

```
#include <stdio.h>

int main()
{
    printf("hello, world!");

    return 0;
}
```

# مسائل وحلول في لغة C++

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

1- برنامج باستخدام الدوال تقوم بجمع من 1 إلى 50 ؟

```
#include <iostream.h>
int sum(int);
int main ()
{
int x ;
cout<<" sumion is :- " <<sum (x) ;
return 0 ;
}
int sum (int a)
{
int su =0 ;
for(int i=1 ; i<=50 ;i++)
su+=i ;
return su ;
}
```

2- برنامج باستخدام الدوال يقوم بحساب مضروب أي عدد ؟

```
#include <iostream.h>
#include <iomanip.h>
int main ()
{
int num , fact=1 ;
cout<<endl<<"\n Enter oen number " <<endl ;
cin>>num ;
}
```

```
for( int i=1 ; i<=num ;i++)  
  
fact*=i ; // fact =fact * i ;  
cout<<" The fact is :- " << fact<<"\n' ;  
  
return 0 ;  
} //end main
```

3- إيجاد قيمة  $y$  حيث:  
 $y = x^2 + 25$

```
#include <iostream.h>  
int tow(int) ;  
int main()  
{  
int x ,y ;  
cout<<"Enter one number (x)^2 " <<endl ;  
cin>>x ;  
cout<<"y=x^2 +25 = " <<tow(x) <<endl ;  
return 0 ;  
}  
int tow(int p=1)  
{  
int y ;  
y= (p*p)+25 ;  
return y ;  
}
```

4- برنامج باستخدام الدوال بحسب مكعب أي عدد مدخل ؟

```
#include <iostream.h>
int sqrt (int) ;
int main ()
{
int x ;
cout<<"Enter x " ;
cin>>x ;
cout<<"The sqrt of "<<x <<" = "<<sq(x) ;

return 0 ;

} //end main

int sqrt (int a)
{
return a*a*a ;
```

$$S=x^2+x^4+x^6+\dots+x^n-5$$

```
#include <iostream.h>
#include <math.h>
void maths(void) ;
int main ()
{
maths();
return 0 ;
}
```

```
void maths (void)
{
int sum =0 ;
int x , n ;
cout<<"Enter base number : " ;
cin>>x ;
cout<<"Enter power number : " ;
cin>>n ;
for (int i=2 ; i<=n ; i+=2) {
sum=pow(x,i) ;
}
cout<<"The Result = " <<sum ;
.
```

6- برنامج يكون الدوال التالية:

- إيجاد جدول الضرب للمعد  $N$  ؟
- إيجاد  $x^y$  للمعد صحيح ؟
- إيجاد جمع الأعداد الفردية من 0 إلى  $N$  ؟
- فحص العدد إذا كان زوجي أو فردي ؟

```
#include <iostream.h>
int main ()
{
int x ;
cout<<"Enter one number " <<"\n";
cin>>x ;
for (int i=1 ;i<=x ;i++)
{
for (int j=1 ;j<=x ;j++)
}
```

```
cout<<i<<"*"<<j<<" = "<<i*j <<endl ;
cout<< endl ;
}
cout<<endl ;
cout<<"-----" ;
}
//-----
#include <iostream.h>
int po (int ,int) ;
int main ()
{
int x ,y ;
cout<<"Enter x ,y " ;
cin>>x>>y ;
cout<<"\nx to po y="<<po(x,y)<<endl ;
return 0 ;
}
int po (int a , int b )
{
int p= 1 ;
for (int i=1 ; i<=b ;i++)
p=p*a ;
return p ;
}
//-----

#include <iostream.h>
int sum(int);
int main()
{
int x ;
cout<<"Enter one number :- " <<endl ;
```

```
cin>>x ;
cout<<"Sumtion is :- " <<<sum(x) ;
return 0 ;
}
int sum(int m )
{
int su=0 ;
for (int i=1 ;i<=m ;i+=2)
su+=i ;
return su ;
}

//-----

#include <iostream.h>
void oddeven (void) ;
int main ()
{
oddeven () ;
return 0 ;
}
void oddeven (void)
{
int x ;
cout<<"Enter number x " <<<endl ;
cin>>x ;
if ( x%2 == 0)
cout<<"Number is even:- " <<<x ;
else if ( x%2 != 0)
cout<<"Number is odd :- " <<<x ;
}
```

7- جمع أرقام يحدد عددها المستخدم

```
#include <iostream.h>

void main ()
{

    // an integer number
    int Num;
    // numebr of numbers
    int Num_Num;
    // total of numbers
    int Sum = 0;

    cout << "Enter the number of numbers : ";
    // get the number of numbers from user
    cin >> Num_Num;

    // loop from 1 to Num_Num.
    for (int Counter = 1; Counter <= Num_Num ; i++)
    {
        cout << "Enter number (" << Counter << ") :";
        // get the number from user
        cin >> Num;
        // put the number in sum
        Sum += Num;
    } // end for

    // print the result
    cout << "The Result is : " << Sum ;

} // end main
```



