)/100)

```
#include <iostream>
using namespace std;
int main()
{     int principal , rate_of_intrest , time_in_year;
      cout<<" calculate simple interest "<<endl;
      cout<<"enter principal"<<endl;
      cin>>principal;
    cout<<"enter rate of interest"<<endl;
    cin>>rate_of_intrest;
    cout<<"enter time is year"<<endl;
    cin>>time_in_year;
    cout<<"simple interest = " <<((principal*rate_of_intrest*time_in_year)/100);
      return 0;
}
output:
calculate simple interest
enter principal
1000
enter rate of interest
10
enter time is year
5
simple interest = 500
```

09.wap to calculate area of geometrical object

```
//area of square a*2
//area of reactangle = L*W
//AREA OF TRIANGLE = (1/2 *BASE * HEIGHT)
//AREA OF CIRCLE = PI *R *2

#include <iostream>
#define PI 3.14
using namespace std;
int main(){


    float length , width ,radius ,side ,BASE,height ,AREA;
      cout<<"find tha area of square"<<endl;
      cout<<"enter length of square"<<endl;
      cin>>AREA;
```

```
	cout<<"area of square is " <<AREA*AREA <<endl;
	cout<<endl;
	cout<<"find tha area of rectangle"<<endl;
	cout<<"enter length of  rectangle"<<endl;
	cin>>length;
	cout<<"enter width of  rectangle"<<endl;
	cin>>width;
	cout<<"area of reactangle is " <<length*width<<endl;
	cout<<endl;
	cout<<"find tha area of triangle"<<endl;
	cout<<"enter height of triangle "<<endl;
	cin>>height;
	cout<<"enter base of triangle"<<endl;
	cin>>BASE;
	cout<<"area of  is triangle" <<(1/2*height*BASE)<<endl;
	cout<<endl;

	cout<<"find tha area of CIRCLE"<<endl;
	cout<<"enter RADIUS of square"<<endl;
	cin>>radius;
	cout<<"area of CIRCLE is " <<(PI*radius*radius)<<endl;
}
output:find tha area of square
enter length of square
50
area of square is 2500

find tha area of rectangle
enter length of  rectangle
40
enter width of  rectangle
50
area of reactangle is 2000

find tha area of triangle
enter height of triangle
40
enter base of triangle
100
area of  is triangle0

find tha area of CIRCLE
enter RADIUS of square
50
area of CIRCLE is 7850
```

10.WAP to find the greater number from 2 number;

```
#include <iostream>
using namespace std;
int main()
{     float number1,number2;
    cout<<"enter number 1"<<endl;
    cin>>number1;
    cout<<"enter number 2"<<endl;
    cin>>number2;
    if (number1>number2)
    {
        cout<<"greater number is = "<<number1<<endl;
    }
    else{
        cout<<"greater number is = "<<number2<<endl;
    }

      return 0;
}
output:
enter number 1
50
enter number 2
1000
greater number is = 1000
```

11.WAP to compare three number nested if

```
#include <iostream>
using namespace std;
int main()
{     float number1,number2,number3;
    cout<<"enter number 1"<<endl;
    cin>>number1;
    cout<<"enter number 2"<<endl;
    cin>>number2;
    cout<<"enter number 3"<<endl;
    cin>>number3;
```

```
    if (number1>number2)
    {
             if (number1>number3)
             {
                cout<<"greater is number 1=" <<number1<<endl;
             }
             }

    if (number2>number1 && number2>number3)
    {
        cout<<"greater is number 2 =" <<number2;
       }
    if (number3>number1 && number3>number3)
    {
        cout<<"greater is number 3 =" <<number3;
     }}
```

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

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

  cout << "Enter three numbers: ";
  cin >> num1 >> num2 >> num3;

  if (num1 > num2) {
    if (num1 > num3) {
      cout << num1 << " is the largest number.\n";
    }
    else {
      cout << num3 << " is the largest number.\n";
    }
  }

  else {
    if (num2 > num3) {
      cout << num2 << " is the largest number.\n";
    }
    else {
      cout << num3 << " is the largest number.\n";
    }
  }
}
```

12.WAP TO PERFORM TRUE OR FALSE .USING RELATION OPERATOR

Relational operators compare numeric, character string, or logical data. The result of the comparison, either true (1) or false (0), can be used to make a decision regarding program flow (see the IF statement).

```
#include <iostream>
using namespace std;
int main()
{
    bool a=10,b=10,c=5;
    cout<<"enter two number "<<endl;
    c=a==b;                                 //output:1
    cout<<c <<endl;
    c= a>=b;
    cout<<c;                                 //output:1
}
```

```
#include <iostream>
using namespace std;
int main()
{
int x1 = 10, x2 = 20, m = 2;
bool b1, b2;

// false
b1 = x1 == x2;

// true
b2 = x1 < x2;

cout << "Bool1 is = " <<
        b1 << "\n";
cout << "Bool2 is = " <<
        b2 << "\n";
bool b3 = true;

if (b3)
    cout << "Yes" << "\n";
else
    cout << "No" << "\n";

int x3 = false + 5 * m - b3;
cout << x3;

return 0;}
```

```
output:
Bool1 is = 0
Bool2 is = 1
Yes
9
```

13.WAP check number is even or odd

```
#include <iostream>
using namespace std;
int main()
{
    int a;
    cout<<"enter number"<<endl;
    cin>>a;
    if (a%2==0)
    {
        cout<<"even";
    }
    else{
        cout<<"odd";
    }
}
output:
enter number
2
Even
```

14.WAP to check days in a week using switch case

