



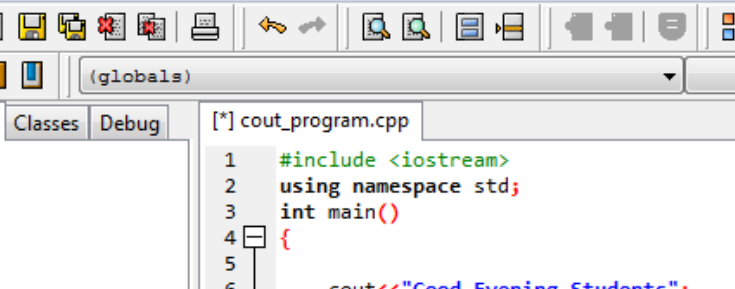
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المرحلة الاولى - الفصل الثاني - مختبر اساسيات برمجة

2021- 2020

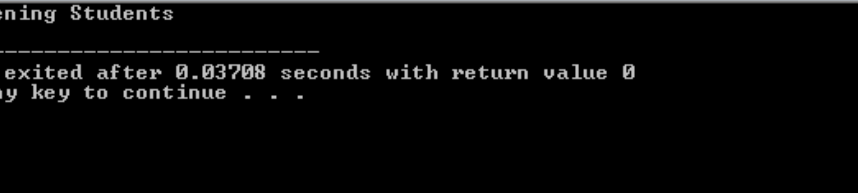
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The screenshot shows the Dev-C++ IDE interface. The title bar indicates the file is 'G:\۲۰۱۹_المرحلة الاولى\cout_program.cpp - Dev-C++ 5.11'. The menu bar includes File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, and Help. The toolbar contains various icons for file operations and execution. The 'Project' panel on the left shows a tree view with 'cout_program.cpp' selected. The main editor window displays the following C++ code:

```
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5
6      cout<<"Good Evening Students";
7      return (0);
8  }
9
10
```



G:\حسابات\مات\2019\cout_program1.exe

Good Evening Students

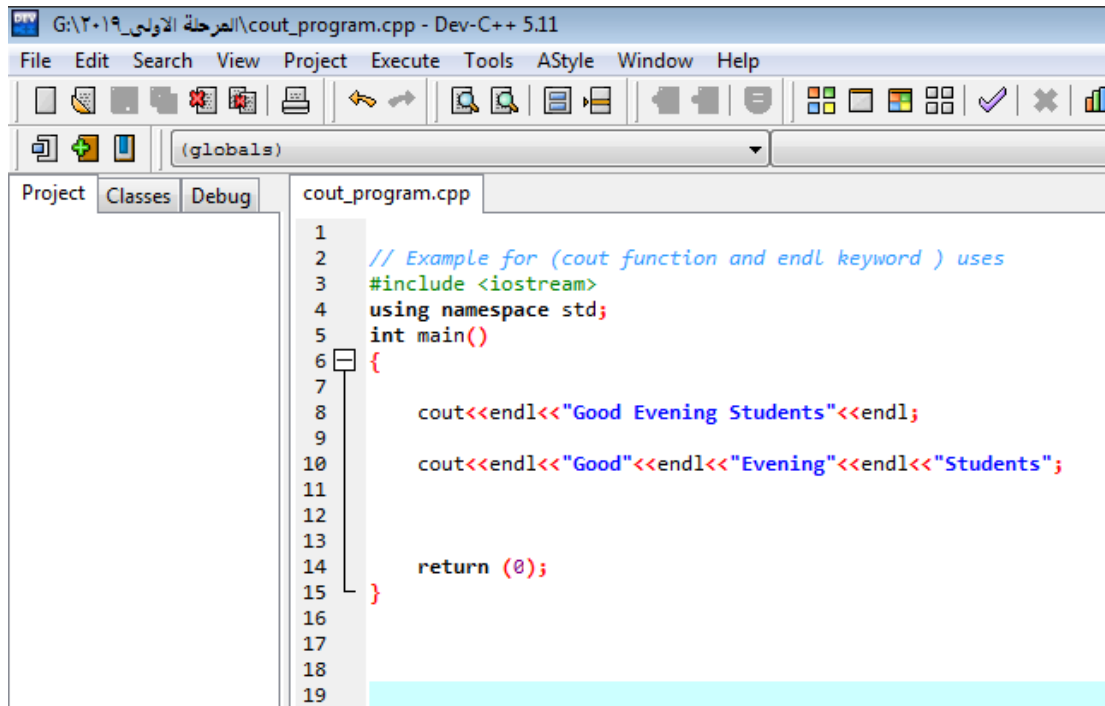
Process exited after 0.033708 seconds with return value 0

Press any key to continue . . .

