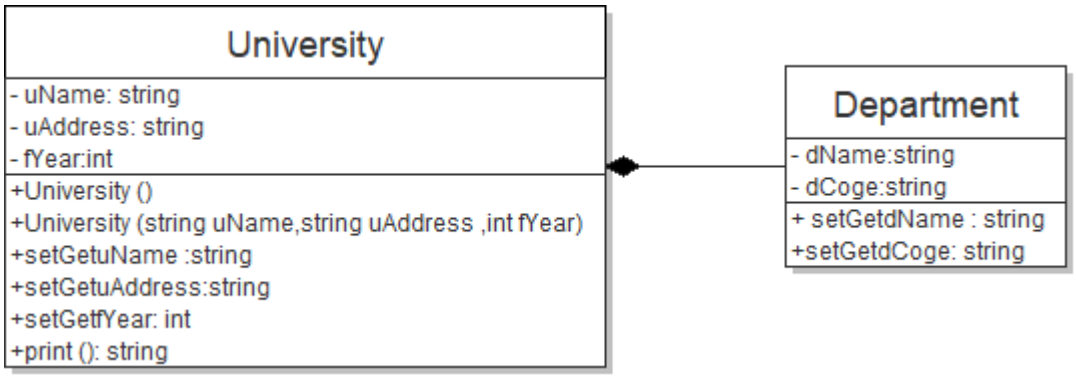
Example (10)
Class Relationships
Composition

في المحاضرات السابقة تناولنا مفهوم Code Reuse و تعلمنا ان Code Reuse نوعين :

1. Black Code Reuse (Association , Aggregation, Composition)
2. White Code Reuse (Inheratance)

Write a C# windows Form Application code to convert the following UML




```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Composition
{
   class Department
   {
      private string dName, dCoge;

      public Department()
      {
         dName = "Computer";
         dCoge = "Science";
      }

      public Department(string dName, string dCoge)
      {
         this.dName = dName;
         this.dCoge = dCoge;
      }

      public string getSetuName
      {
         set { dName = value; }
         get { return dName; }
      }
```

```
        public string getSetudCoge
        {
            set { dCoge = value; }
            get { return dCoge; }
        }
    }
}


using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace Composition
{
    class University
    {
        private string uName,uAddress;
        private int fYear;
        private Department dep=new Department ();

        public University()
        {
            uName ="Al_Mustansiria ";
            uAddress = "Plastine Street";
            fYear = 1963;

        }
        public University(string uName, string uAddress,int fYear)
        {
            this.uName = uName;
            this.uAddress = uAddress;
            this.fYear = fYear;
        }

        public string setGetuName
        {
            set { uName = value; }
            get { return uName; }
        }

        public string setGetuAddress
        {
            set { uAddress = value; }
            get { return uAddress ; }
        }

        public int setGetfYear
        {
            set { fYear = value; }
            get { return fYear; }
        }
```

```
        public string  setGetDepName
        {
           set{ dep.getSetuName = value.ToString ();}
           get{return dep.getSetuName;}
        }

        public string setGetDepCoge
        {
           set { dep.getSetudCoge = value.ToString(); }
           get { return dep.getSetudCoge; }
        }

        public string print()
        {
           string r = "";
           r += " University name: " + setGetuName + Environment.NewLine;
           r += " University Address: " + setGetuAddress + Environment.NewLine;
           r += " University Foundation Year: " + setGetfYear + Environment.NewLine;
           r+=  " Department Name : "+ dep.getSetuName+" " ;
           r+= " Department College : "+ dep.getSetudCoge;
           return r;
        }
     }
  }


  private void button1_Click(object sender, EventArgs e)
        {
           University u = new University("Mustansiria", "Plastine Street ", 1963);
           textBox1.Text = u.print()+Environment.NewLine ;
           u.setGetuName = "Baghadad";
           u.setGetuAddress = "Jadriaa";
           u.setGetfYear = 1957;
           u.setGetDepName = "Civil Engineering";
           u.setGetDepCoge = "Engineering";
           textBox1.Text += u.print() + Environment.NewLine;
           u = null;
         }
```

Exercise

1. Convert the following UML diagram into C# code