```
#include <iostream>
using namespace std;
int main()
{     int days;
    cin>>days;

    switch (days)
    {
    case 1:
        cout<<"monday";
        break;
    case 2:
        cout<<"tuesday";
        break;
    case 3:
        cout<<"wed";
        break;
    case 4:
        cout<<"thus";
        break;
```

```
    case 5:
        cout<<"fri";
        break;
    case 6:
        cout<<"sat";
        break;
    case 7:
        cout<<"sunday";
        break;
    default:
        cout<<"invalid enter";
    }
      return 0;
}
```

15.WAP C++ program to returns day based on the numeric value.

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

class Day
{
    private:
        int day;

    public:
        void set_data()
        {
            cout<<"Enter no of day you want to display: ";
            cin>>day;
        }

        void display_day()
        {
            switch (day)
            {
                case 1:
                    cout<<"MONDAY";
                    break;

                case 2:
                    cout<<"TUESDAY";
                    break;
```

```
                case 3:
                    cout<<"WEDNESDAY";
                    break;

                case 4:
                    cout<<"THURSDAY";
                    break;

                case 5:
                    cout<<"FRIDAY";
                    break;

                case 6:
                    cout<<"SATURDAY";
                    break;

                case 7:
                    cout<<"SUNDAY";
                    break;

                default:
                    cout<<"INVALID INPUT";
                    break;
            }
        }
};

main()
{
    Day d1;
    d1.set_data();
    d1.display_day();

}
output:
Enter no of day you want to display: 7
SUNDAY
```

16.C program to demonstrate syntax of switch

```
#include <iostream>
using namespace std;
int main()
{
    char x ;
    cin>>x;
    switch (x) {
    case 'A':
        cout<<"Choice is A";
        break;
    case 'B':
    cout<<"Choice is B";
        break;
    case 'C':
        cout<<"Choice is C";
        break;
    default:
        cout<<"Choice other than A, B and C";
        break;
    } }
```

OUTPUT:

```
A
Choice is A
```

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

int main() {

char n='C';
switch(n)
{
    case 'A':
    case 'B':
    cout<<"A and B";
    break;

    case 'C':
    case 'D':
    cout<<"C and D\n";
    break;
    default:cout<<"Alphabet is greater than D";
    break;}}
```

17.WAP TO ADD BILL GENERATION OF CAFE SWITCH CASE

```
#include <iostream>
using namespace std;
int main()
{
    int select,total,quantity;

    cout<<"SELECT \n 1.Coffee \n 2.Tea \n 3.Cold Drink \n";
    cin>>select;

    switch (select)
    {
    case 1:
        cout<<"you selectd coffe , now select quantity "<<endl;
        cin>>quantity;
        total=quantity*5;
        cout<<"total = "<<total;
        break;
    case 2:
        cout<<"you selectd tea , now select quantity "<<endl;
        cin>>quantity;
        total=quantity*10;
        cout<<"total = "<<total;
        break;
    case 3:
        cout<<"you selectd cold drink , now select quantity "<<endl;
        cin>>quantity;
        total=quantity*15;
        cout<<"total = "<<total;
        break;
    default:
        cout<<"invalid select";
    }
      return 0;
}
output:
SELECT
 1.Coffee
 2.Tea
 3.Cold Drink
1
you selectd coffe , now select quantity
2
total = 10
```

18.WAP To MAKE CALCULATOR USING CAFE SWITCH CASE

```
#include <iostream>
using namespace std;
int main()
{
    int select,a,b,total;

   cout<<"SELECT \n 1.ADDITION \n 2.SUBSTRACTION \n 3.MULTYPLY \n 4.DIVISION \n";
    cin>>select;

    switch (select)
    {
    case 1:
        cout<<"you selectd ADDITION , now select "<<endl;
        cout<<"Enter TWO number "<<endl;
        cin>>a >>b;
        cout<<"add  = "<<a+b;
        break;
    case 2:
        cout<<"you selectd sub , now select "<<endl;
        cout<<"Enter TWO number "<<endl;
        cin>>a >>b;
        cout<<"add  = "<<a-b;
        break;
    case 3:
        cout<<"you selectd mul , now select "<<endl;
        cout<<"Enter TWO number "<<endl;
        cin>>a >>b;
        cout<<"add  = "<<a*b;
        break;
    case 4:
        cout<<"you selectd mul , now select "<<endl;
        cout<<"Enter TWO number "<<endl;
        cin>>a >>b;
        cout<<"add  = "<<a/b;
        break;
    default:
        cout<<"invalid select";
    }
      return 0;
}
```

```
output:
 1.ADDITION
 2.SUBSTRACTION
 3.MULTYPLY
 4.DIVISION
1
you selectd ADDITION ,
now select
Enter TWO number
2
2
add  = 4
```

19.wap to print 1 to 10 using while loop

```
#include <iostream>
using namespace std;
int main()
{     int a=1 ;

     while (a<=10)
     {cout<<a <<" ";
        a++;
     }
      return 0;
}
output:
1       2       3       4       5       6       7       8       9       10
```

20.wap to print a table of any number using while loop .