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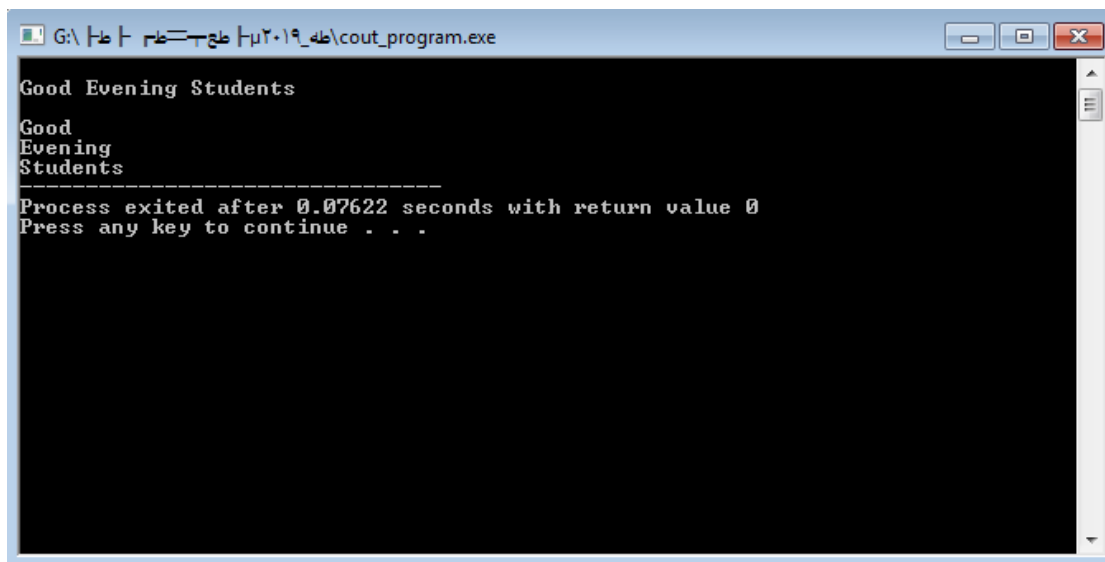
Example 2)

ملاحظه:- endl تستخدم لنبدأ سطر جديد :



```
1 // Example for (cout function and endl keyword ) uses
2 #include <iostream>
3 using namespace std;
4 int main()
5 {
6     cout<<endl<<"Good Evening Students"<<endl;
7     cout<<endl<<"Good"<<endl<<"Evening"<<endl<<"Students";
8
9     return (0);
10 }
```

Run:



```
Good Evening Students
Good
Evening
Students
-----
Process exited after 0.07622 seconds with return value 0
Press any key to continue . . .
```

Lecture 2 (Correction of cout statement mistakes)

Example 1) Correct the Following Program

المثال يوضح مكان الخطأ وكيفية تصحيحه :

E4

```
1 // Correct The Following Program
2
3 using namespace std;
4 int main()
5 {
6
7     cout<<"Good Evening Students"<<endl;
8
9     return (0);
10 }
11
```

التصحيح يكون بإضافة
#include <iostream>
لأنها تحتوي على تعريف
cout , endl

mpiler (3) Resources Compile Log Debug Find Results Close

Col	File	Message
	G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	In function 'int main()':
2	G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	[Error] 'cout' was not declared in this scope
33	G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	[Error] 'endl' was not declared in this scope

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Example2) Correct the Following Program

امثلة توضح مكان الخطأ وكيفية تصحيحه :

```

1 // Correct The Following Program
2 #include<iostream>
3 using namespace std;
4 int main()
5 {
6     Cout<<"Good Evening Students"<<endl;
7
8     return (0);
9 }
10
11

```

cout
تكتب بالحروف الصغيرة
لان الله تكتب الحروف
Case Sensitive
وهنا كتبنا
Cout
فلم يتعرف عليها البرنامج
والمصحح هو كتابة
cout

Resources Compile Log Debug Find Results Close

File	Message
G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	In function 'int main()':
G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	[Error] 'Cout' was not declared in this scope

```

1 // Correct The Following Program
2 #include<iostream>
3 using namespace std;
4 int main()
5 {
6     cout >> "Good Evening Students"<<endl;
7
8     return (0);
9 }
10
11

```

الخطأ
cout>>
المصحح
cout<<

Compiler (45) Resources Compile Log Debug Find Results Close

Col	File	Message
	G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	In function 'int main()':
6	G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	[Error] no match for 'operator>>' (operand type
6	G:\٢٠١٩\المرحلة الاولى\cout_program1.cpp	inNote: candidates are:

Lecture 3 (If else Examples)

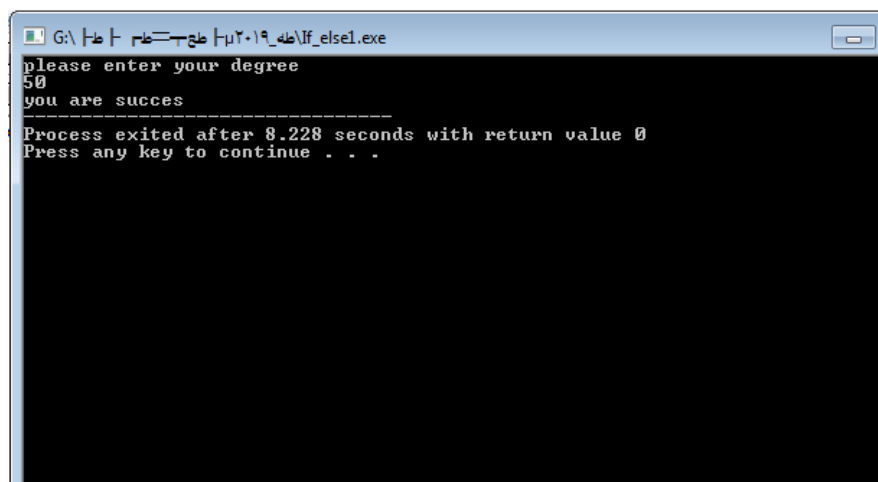
Example 1) Write a program to enter your degree and then check it, if greater than or equal to fifty print "You are a success", else print "You unsuccessful".

Code:

```
1
2 // Example 1) Write a program to enter your degree and then,
3 // check it if greater than or equal to fifty
4 //print "You are success"
5 //else print "You unsuccessful".
6 #include <iostream>
7 using namespace std;
8 int main()
9 {
10     int x;
11     cout<<"please enter your degree";
12     cin>>x;
13
14     if (x>=50)
15         cout<<"you are succes";
16     else
17
18         cout<<"you unsuccessul";
19     return (0);
20 }
```

Enter your degree

Run:



```
G:\...if_else1.exe
please enter your degree
50
you are succes
-----
Process exited after 8.228 seconds with return value 0
Press any key to continue . . .
```


Lecture 4:(correction of If statement mistakes)

Example 1) Correct the Following Program:

المثال يوضح مكان الخطأ وكيفية تصحيحه ببرنامج استخدمنا به الجملة الشرطية

```
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int x;
10    cout<<"please enter your degree";
11    cin>>x;
12    if (x>=90)
13    {
14
15        cout<<"you are asucces"<<endl;
16        cout<<"Excellent";
17    }
18    else
19        cout<<"you unsuccesful";
20    return (0);
21 }
```

Syntax error
الخطأ قوس الجملة الشرطية
غير موجود

Message
[Error] expected '(' before 'x'
[Error] else without a previous 'if'

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Example2) Correct the Following Program

المثال يوضح مكان الخطأ وكيفية تصحيحه ببرنامج استخدمنا به الجملة الشرطية

```
4 // "You are a success" and print "Excellent", else print
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int x;
10    cout<<"please enter your degree";
11    cin>>x;
12    if (x>=90)
13    {
14        cout<<"you are asucces"<<endl;
15        cout<<"Excellent";
16    }
17    else
18    {
19        cout<<"you unsuccesful";
20    }
21    return (0);
22 }
```

الخطأ هنا عدم كتابة اقواس البداية والنهاية للجملة الشرطية { }
نحتاج الاقواس لوجود اكثر من جملة بعد if

In function 'int main()':
[Error] 'else' without a previous 'if'

Example 3) Correct the Following Program

المثال يوضح مكان الخطأ وكيفية تصحيحه ببرنامج استخدمنا به الجملة الشرطية

```
3 //greater than or equal to ninety print
4 // "You are a success" and print "Excellent", else print "You unsuccesfu
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int x;
10    cout<<"please enter your degree";
11    cin>>x;
12    if (x>=90);
13    {
14        cout<<"you are asucces"<<endl;
15        cout<<"Excellent";
16    }
17    else
18    {
19        cout<<"you unsuccesful";
20    }
21    return (0);
22 }
```

**الخطأ هنا هو وضع ; بعد جملة if كأنما فصلنا if عن else
**وضع ; يعني نهاية الجملة
** مترابطتين if, else

In function 'int main()':
[Error] 'else' without a previous 'if'

Lecture 5: (Examples of if statement - iteration structure)

Example 1)) Write c ++ program to enter ten numbers and check each number if divisible by 6 print (yes) else print (No).

