



CC5IH – Programación Orientada al Objeto

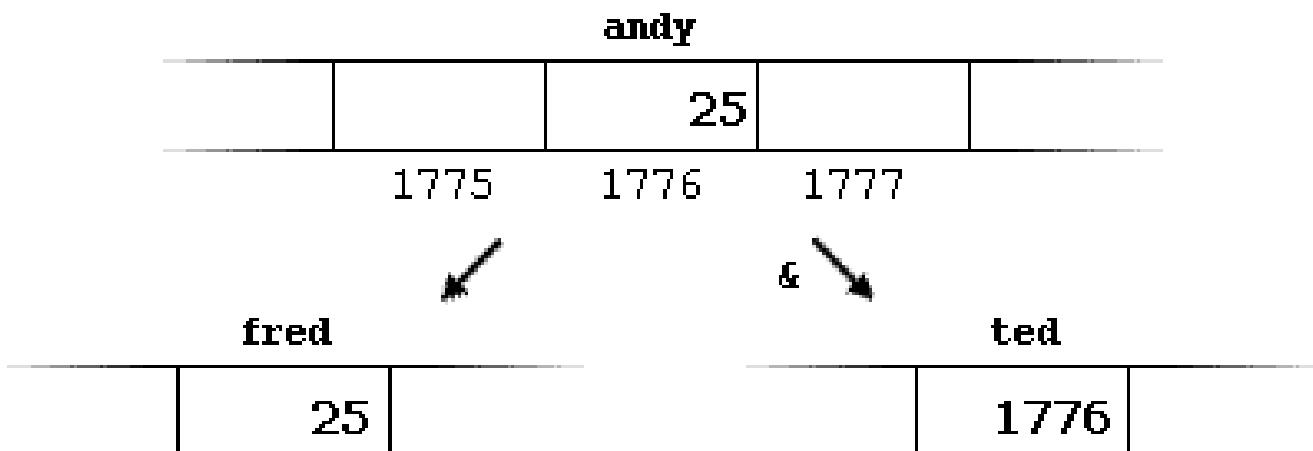
Clase Auxiliar 01

Lunes 14 marzo 2011

DCC – Universidad de Chile

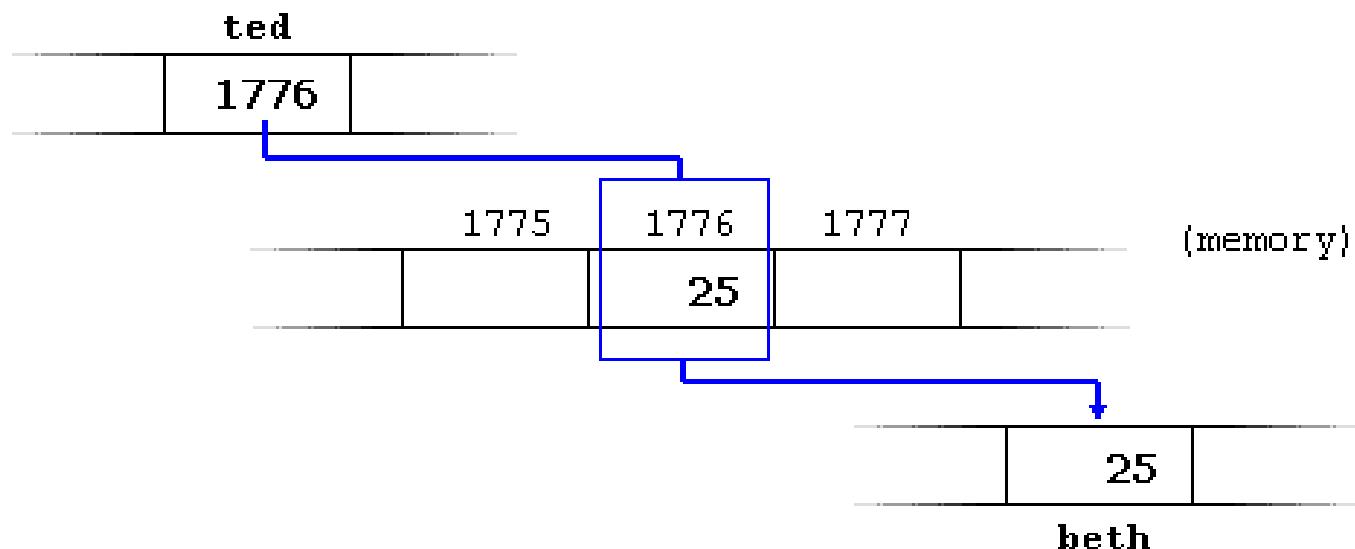
Punteros – operador (&)

```
1 andy = 25;  
2 fred = andy;  
3 ted = &andy;
```