```
#include <iostream>
using namespace std;
int main()
{   int a,i=1;
    cout<<"enter  number of table"<<endl;
    cin>>a;
    while ( i<=10)
    {  cout<<a <<" x " <<i <<" = " <<a*i<<endl;
      i++;
    }
}
output:
enter  number of 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
```

21.WAP to reverse a number taken from user

```
#include <iostream>
using namespace std;
int main() {
    int num, reversed_num = 0, remainder;
    cout<<"Enter your number for reverse"<<endl;
    cin>>num;

    while (num!=0)
    {
        remainder=num%10;
        reversed_num=reversed_num * 10 + remainder;
        num=num/10;
    }

    cout<<"Reversed number is = "<<reversed_num;
}
output:
Enter your number for reverse
1234
Reversed number is = 4321

explaination
    while(123 != 0)condition true while loop  execuate
    {  remainder = 123 % 10;
        reversed_num = 0 * 10 + 3; (3)
        num=123/10; (12) }

      while(12 != 0)condition true while loop  execuate
      { remainder = 12 % 10; (2)
        reversed_num = 3 * 10 + 2; (32)
        num=12/10; (1)}

      while(1 != 0) condition true while loop  execuate
      { remainder = 1 % 10; (1)
        reversed_num = 32 * 10 + 1; (321)
        num=1/10; (0) }

      while(0 != 0)  condition false while loop not execuate
      { remainder = 1 % 10; (1)
        reversed_num = 32 * 10 + 1; (321)
        num=1/10; (0) }
```

22.WAP to check number is prime or not using loop

```
//prime number is which is divided by 1 or itself
//so if number is prime it has 2 factore

#include <iostream>
using namespace std;
int main()
{  int number ,count=0;
   cout<<"Enter your number "<<endl;
   cin>>number;

   for (int i = 1; i <= number; i++)
   {
    if (number%i==0)
    {
        count++;
    }
    }
   if (count==2)
   {
    cout<<"number is prime"<<endl;
   }
   else{
    cout<<"number is not prime";
   }
}
output:
Enter your number
7
number is prime
```

23.WAP to make pattern using nested loop . right angle triangle;

```
#include <iostream>
using namespace std;
int main()
{   int a;
     cout<<"enter number of row";
    cin>>a;

    for (int i = 1; i <= a; i++)                    //raw
    {
        for (int j = 1; j <= i ; j++)              //column
        {
           cout<<"*";
        }
        cout<<endl;
    }
}
output:
enter number of row5
*
**
***
****
*****
```

what is difference between ++i and i++ in c++

In C++, ++i and i++ are both increment operators that increase the value of a variable by 1. However, they differ in when the increment occurs.

++i is the pre-increment operator, which means that it increments the value of i before using its value in the expression. That is, the value of i is incremented immediately, and then the new value of i is used in the expression. For example:

```
int i = 5;
int j = ++i; // i is incremented to 6, and then assigned to j
```

In this example, the value of i is incremented to 6 before it is assigned to j.

On the other hand, i++ is the post-increment operator, which means that it increments the value of i after using its value in the expression. That is, the

current value of i is used in the expression, and then the value of i is incremented. For example:

```
int i = 5;
int j = i++; // i is assigned to j, and then incremented to 6
```

In this example, the current value of i (which is 5) is assigned to j, and then i is incremented to 6.

So the main difference between ++i and i++ is when the increment takes place, and this can affect the behavior of expressions that use these operators.

24.WAP to make pattern using nested loop . pyramid

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

int main() {
    int n, i = 1, j, k;
    cout << "Enter the number of rows: ";
    cin >> n;

    while (i <= n) {
        // Print spaces
        j = 1;
        while (j <= n - i) {
            cout << " ";
            j++;
        }

        // Print stars
        k = 1;
        while (k <= 2 * i - 1) {
            cout << "*";
            k++;
        }

        cout << endl;
        i++;
    }

    return 0;
}
```

```
output:
Enter the number of
rows: 5
    *
   ***
  *****
 *******
*********
```

explanation
In this program, the user is prompted to enter the number of rows they want in the pyramid. The program then uses a while loop to print out each row of the pyramid. The outer while loop runs from 1 to the number of rows entered by the user. The inner while loops are used to print out the spaces and stars for each row.

The variable i is used to keep track of the current row being printed, j is used to print the spaces, and k is used to print the stars. The number of spaces on each row is equal to n - i, and the number of stars is equal to 2 * i - 1. The endl statement is used to move to the next line after printing each row.

```
#include <iostream>
using namespace std;
int main()
{
    int n ,i ,j ,k;
    cin>>n;
    for (int i = 1; i <= n; i++)
    {
        for (int j = 1; j <= n-i; j++)
        {
            cout<<" ";
        }

        for (int k = 1; k <=2*i-1 ; k++)
        {
            cout<<"*";
        }
        cout<<endl;
    }

      return 0;
}
output:
5
    *
   ***
  *****
 *******
*********
```

25.inverted pyramid

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

int main() {
    int rows;
    cout << "Enter the number of rows: ";
    cin >> rows;

    // outer loop for rows
    for (int i =rows; i >= 1; i--)
    {

        for (int j = rows; j > i; j--) {
            cout<<" ";

        }

        for (int k = 1; k < (i*2); k++)
        {
        cout<<"*";
        }

        cout << endl;
    }
    return 0;
}
output:
Enter the number of rows: 5
*********
 *******
  *****
   ***
    *
```

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

int main() {
    int rows,i,j,k;
    cout << "Enter the number of rows: ";
    cin >> rows;
i =rows;
while (i>=1)
{
    j=rows;
    while (j>=i)
{
    cout<<" ";
    j--;
}
k=1;
while (k<(i*2))
{
    cout<<"*";
    k++;
}
cout<<endl;
   i--;
}
}
```

output:

```
Enter the number of rows: 5
 *********
  *******
   *****
    ***
     *
```

26.WAP TO MAKE PATTERN USING NESTED LOOP - STAR CROSS

```
#include <iostream>
using namespace std;
int main()
{   int i, j, N;
    int count;

    cout<<"Enter N: ";
    cin>>N;
    count = N * 2 - 1;

    for(i=1; i<=count; i++)
    {
        for(j=1; j<=count; j++)
        {
            if(j==i || (j==count - i + 1))
            {
                cout<<"*";
            }
            else
            {
                 cout<<" ";
            }
        }

        cout<<"\n";

    }
}
output:
Enter N: 5
*       *
 *     *
  *   *
   * *
    *
   * *
  *   *
 *     *
*       *
```