((Solution

```
# include<iostream>
```

```
using namespace std;
```

```
main(){
```

```
    int x;
```

```
    for(int i=0;i<10;i++)
```

```
    {
```

```
        cout<<i<<"please enter number"<<endl;
```

```
        cin>>x;
```

```
        if(x%6==0)
```

```
            cout<<" yes"<< endl ;
```

```
        else
```

```
            cout<<" No " << endl;
```

```
    }
```

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Example 2))

Write c ++ program to enter (n) numbers then print these statements (The number greater than or equal to 5) and (Success) using separate output statements else print (The number less than 5) and (Fail)

((Solution

```
# include<iostream>
```

```
using namespace std;
```

```
main(){
```

```
int x,n;
```

```
cin>>n;
```

```
    for(int i=0;i<n0;i++)
```

```
    {
```

```
        cout<<i<<"please enter number"<<endl;
```

```
        cin>>x;
```

```
        if(x>=5)
```

```
        {
```

```
            cout <<" The number greater than or equal to 5" <<endl;
```

```
            cout <<" Success" << endl ;
```

```
        }// end if
```

```
        Else
```

```
        {
```

```
            cout <<" The number less than 5" <<endl;
```

```
            cout <<" Fail" << endl ;
```

```
        }// end else
```

```
    }// end for
```

```
    }// end main
```

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Example 3)) Write c ++ program to enter degree of five students and print this message (Success Student) if student (degree >=50) Else print (Fail Student)

Solution))

```
# include<iostream>
```

```
using namespace std;
```

```
main(){
```

```
    int x;
```

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

```
    {
```

```
        cout<<i<<"please enter student degree"<<endl;
```

```
        cin>>x;
```

```
        if(x>=50)
```

```
            cout<<" student "<<i<<"  Sucess Student"<<endl ;
```

```
        else
```

```
            cout<<" student "<<i<<"  Fail Student"<<endl;
```

```
    }
```

Lecture 6: (string and cstring functions Examples with solution)

Example1: Write a C ++ Program to append a Cstring s1 that represents your first name to the end of "Computer science". The program then should replace each ('C') character in the destination Cstring by its corresponding lower case letter ('c'). [Hint: Do not use any of the Cstring predefined functions.

```
#include<iostream>
using namespace std;
int main()
{
    char s1[20]="Camal",s2[20]="Computer science" ;
    int i,j;
    for (i=0;s2[i]!='\0';i++);
    s2[i]=' ';
    i++;
    for(j=0;s1[j]!='\0';j++)
        s2[i++]=s1[j];
    s2[i]='\0';
    for(j=0;s2[j]!='\0';j++)
        cout<<s2[j];
    cout <<endl;
    cout<<"After replace s2";
    for (i=0;s2[i]!='\0';i++)
        if(s2[i]=='C')
            s2[i]='c';
    for(j=0;s2[j]!='\0';j++)
        cout<<s2[j];
```

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```
return 0;  
}
```

Example 2)

A) Considering the declaration and initialization statement below:

String str1="First_Class_Computer_Science."

Perform the following:

- 1-Return ("Computer") string
- 2-Return the index of ("Class")
- 3-Replace ("First") with ("Second")

Solution)

- 1- Str1.substr(12,8)
- 2- Str1.find("class")
- 3- str1.replace(0,5,"second")

Lecture 7 : Examples of String function with solutions

Example 1: Write a C++ Program to read a string data type variable s1 and then copy its contents to another string s2. After that the program should replace the first character in s2 by the character ('A'). [Hint: Do not use any of the string predefined functions].

```
#include<iostream>
using namespace std;
int main()
{
    string s1,s2;
    int i;
    getline(cin,s1);
    for(i=0;s1[i]!='\0';i++)
        s2[i]=s1[i];
    s2[i]='\0';
    s2[0]='A';
    cout<<"after replace s2=";
    for(i=0;s2[i]!='\0';i++)
        cout <<s2[i];