Punteros – Operador (*)

```
beth = *ted;
```



Punteros - Ejemplo

```
1 // my first pointer
2 #include <iostream>
3 using namespace std;
4
5 int main ()
6 {
7     int firstvalue, secondvalue;
8     int * mypointer;
9
10    mypointer = &firstvalue;
11    *mypointer = 10;
12    mypointer = &secondvalue;
13    *mypointer = 20;
14    cout << "firstvalue is " << firstvalue << endl;
15    cout << "secondvalue is " << secondvalue << endl;
16    return 0;
17 }
```

Punteros - Ejemplo

```
1 // more pointers
2 #include <iostream>
3 using namespace std;
4
5 int main ()
6 {
7     int firstvalue = 5, secondvalue = 15;
8     int * p1, * p2;
9
10    p1 = &firstvalue;
11    p2 = &secondvalue;
12    *p1 = 10;
13    *p2 = *p1;
14    p1 = p2;
15    *p1 = 20;
16
17    cout << "firstvalue is " << firstvalue << endl;
18    cout << "secondvalue is " << secondvalue << endl;
19    return 0;
20 }
```

Clases

Private
Protected
Public

```
1 // example on constructors and destructors
2 #include <iostream>
3 using namespace std;
4
5 class CRectangle {
6     int *width, *height;
7 public:
8     CRectangle (int,int);
9     ~CRectangle ();
10    int area () {return (*width * *height);}
11 };
12
13 CRectangle::CRectangle (int a, int b) {
14     width = new int;
15     height = new int;
16     *width = a;
17     *height = b;
18 }
19
20 CRectangle::~CRectangle () {
21     delete width;
22     delete height;
23 }
24
25 int main () {
26     CRectangle rect (3,4), rectb (5,6);
27     cout << "rect area: " << rect.area() << endl;
28     cout << "rectb area: " << rectb.area() << endl;
29     return 0;
30 }
```

Templates (Funciones)

```
1 // function template II
2 #include <iostream>
3 using namespace std;
4
5 template <class T>
6 T GetMax (T a, T b) {
7     return (a>b?a:b);
8 }
9
10 int main () {
11     int i=5, j=6, k;
12     long l=10, m=5, n;
13     k=GetMax(i,j);
14     n=GetMax(l,m);
15     cout << k << endl;
16     cout << n << endl;
17     return 0;
18 }
```

Templates (Clases)

```
1 // class templates
2 #include <iostream>
3 using namespace std;
4
5 template <class T>
6 class mypair {
7     T a, b;
8     public:
9         mypair (T first, T second)
10            {a=first; b=second;}
11         T getmax ();
12     };
13
14 template <class T>
15 T mypair<T>::getmax ()
16 {
17     T retval;
18     retval = a>b? a : b;
19     return retval;
20 }
21
22 int main () {
23     mypair <int> myobject (100, 75);
24     cout << myobject.getmax();
25     return 0;
26 }
```