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

int main() {
  // size of cross, use odd number
  int size = 5;

  for (int i = 0; i < size; i++)
  {
    for (int j = 0; j < size; j++)
    {
      if (i==j || i+j==size-1)
      {
        cout << "*";
      } else {
        cout << " ";
      }
    }
    cout << "\n";
  }
  return 0;
}
```

output:

```
*   *
 * *
  *
 * *
*   *
```

explanation

first row started

1.first loop =for (int i = 0; i < size; i++) = for (int i = 0; 0 < 5; i++)true

2. second loop= for (int j = 0; j < size; j++) =for (int j = 0; 0 < 5; j++) true

3.if (i==j || i+j==size-1) =if (0==0 || 0+0==5-1) (one condition is true) one * is print.

4.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 1 < 5; j++) true

5.if (i==j || i+j==size-1) =if (0==1 || 0+1==5-1) (false)

6.else statment execute cout<<" "; =(one space)

7.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 2 < 5; j++) true

8.if (i==j || i+j==size-1) =if (0==2 || 0+2==5-1) (false)

9.else statment execute cout<<" "; =(second space)

```
10.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 3 < 5;
j++) true
11.if (i==j || i+j==size-1) =if (0==3 || 0+3==5-1)  (false)
12.else statment execute cout<<" "; =(third space)

13.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 4 < 5;
j++) true
14.if (i==j || i+j==size-1) =if (0==4 || 0+4==5-1)  (true) second * print
first row completed .

second row started
1.first loop =for (int i = 0; i < size; i++) = for (int i = 0; 1 < 5; i++)true

2.second loop= for (int j = 0; j < size; j++) =for (int j = 0; 0 < 5; j++) true
3.if (i==j || i+j==size-1) =if (1==0 || 1+0==5-1)  (false) else condtion execute
" "first space.

4.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 1 < 5; j++)
true
5.if (i==j || i+j==size-1) =if (1==1 || 1+1==5-1)  (true) first star


6.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 2 < 5; j++)
true
7.if (i==j || i+j==size-1) =if (1==2 || 1+2==5-1)  (false)
8.else statment execute cout<<" "; =(second space)

9.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 3 < 5; j++)
true
10.if (i==j || i+j==size-1) =if (1==3 || 1+3==5-1)  (true) second star

11.again second loop =for (int j = 0; j < size; j++) = for (int j = 0; 4 < 5;
j++) true
12.if (i==j || i+j==size-1) =if (1==4 || 1+4==5-1)  (false) third space
second row completed .
```

27.wap to declare an interger array of length 20 and input the multiple of 2 starting from 2 in the array

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

int main() {
    int a[20]; // Declare integer array of length 20
  for (int i = 0, j=2; i < 20 ; i++ ,j=j+2)
  {
     a[i]=j;
  }
    // Print out the array
    for (int i = 0; i < 20; i++) {
        cout << a[i] << " ";
    }

    return 0;
}
```

output:

```
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
```

28.wap to input an interger array of length five and add all the element of the array

```
#include <iostream>
using namespace std;
int main()
{ int a[5] ,sum=0;
 for (int i = 0; i <5; i++)
 { cout<<"enter value of index " <<i <<" = ";
   cin>>a[i];
  cout<<"value of index "<<i <<" is " <<a[i]<<endl;
   cout<<endl;}

  for (int i = 0; i < 5; i++)
    {
        sum=sum+a[i];
    }
    cout<<"sum of array = "<<sum;

      return 0;
}
output:
enter value of index 0 = 1
value of index 0 is 1

enter value of index 1 = 2
value of index 1 is 2

enter value of index 2 = 3
value of index 2 is 3

enter value of index 3 = 4
value of index 3 is 4

enter value of index 4 = 5
value of index 4 is 5

sum of array = 15
```

```cpp
#include <iostream>
using namespace std;
int main()
{
    int a[5] ,sum=0;
    for (int i = 0,j=1; i <5; i++,j++)
    {
       a[i]=j;
       cout<<"value of index "<<i <<" is " <<a[i]<<endl;
       cout<<endl;
    }

    for (int i = 0; i < 5; i++)
    {
        sum=sum+a[i];
    }
    cout<<"sum of array = "<<sum;

      return 0;
}
output:
value of index 0 is 1

value of index 1 is 2

value of index 2 is 3

value of index 3 is 4

value of index 4 is 5

sum of array = 15
```

29.wap to reverse an interger array of length 10

```
#include <iostream>
using namespace std;
int main()
{     int a[5];
       cout<<"enter array element :";
       for (int i = 0; i < 5; i++)
       {
        cin>>a[i];
       }
       cout<<"reverse array element :";
       for (int i = 4; i >=0 ; i--)
       {
        cout<<a[i] <<"\t";
       }
      return 0;
}
```

```
output:
enter array element :
10
20
30
40
50
reverse array element
:50       40       30       20       10
```

```
#include <iostream>
using namespace std;
int main()
{     int a[10];
       cout<<"enter array element :";
       for (int i = 0,j=1; i < 10; i++,j++)
       { a[i]=j;}
for (int i = 0,j=1; i < 10; i++,j++)
       {cout<<a[i]<<"\t";}
       cout<<"\n";

       cout<<"reverse array element :";
       for (int i = 9; i >=0 ; i--)
       {
        cout<<a[i] <<"\t";
       }
      return 0;
}
output:
enter array
element   :1       2       3       4       5       6       7       8       9
  10
reverse array element
:10       9       8       7       6       5       4       3       2       1
```