8- الة حاسبه باستخدام الدوال (Function)

```
#include <iostream.h>

// functions initialize
int Pluse ( int, int );
int Minus ( int, int );
int Div ( int, int );
int Mult ( int, int );

void main ()
{
    // first and second integer number
    int Fir_Num;
    int Sec_Num;

    // kind of operation
    char Ope;

    // input phase
    cout << "Enter the first number : ";
    cin >> Fir_Num;
    cout << "Enter the second number : ";
    cin >> Sec_Num;
    cout << "Enter ur operation : ";
    cin >> Ope;

    // switch body
    switch (Ope)
    {
        // if operation is pluse
        case '+' :
            cout << "The result is : ";
```

```
break;

// if operation is minus
case '-':
    cout << "The result is : "
        << Minus ( Fir_Num, Sec_Num );
    break;

// if operation is mult
case '*':
    cout << "The result is : "
        << Mult ( Fir_Num, Sec_Num );
    break;

// if operation is divison
case '/':
    cout << "The result is : "
        << Div ( Fir_Num , Sec_Num );
    break ;

// if operation is not logical
default :
    cout << "Sorry ur operation is wrong ";
} // end switch

} // end main

// pluse function body
int Pluse ( int x, int y )
{
    return x + y ;
}
```

```
// minus function body
int Minus ( int x, int y )
{
    return x - y;
}

// div function body
int Div ( int x, int y )
{
    if ( y == 0 )
    {
        cout << "Error division by zero ";
        return 0;
    }
    else
        return x / y;
}

// mult function body
int Mult ( int x, int y )
{
    return x * y ;
}
```

9- برنامج يأخذ كدخل من المستخدم عناصر مصفوفة ثم يرتب عناصرها تصاعديا ويضعها في مصفوفة أخرى بواسطة الفرز الفقاعي؟

```
#include <iostream.h>

void main ( )
{
    // matrix initialize to 80 dim
```

```
int Matrix [80];

// integer numbers
int Number;
int Temp;

// input phase
cout << "plz enter number of numbers : ";
cin >> Number;

for (int i = 0; i < Number; i++)
{
    cout << "Enter the number : ";
    cin >> Matrix [i];
}

// loop until loop counter equal to number
for (int Start = 0; Start < Number ; Start++)
    // loop until loop counter equal to number
    for (int N_Now = Start ; N_Now < Number ; N_Now++ )
    {
// when matrix with main loop counter index less than matrix with loop
// counter
        //index
        if (Matrix [Start] > Matrix [N_Now])
        {
            Temp = Matrix [Start];
            Matrix [Start] = Matrix [N_Now];
            Matrix [N_Now] = Temp;
        }
        // end if
    }
    // end for
}
```

```
// print matrix
for (int Start = 0; Start < Number ; Start++)
    cout << Matrix [Start] << endl;
} // end main
```

10- برنامج يعمل على جمع عددين

```
include <iostream.h>

void main()
{

    // an integer number
    int Fir_Num;
    // an integer number
    int Sec_Num;

    cout << "Enter the first number : " ;
    // get the first number from user
    cin >> Fir_Num ;

    cout << "Enter the second number : " ;
    // get the second number from user
    cin >> Sec_Num;

    // print the sum
    cout << "The Result is : " << Fir_Num + Sec_Num ;

} // end main
```

11- برنامج رفع العدد إلى قوة (Power)؟

```
#include <iostream.h>

void main ()
{
    // an integer number and power
    int Num;
    int Pow;
    // the result of operation
    int Res;
    // temporary number
    int Temp_Num;

    // input phase
    cout<<"Enter the number : ";
    cin>> Num ;
    cout<<"Enter the power : ";
    cin>> Pow ;

    Temp_Num = Num ;

    // loop continue until Counter equal to power
    for(int Counter = 0 ; Counter <= Pow ; Counter++)
    {
        Res = Num * Temp_Num ;
        Temp_Num = Res;
    } //end loop

    // print the result
    cout << "The result is : " << Res;

} // end main
```

12- برنامج يعمل على فحص الرقم إذا كان زوجي أم فردي؟

```
#include <iostream.h>

void main ()
{

    // an integer number
    int Num;

    // input phase
    cout << "Plz enter an integer number : " ;
    cin >> Num;

    //condition statement
    if ( Num % 2 == 1)
        cout << "The number is odd ";
    else
        cout << "The number is not odd";

} // end main
```

13- برنامج يبحث عن القاسم المشترك الأكبر لعددين

```
#include <iostream.h>

void main ()
{

    // first and second integer number
    int Fir_Num ;
    int Sec_Num ;
```

```
//input phase
cout << "Enter first number : ";
cin >> Fir_Num;
cout << "Enter second number : ";
cin >> Sec_Num;

// while one of these conditions or both is true repeat
while (Fir_Num < 0 || Sec_Num < 0)
{
    cout << "One or to numbers is negative\n";
    cout << "Oh man enter positive number : ";
    cin >> Fir_Num;
    cout << "Your second number please : ";
    cin >> Sec_Num;
}
//while First number not equal to second number repeat
while ( Fir_Num != Sec_Num )
{
    if ( Fir_Num > Sec_Num)
        Fir_Num -= Sec_Num ;
    else
        Sec_Num -= Fir_Num ;
} // end while

cout << "The result is : "
    << Sec_Num;

} // end main
```