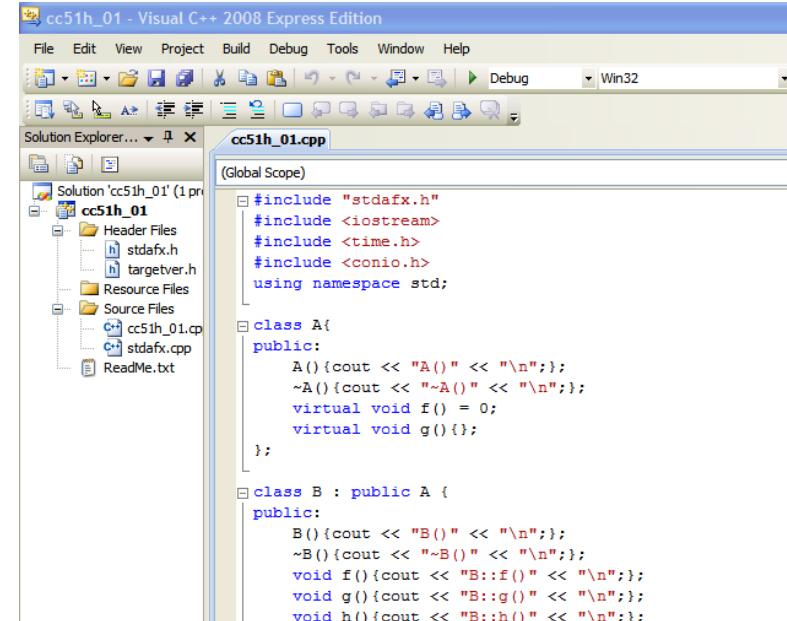
Links útiles

The screenshot shows a Mozilla Firefox browser window. The title bar reads "C++ Language Tutorial - Mozilla Firefox". The menu bar includes "Archivo", "Editar", "Ver", "Historial", "Marcadores", "Herramientas", and "Ayuda". The toolbar includes standard icons for back, forward, search, and home, along with a link to "http://wwwcplusplus.com/doc/tutorial/". The address bar also shows "http://wwwcplusplus.com/doc/tutorial/". Below the toolbar is a toolbar with links to "Más visitados", "DCC - Ingreso", "Google Académico", "Google Libros", "Traductor de Google", and "Real Academia Española". The main content area displays the "cplusplus.com" website. The header features the "cplusplus.com" logo with three purple cubes. The main title is "C++ : Documentation : C++ Language Tutorial". A search bar is present. To the right, there is an advertisement for "REAL Studio" with the headline "Don't like .NET? Try REAL Studio! Cross-Platform development that's easy". Below the ad, a link leads to "www.realsoftware.com/realbasic". The main content below the ad is titled "C++ Language Tutorial". It describes the tutorials as explaining the C++ language from basics to newest features like polymorphism and templates, oriented in a practical way. A link "[Download the entire tutorial as a PDF file]" is provided. On the left sidebar, there are navigation links for "Information", "Documentation", "Reference", "Articles", "Sourcecode", and "Forums". Under "Documentation", there are links for "C++ Language Tutorial", "Ascii Codes", "Boolean Operations", and "Numerical Bases". The "C++ Language Tutorial" section is expanded, showing "Introduction:" with a link to "Instructions for use" and "Basics of C++:" with a link to "Structure of a program".

<http://wwwcplusplus.com/doc/tutorial/>

Editores

- Eclipse
- NetBeans
- Microsoft Visual C++ Express Edition
- Linux (g++)



A screenshot of the Microsoft Visual Studio Express Edition interface. The window title is "cc51h_01 - Visual C++ 2008 Express Edition". The menu bar includes File, Edit, View, Project, Build, Debug, Tools, Window, and Help. The toolbar has various icons for file operations. The Solution Explorer shows a project named "cc51h_01" with files: stdafx.h, targetver.h, cc51h_01.cpp, stdafx.cpp, and ReadMe.txt. The code editor pane displays the following C++ code:

```
#include "stdafx.h"
#include <iostream>
#include <time.h>
#include <conio.h>
using namespace std;

class A{
public:
    A(){cout << "A()" << "\n";}
    ~A(){cout << "~A()" << "\n";}
    virtual void f() = 0;
    virtual void g() {};
};

class B : public A {
public:
    B(){cout << "B()" << "\n";}
    ~B(){cout << "~B()" << "\n";}
    void f(){cout << "B::f()" << "\n";}
    void g(){cout << "B::g()" << "\n";}
    void h(){cout << "B::h()" << "\n";}
};
```