30.wap to input 10 number in an array and display only the even number if present in array

```
#include <iostream>
using namespace std;
int main()
{     int a[10];
       cout<<"enter array element :";
       for (int i = 0,j=1; i < 10; i++,j++)
       {
         a[i]=j;
       }

        for (int i = 0; i < 10; i++)
       {
         cout<<a[i]<<"\t";
       }
       cout<<"\n";
        cout<<"even number in given array is : ";
        for (int i = 0; i < 10; i++)
       {
         if (a[i]%2==0)
         {
            cout<<a[i]<<"\t";
         }
        }

      return 0;
}
output:
enter array element
:1  2       3       4       5       6       7       8       9       10
even number in given array is : 2       4       6       8       10
```

31.wap to declaration ,initialization ,and accesing of element of a 3x3 two dimensional array .

```
#include <iostream>
using namespace std;
int main()
{
    int a[2][3]={{1,2,3},{4,5,6}}  ;

    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 3; j++)
        {
            cout<<"a["<<i <<"]" <<"["<<j<<"]"  <<" = "<<a[i][j] <<endl;
        }
    }
      return 0;
}
output:
a[0][0] = 1
a[0][1] = 2
a[0][2] = 3
a[1][0] = 4
a[1][1] = 5
a[1][2] = 6
```

```cpp
//wap to add two matrix .

#include <iostream>
using namespace std;
int main()
{
    int a[2][3]={{1,2,3},{4,5,6}}  ;

 cout<<"first matrix"<<endl;
    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 3; j++)
        {
            cout<<a[i][j] <<"\t";
        }
        cout<<endl;
    }

     cout<<"second matrix"<<endl;
    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 3; j++)
        {
            cout<<a[i][j] <<"\t";
        }
        cout<<endl;
    }

    cout<<"sum matrix of first and second matrix"<<endl;
    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 3; j++)
        {
            cout<<a[i][j] + a[i][j]<<"\t";
        }
        cout<<endl;
    }


      return 0;
}
```

```
output:
first matrix
1       2       3
4       5       6
second matrix
1       2       3
4       5       6
sum matrix of first
and second matrix
2       4       6
8       10      12
```

32.wap to declaration ,initialization ,and accesing of element of a three dimensional array .

```
output:
a[0][0][0]=1
a[0][0][1]=2
a[0][1][0]=3
a[0][1][1]=4
a[0][2][0]=4
a[0][2][1]=6
a[1][0][0]=7
a[1][0][1]=8
a[1][1][0]=9
a[1][1][1]=10
a[1][2][0]=11
a[1][2][1]=12
```

```
#include <iostream>
using namespace std;
int main()
{
    int a[2][3][2]=
    {
        {{1,2},{3,4},{4,6}},
        {{7,8},{9,10},{11,12}}
    };

    for (int i = 0; i < 2; i++)
    {
        for (int j = 0; j < 3; j++)
        {
            for (int z = 0; z < 2; z++)
            {
                cout<<"a["<<i <<"]" <<"["<<j<<"]" <<"["<<z<<"]="  <<a[i][j][z]
<<endl;
            }
        }
    }
}
```

33.wap to display "welcome to cybrom " using function .

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

void print(){
    cout<<"welcome to cybrom";
}
int main()
{  print();
      return 0;
}
output:
welcome to cybrom
```

34.wap to create a calculator using function.

```
#include <iostream>
using namespace std;
int calculator(int a ,int b){

  char c;
  cout<<"what you want to do + , - , / , *"<<endl;
  cin>>c;
  switch (c)
  {
  case '+':
    return a+b;
    break;
  case '-':
    return a-b;
    break;

  case '/':
    return a/b;
    break;

   case '*':
    return a*b;
    break;
  default:
    cout<<"invalid enter";
  }
}
int main()
{   int a , b,c;
   cout<<"enter two number"<<endl;
   cin>>a >>b;
   c=calculator(a,b);
   cout<<c;

}
output:
enter two number
40
50
what you want to do + , - , / , *
-
-10
```

35.wap to print a factorial of a number using function.

n!=n*(n-1)*(n-2)*(n-3)*(n-4)*.....

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

int factorial(int a)
{
    long sum=1;
     for (int i = 1; i <= a; i++)
    {
        sum=sum*i;
    }
      return sum;
}
int main()

{
int a ;
cout<<"enter a number "<<endl;
cin>>a;
cout<<"factorial of = " <<a <<" is "<<factorial(a);

 }
```

```
// output:
enter a number
7
factorial of = 7 is 5040
```

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

int factorial(int n) {
    if (n == 1) {
        return 1;
    } else {
        return n * factorial(n-1);
    }
}

int main() {
    int n;
    cout << "Enter a number: ";
    cin >> n;
    cout << n << "! = " << factorial(n) << endl;
}
// output:
// Enter a number: 3
// 3! = 6
```

```
Explanation
int factorial(int 3) {
    if (3 == 1) {return 1;} false
    else { return 3 * factorial(2);}}
 int factorial(int 2) {
    if (2 == 1) {return 1;} false
    else { return 2 * factorial(1);}}

     int factorial(int 1) {
    if (1 == 1) {return 1;} true so it
retrn 1
```

36.wap to find the 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.
Three-digit numbers are 000, 001, 002, ..., 009, 010, 011, ..., 019, 020, 021, 022, ..., 099, 100, 101, 102, ..., 109, 110, ... 990, 991, ..., 999.
abcd... = an + bn + cn + dn +
armstrong number of 3 digit

```
#include <iostream>
using namespace std;
int armstrong(int a){
    int  originalNum, remainder, result = 0;
    originalNum = a;

    while (a != 0) {
       // remainder contains the last digit
        remainder = a % 10;

       result =result + remainder * remainder * remainder;