14- برنامج اختبار الرقم إذا كان فردي أو زوجي فإذا كان فردي فربعه واجمعه  
وإذا فلا تجمعه ويظل الإدخال حتى يتم إدخال الرقم -1؟



```
#include <iostream.h>
void main ()
{
    // integer number
    int Num = 0;
    // total of ood number
    int Total = 0;

    // for loop ended when user input -1
    while ( Num != -1 )
    {
        cout << "Enter positive number (-1) to end : ";
        cin >> Num;

        // when number is negative
        if ( Num < -1 )
            Num *= -1 ;

        // test if number is odd or not
        if ( Num % 2 == 1 )
            Total = Total + (Num * Num);
    } // end while

    // print the result
    cout << "The result is : " << Total;

} // end main
```

15- برنامج يحسب حساب معدل تخرج طالب من إحدى الكليات أو المعاهد؟

```
#include <iostream.h>

void main ()
{
    // integer values
    int Num_Of_Sub;
    int Grade;
    int Total = 0;
    int Average;
    // get the number from user
    cout << "Plz enter number of subjects : ";
    cin >> Num_Of_Sub;
    // loop until loop counter equal to number of subjects
    for (int Counter = 1; Counter <= Num_Of_Sub; Counter++)
    {
        // input phase
        cout << "Enter grade number (" << Counter << ") : ";
        cin >> Grade;
        // when grade is between (100) and (50)
        if (Grade >= 50 && Grade <= 100)
            Total += Grade;
        // when grade is larger than (100) or less than (50)
        else
        {
            cout << "Sorry ...grade is out of range !!!!! try again\n";
            Counter--;
        }
    }
    // end for

    // print the average
    Average = Total / Num_Of_Sub ;
    cout << "The average is : " << Average ;
}
// end main
```

16- برنامج يعمل على تقريب عدد حقيقي إلى اقرب عدد صحيح؟

```
#include <iostream h>

void main ()
{
    // a float number
    float Num;
    // temporary number
    float Temp_Num;

    //input phase
    cout << "Enter ur Number : ";
    cin >> Num;

    // put the value of number in temporary number
    Temp_Num = Num;

    // while temporary number is bigger than one repeat
    while ( Temp_Num > 1 )
    {
        Temp_Num -= 1;
    } // end while

    // when temporary number is less than zero point five (0.5)
    if (Temp_Num < 0.5)
        cout << "The result is : " << ( Num ) - ( Temp_Num );
    // when temporary number is bigger than zero point five (0.5)
    else
        cout << "The result is : "
            << (Temp_Num - 1 ) * (-1) + ( Num );

} // end main
```

17- برنامج يأخذ رقم من المستخدم ثم يطبع في السطر الأول رقم 0 ثم في السطر الثاني رقم 2 وهكذا حتى يصل إلى الرقم المدخل؟

```
#include <iostream.h>
void main ()
{
    // an integer number
    int Num;

    cout << "Enter an integer number (not odd) : ";
    cin >> Num;

    // when the number is odd
    if ( Num % 2 == 1)
        cout << "Sorry ur number is odd";
    // when number is not odd
    else
    {
        // loop until loop counter equal to number
        for ( int Count_1 = 0; Count_1 <= Num; Count_1 += 2 )
        {
            // loop until loop counter equal to main loop counter
            for ( int Count_2 = 0; Count_2 <= Count_1 ; Count_2 += 2 )
                cout << Count_2 ;

            cout << endl;
        }
    }
}
// end for
// end if
// end main
```

18- برنامج يحدد المستخدم أبعاد مصفوفة ثنائية مربعة, ومن ثم يقوم البرنامج بطباعه مجموع عناصر القطر الرئيسي للمصفوفة؟

```
#include <iostream.h>
void main ( )
{
    // initialize tow dimensional array
    int Array [10] [10] ;
    // size of array
    int Dim;
    //total numbers which have same dimension
    int Total = 0 ;
    // input phase
    cout << "Enter the Dim of Array : " ;
    cin >> Dim ;
    // loop until loop counter equal to array dimension
    for (int Counter_1 = 0; Counter_1 < Dim; Counter_1 ++ )
    {
        // loop until loop counter equal to array dimension
        for (int Counter_2 = 0; Counter_2 < Dim; Counter_2 ++ )
        {
            // input phase
            cout << "Enter the element ["
                << Counter_1
                << "]" [" << Counter_2
                << "]" : ";
            cin >> Array [Counter_1] [Counter_2];
            // if row number equal to column number
            if ( Counter_1 == Counter_2 )
                Total += Array [Counter_1] [Counter_2] * Array [Counter_1]
                    [Counter_2];
        }
    } // end for
    // display result
    cout << "The result is : " << Total;
} // end main
```