    return 0;
}
```

Example 2)

A) Considering the declaration and initialization statement below:

String s= "Here Hello";

Perform the following:

1. Delete the string "He" from s.

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2. Replace the string "Here" by "Hi"
3. Return the index of ("lo")
4. Return ("ere")
5. Insert ("Ahmed") at the end of s

Solution)

- 1- s.erase(0,2)
- 2- s.replace(0,4,"Hi")
- 3- s.find("lo")
- 4- s.substr(1,3)
- 5- s.append("Ahmed")

Lecture 8: Reading CString and Outputs of String Functions

Example 1:

A) Considering the declaration and initialization statement below:

String str1="Hello, my name is Rami.."

Perform the following:

- 1-Return ("e is") string
- 2-Return the index of ("o,")
- 3-Replace ("na") with ("nana")
- 4- Delete the substring("Ra") from str1
- 5- Insert ("Aziz") at the end of str1

Solution)

- 1- Str1.substr(13,4)
- 2-str1.find("o,")
- 3-str1.replace(10,2,"nana")
- 4-str1.erase(18,2)
- 5-str1.append("Aziz")

Example 2: Write a C ++ Program that reads a CString s1 and then stores a copy of its contents to another CString s2. After that the program replaces the last character in s2 by the character ('Z'). [Hint: Do not use any of the CString predefined functions].

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

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```
char s1[10],s2[10];  
int i;  
cin.getline(s1,10);  
for(i=0;s1[i]!='\0';i++)  
    s2[i]=s1[i];  
s2[i]='\0';  
cout <<s2<<endl;  
for (i=0;s2[i]!='\0';i++);  
    s2[i-1]='Z';  
    cout <<s2;  
  
return 0;  
}
```

Lecture 9:- Cstring Concatenation

Example 1:) Write a C ++ Program to concatenate the Cstring s1 which represents your father name to the Cstring s2 which represents your first name. After that, the program should insert the character ('*') at the end of the destination string. [Hint: Do not use any of the Cstring predefined functions].

```
#include<iostream>
using namespace std;
int main()
{
    char s1[20],s2[20];    //char s1[20]="Samir";s2[20]="Rana"
    int i,j;
    cin.getline(s1,20);
    cin.getline(s2,20);
    for (i=0;s2[i]!='\0';i++);
    s2[i]=' ';
    i++;

    for(j=0;s1[j]!='\0';j++)
        s2[i++]=s1[j];
    s2[i]='\0';
    for(j=0;s2[j]!='\0';j++)
        cout<<s2[j];
    cout <<endl;
    cout<<"After insert * at the end of s2";
    for (i=0;s2[i]!='\0';i++);
        s2[i]='*';
        s2[i+1]='\0';
```

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```
for(j=0;s2[j]!='\0';j++)  
  
    cout<<s2[j];  
return 0;  
}
```

Example 2)

A) Considering the declaration and initialization statement below:

String str1="Hello, good morning student.."

Perform the following:

- 1-Return ("student") string
- 2-Return the index of ("o,")
- 3-Replace ("morning") with ("afternoon")

Solution)

- 1- Str1.substr(20,7)
- 2- str1.find("o,")
- 2- str1.replace(12,7,"afternoon")

Lecture 10: String functions

Example 1) Considering the declaration and initialization statement below:

string str = "I love programming";

Perform the following:

1. Insert three copies of '!' at the end of *str*.
2. Delete four elements from *str* starting at position 2.
3. Print the content of position 2 of *str*.

Solution)

- 1- `str.insert(18,3,'!')` or `str.append(3,'!')`
- 2- `str.erase(2,4)`
- 3- `Cout<<str[2]` or `cout<<str.substr(2,1)`

Example 2)

Considering the declaration and initialization statement below: (3 marks)

string str = "I love computer science";

Perform the following:

4. Start at position 4 and search for the letter 'o'.
5. Replace the letter 'l' at *str* with the string literal "They".
6. Append the string literal "department" to *str*.

Solution:

- 1- `Str.find('o',4)`
- 2-`str.replace(0,1,"They");`
- 3-`str.append("department");`

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Example 3)

Considering the declaration and initialization statement below:: (3 marks)

string str = "I love computer science";

Perform the following:

7. Extract a substring containing four characters from *str* starting at position 2.
8. Insert the special character '?' at the end of *str*.
9. Replace the letter 'I' at *str* with the string literal "are you".

Solution)

- 1- Str.substr(2,4)
- 2- Str.insert(23,1,'?')
- 3-
- 4- Str.replace(0,1,"are you");

Example 4)

Considering the declaration and initialization statement below:: (3 marks)

string str = "I love programming with c + +";

Perform the following

- 1-Insert **four** copies of '%' at position **4** of *str*.
- 2-Delete **five** elements from *str* starting at position **3**.
- 3 Replace the substring "c++" at *str* with the string literal "visual studio".

Solution)

- 1- str.insert(4,4,'%')
- 2- str.erase(3,5)
- 3- str.replace(24,3,"visual studio")