       // removing last digit from the orignal number
       a=a/ 10;
    }

    if (result == originalNum){
        cout<<originalNum<<" : is an Armstrong number.";}
    else{
        cout<<originalNum <<" : is not an Armstrong number.";
    }
return 0;
}
int main()
{     int a=153,b;
      b=armstrong(a);
      cout<<b;
      return 0;
}
output:153 : is an Armstrong number.0
```

pow() function is used to find the power of given number

```
#include <iostream>
#include <cmath>
using namespace std;
int main() {
 // computes 5 raised to the power 3
  cout << pow(5, 3);
  return 0;
}
// Output: 125
```

```
#include <iostream>
#include <cmath>
using namespace std;
int main()
{
    int number , result=0 ,power=0,ori_number,remainder;
    cin>>number;
    ori_number=number;

      while (number!=0)
      {
        number=number/10;
        power++;
      }
     while (number!=0)
     {
        remainder=number%10;
        result=result+pow(remainder,power);
        number=number/10;
     }

     if (result=ori_number)
     {
        cout<<"armstrong";
     }
     else{
        cout<<"not an armstrong";
     }
}
output:
1634
armstrong
```

```cpp
#include <iostream>
#include <cmath>

using namespace std;

bool isArmstrong(int num) {
    int originalNum, remainder, result = 0, n = 0;

    originalNum = num;

    while (originalNum != 0) {
        originalNum =originalNum/ 10;
        n++;
    }

    originalNum = num;

    while (originalNum != 0) {
        remainder = originalNum % 10;
        result =result+ pow(remainder, n);
        originalNum =originalNum /10;
    }

    if (result == num)
        return true;
    else
        return false;
}

int main() {
    int num;

    cout << "Enter a three-digit number: ";
    cin >> num;

    if (isArmstrong(num))
        cout << num << " is an Armstrong number." << endl;
    else
        cout << num << " is not an Armstrong number." << endl;
    return 0;
}
```

output:

```
Enter a three-digit number: 1634
1634 is an Armstrong number.
```

37.wap type 1 to calculate the area of circle using function

```
//without arugument without return type
#include <iostream>
#define PI 3.14159265358979323846
using namespace std;
void calculateArea() {
    float radius, area;

    cout << "Enter the radius of the circle: ";
    cin >> radius;

    area = PI * radius * radius;

    cout << "The area of the circle is: " << area << endl;
}

int main() {
    calculateArea();
}
output:
Enter the radius of the circle: 50
The area of the circle is: 7853.98
```

38.wap type 1 to swap a number using third variable

```
//without argument without return type

#include <iostream>
using namespace std;
void swap(){
    int a,b,c;
    cout<<"enter value a : ";
    cin>>a;
    cout<<"enter value b : ";
    cin>>b;
    c=a;
    a=b;
    b=c;
    cout<<"value of a is : "<<a <<endl;
    cout<<"value of b is : "<<b;
}

int main()
{     swap();
      return 0;}
```

```
output:
enter value a : 10
enter value b : 50
value of a is : 50
value of b is : 10
```

39.wap to type 2 convert the centigrade into fahrenhit

```
//without argument with return value

#include <iostream>
using namespace std;
int centigrade_to_fahrenhit(){
    int centigrade ,fahrenhit;
    cout<<"enter centigrade :";
    cin>>centigrade;
    fahrenhit=(centigrade * 9/5) + 32;
    return fahrenhit;
}
int main()
{   float temp;
    temp=centigrade_to_fahrenhit();
    cout<<"fahrenhit : "<<temp;
      return 0;
}
```

```
output:
enter centigrade :10
fahrenhit : 50
```

40.wap type 2 to calculate power of number , power and number will be given by a user.

without argument with return value

```
#include <iostream>
#include <cmath>
using namespace std;
int power (){
    float power ,number;
    cout<<"enter the power :" ;
    cin>>power;
    cout<<"enter the number :";
    cin>>number;
    return pow(number,power);
}
int main()
{     float a;
      a=power();
      cout<<"answer :"<<a;
}
output:
enter the power :2
enter the number :5
answer :25
```

```
#include <iostream>
#include <cmath>
using namespace std;
int power (){
    float power ,base ,result=1;
    cout<<"enter the base :" ;
    cin>>base;
    cout<<"enter the power :";
    cin>>power;

    for (int i = 1; i <= power; i++)
    {
        result=result*base;
    }
    return result;

}
int main()
{     float a;
      a=power();
      cout<<"answer :"<<a;
      return 0;
}
```

```
output:
enter the base :5
enter the power :2
answer :25
```

41.wap type 3 to pass an array of length 5 and find its mean

with argument without return type ;

```
#include <iostream>
using namespace std;
int mean(int a[]){
    int sum =0;
    for (int i = 0; i < 5; i++)
    {
         sum=sum+a[i];
    }
    cout<<sum/5;
}
int main()
{   int a[5]={1,2,3,4,5};
    mean(a);
}
output: 3
```

```
#include <iostream>
using namespace std;
int mean(int a[],int size){
    int sum=0;
    for (int i = 0; i < size; i++)
    {
        sum=sum+a[i];
    }
    cout<<"mean : "<<sum/size;

}
int main()
{   int a[5]={1,2,3,4,5};
    int size;
    size=sizeof(a)/sizeof(int);                //find the size of array
    mean(a,size);
}
output:
mean : 3
```

42.wap type 3 to check given number is int or float

```
//with argument without return type ;

#include <iostream>
using namespace std;
void checkNumber(double num) {
  if (num == (int)num) {
    cout << num << " is an integer." << endl;
  } else {
    cout << num << " is a float." << endl;
  }
}
int main() {
  double num;
  cout << "Enter a number: ";
  cin >> num;
  checkNumber(num);
}
output:
Enter a number: 10.54
10.54 is a float.
```

43.wap type 4 to sum the digit of a given number

```
//with argument with return value

#include <iostream>
using namespace std;
double sum(int a ,int b){
      return a+b;
}

int main()
{   int a ,b;
    cin>>a >>b;
    cout<<sum(a,b);
}
```

```
output:
10
10
20
```

44.wap type 4 to print the decimal number of a given number

```
//with argument with return value

#include <iostream>
using namespace std;

double decimal_number(double a){
    double b;
    b=a - int(a);
    return b;
}
int main()
{   double number , decimal;
    cout<<"Enter a decimal number : ";
    cin>>number;
    cout<<"decimal part of given number is :"<<decimal_number(number);

}
output:
Enter a decimal number : 10.45
decimal part of given number is :0.45
```

45.wap to swap two number using call by reference

```
#include <iostream>
using namespace std;
void swap(int &a ,int &b){
    int temp;
    temp=a;
    a=b;
    b=temp;
      cout<<"\nafter swap value of a is : "<<a <<" and value of b is : "<<b;
}
int main()
{    int a , b;
     cout<<"Enter two number "<<endl;
     cin>>a >>b;
     cout<<"before swap value of a is : "<<a <<" and value of b is : "<<b;
     swap(a,b);
     cout<<"\nafter swap value of a is : "<<a <<" and value of b is : "<<b;
}
Enter two number
5
7
before swap value of a is : 5 and value of b is : 7
after swap value of a is : 7 and value of b is : 5
after swap value of a is : 7 and value of b is : 5
```

46.wap to swap two number using call by value .

```
//swap by * and /
#include <iostream>
using namespace std;
int main()
{
int a=5, b=10;
cout<<"Before swap a= "<<a<<" b= "<<b<<endl;
a=a*b; //a=50 (5*10)
b=a/b; //b=5 (50/10)
a=a/b; //a=10 (50/5)
cout<<"After swap a= "<<a<<" b= "<<b<<endl;
return 0;
}
```

```
output:
Before swap a= 5 b= 10
After swap a= 10 b= 5
```

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

void swap(int a,int b)
{       int c;
        c=a;
        a=b;
        b=c;
cout<<"\nInside Function After Swapping, Value of :: \nA = "<<a<<" B =
"<<b<<"\n";
}
int main()
{
        int a,b;
        cout<<"Enter Value Of A :: ";
        cin>>a;
        cout<<"\nEnter Value of B :: ";
        cin>>b;

        cout<<"\nBefore Swapping, Value of :: \nA = "<<a<<" B = "<<b<<"\n";

        swap(a,b);

        cout<<"\nOutside Function After Swapping, Value of :: \n A = "<<a<<" B =
"<<b<<"\n";
}
output:
Enter Value Of A :: 10

Enter Value of B :: 20

Before Swapping, Value of ::
A = 10 B = 20

Inside Function After Swapping, Value of ::
A = 20 B = 10

Outside Function After Swapping, Value of ::
 A = 10 B = 20
```

```
Swap by using + and -
#include <iostream>
using namespace std;
int main()
{
int a=5, b=10;
cout<<"Before swap a= "<<a<<" b= "<<b<<endl;
a=a+b; //a=15 (5+10)
b=a-b; //b=5 (15-10)
a=a-b; //a=10 (15-5)
cout<<"After swap a= "<<a<<" b= "<<b<<endl;
return 0;
}
output:
Before swap a= 5 b= 10
After swap a= 10 b= 5
```

47.wap to convert hours to minutes and second .

```
#include <iostream>
using namespace std;
void convert(float a){
    cout<<a <<" hours = " <<a*60 <<" minutes" <<endl;
    cout<<a <<" hours = " <<a*3600 <<" second";
}
int main()
{     float a ;
      cin>>a;
      convert(a);
      return 0;
}
output:
1.5
1.5 hours = 90 minutes
1.5 hours = 5400 second
```

48.wap to perform mathematical expression with function overloading .

```
#include <iostream>
using namespace std;
int sum(int a ,int b ,int c){
    return a +b +c;
}
int sum(int a ,int b ){
    return a +b;
}
int main()
{     int a=10,b=10,c=10,d;

     cout<<sum(a,b) <<endl;
     cout<<sum(a,b,c);
}
```

```
output:
20
30
```

49.wap to handle different type of data by function overloading

wap to perform mathematical expression with function overloading .

```
#include <iostream>
using namespace std;
int sum(int a ,int b ){
    return a +b ;
}
double sum(double a ,double b ){
    return a +b;
}
int main()
{   int a =sum(10,10);
   double b=sum(10.10,50.4);
   cout<<a<<endl;
   cout<<b;

}
output:
20
60.5
```

50.wap to take input full name and print it .

```
#include <iostream>
using namespace std;
int main()
{
    string a;
    getline(cin,a);
    cout<<"hello "<<a;
      return 0;
}
```

```
output:
amarth patel
hello amarth patel
```

51.wap to initialize the string and concatenaate two string

```
 #include <iostream>
using namespace std;
int main()
{
    string a="amarth ",b="patel";
    cout<<a.append(b);

      return 0;
}
output:amarth patel
```

52.wap to reverse a string which is given by user .

```
 #include <iostream>
 #include<algorithm>
using namespace std;
int main()
{
    string a;
    cout<<"enter your name for reverse output : ";
    getline(cin,a);
    reverse(a.begin(),a.end());
    cout<<"reverse : "<<a;

      return 0;
}
output:
enter your name for reverse output : amarth patel
reverse : letap htrama
```

53.wap to find 'e' character in string 'good evening' using string function

```
 #include <iostream>

using namespace std;
int main()
{
    string a="good evening";
    cout<<a.find("e");
      return 0;
}
output: 5
```

54.wap to find the length of string which is given by user

```
#include <iostream>
using namespace std;
int main()
{
    string a="good evening";
    cout<<a.length();
}
output:
12
```

55.write a program to store and print the roll no, name , age , and marks of a student using structure

```
#include <iostream>
using namespace std;
    struct student {
        int roll_no;
        string name;
        int age;
    };
int main()
{  student school;
cout<<"enter roll no.:";
cin>>school.roll_no;
cout<<"\nenter name:";
cin>>school.name;
cout<<"\nenter age:";
cin>>school.age;
cout<<"rollno.:"<<school.roll_no <<" " <<"name:"<<school.name <<"
"<<"age:"<<school.age;

      return 0;
}
output:
enter roll no.:03

enter name:amarth

enter age:18
rollno.:3 name:amarth age:18
```

56.wap using structure to accept and display employee details and also calculate the total payment of workers

```
#include <iostream>
using namespace std;
struct Employee{
    string name ;
    string designation;
    double ID;
    double salary ; };

int main()
{ Employee worker[2];
 double  total_payment=0;
for (int i = 0; i < 2; i++)
{
    cout<<"Enter Employee Full Name : ";
    getline(cin,worker[i].name);
    cout<<"Enter Designation : ";
    getline(cin,worker[i].designation);


    cout<<"Enter Employee ID : ";
    cin>>worker[i].ID;
    cout<<"Enter Salary : ";
    cin>>worker[i].salary;
   cin.ignore();
    total_payment=total_payment+worker[i].salary;
}

for (int i = 0; i < 2; i++)
{
    cout<<worker[i].name <<" " <<worker[i].ID<<" " <<worker[i].designation<<" "
<<worker[i].salary <<endl;

}
cout<<"total payment :" <<total_payment;

}
```

```
OUTPUT:
Enter Employee Full Name : amarth
patel
Enter Designation : S.E
Enter Employee ID : 456
Enter Salary : 123
Enter Employee Full Name : PATEL
Enter Designation : W.D
Enter Employee ID : 789
Enter Salary : 123
amarth patel 456 S.E 123
PATEL 789 W.D 123
total payment :246
```

57.wap to add two distance in inch-feet using structure . the value of the distance is to be taken from the user .

```
output:
Enter feet for first distance: 10
Enter inches for first distance: 13
Enter feet for second distance: 10
Enter inches for second distance: 12
The sum of distances is: 22 feet 1 inches
```

```cpp
#include <iostream>

using namespace std;

struct Distance {
    int feet;
    int inches;
};

int main() {
    Distance d1, d2, sum;

    // Taking the input for first distance
    cout << "Enter feet for first distance: ";
    cin >> d1.feet;
    cout << "Enter inches for first distance: ";
    cin >> d1.inches;

    // Taking the input for second distance
    cout << "Enter feet for second distance: ";
    cin >> d2.feet;
    cout << "Enter inches for second distance: ";
    cin >> d2.inches;

    // Adding the distances
    sum.inches = d1.inches + d2.inches;
    sum.feet = d1.feet + d2.feet;

    // Converting extra inches to feet if any
    if (sum.inches >= 12) {
        sum.feet =sum.feet+ sum.inches / 12;
        sum.inches = sum.inches % 12;
    }

    // Displaying the sum of distances
    cout << "The sum of distances is: " << sum.feet << " feet " << sum.inches <<
" inches" << endl;

    return 0;
}
```

58.create a class named 'student ' with a string variable 'name' and an interger variable 'roll_no.' .Assign the value of roll_no as'2' and that of name as "john" by creating an object of the class student

```
#include <iostream>
using namespace std;
class student {
    public:
    string name;
    int roll_no;
};
int main()
{   student s1;
     s1.name="john";
     s1.roll_no=2;
     cout<<s1.name <<" "<<s1.roll_no  ;
      return 0;
}
output:
john 2
```

59.wap to print the area and perimeter of a triangle and take sides from user creating a classs named 'trinagle' with a function to print the area and perimeter

```
// perimeter of triangle = a+b+c
// Area of a Triangle = 1/2 × b × h

#include <iostream>
using namespace std;
class Triangle {
public:
int height ,base ,side1 ,side2 ,side3;

int area(int b, int h)
{ return 0.5*b*h;};

int perimeter_of_triangle(int a,int b,int c){
  return a+ b +c ;
};

};


int main() {
Triangle area1 , perimeter;
cout<<"enter height of triangle :";
cin>>area1.height;
cout<<"enter base of triangle :";
cin>>area1.base;
cout<<"area of triangle :
"<<area1.area(area1.height,area1.base)<<endl;


cout<<"\n find perimetr of triangle : \n";
cout<<"enter side1 of triangle :";
cin>>perimeter.side1;
cout<<"enter  side2 of triangle :";
cin>>perimeter.side2;
cout<<"enter   side3 of triangle :";
cin>>perimeter.side3;
cout<<"perimetr of triangle :
"<<perimeter.perimeter_of_triangle(perimeter.side1,perimeter.side2,perimeter.side
3);
    return 0;}
```

```
output:
enter height of triangle :100
enter base of triangle :100
area of triangle : 5000

find perimetr of triangle :
enter side1 of triangle :100
enter  side2 of triangle :110
enter   side3 of triangle :100
perimetr of triangle : 310
```

60.WAP TO FIND sum of all odd number between 1-100 using class.

```
#include <iostream>
using namespace std;
class odd{
public:
int number,sum=0 ;
 int oddd(){
    for (int i = 1; i <= 100; i++)
    {
        if (i%2!=0)
        {
          sum=sum+i;
        }
    }
    cout<<sum;
 };

};
int main()
{
odd sum;
sum.oddd();
return 0;
}
output== 2500;
```