## **Properties**

This lesson discusses properties, how to declare them, initialize them and use them in C#

#### WE'LL COVER THE FOLLOWING ^

- Introduction
- Public Get
- Public Set
- Declaring Properties
- Example

#### Introduction #

**C# properties** are *class members* that expose functionality of *methods* using the syntax of *fields*. They simplify the *syntax* of calling traditional **get** and **set** methods (a.k.a. *accessor methods*). Like *methods*, they can be **static** or **instance**.

Let's take a look at public get and set accessors first.

## Public Get #

Getters are used to expose values from classes.

```
private name;
public string Name
{
  get { return this.name; }
}
```

### Public Set #

Setters are used to assign values to properties.

```
private name;
public string Name
{
  set { this.name = value; }
}
```

# **Declaring Properties** #

**Properties** are defined in the following way:

```
public class PropertiesExample
{
    private bool _isValid;

    public bool IsValid
    {
        get
        {
            return _isValid; // get returns the field you specify when this property is assi
        }
        set
        {
            //The C# keyword value contains the value assigned to the property.
              _isValid = value; // set assigns the value assigned to the property of the field
        }
    }
}
```

The shorter equivalent of the above code for **getter**/**setter** *accessors* is the following:

```
public bool IsValid { get; set; }
```

# Example #

Let's take a look at an example implementing this.

```
using System;

class Person
{
    public int age { get; set; } //get/set accessors for age
    public string name { get; set; } //get/set accessors for name
}

public class Sample
{
    public static void Main()
    {
        Person person1 = new Person();
    }
}
```

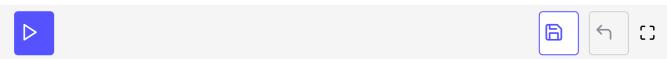
```
person1.age = 20;  // ==> equivalent to person1.SetAge("Italian");
int Age = person1.age; // ==> equivalent to ... = person1.GetAge();

Console.WriteLine("person1's age is: {0}", Age);

person1.name = "marissa"; // ==> equivalent to person1.SetName("Italian");

string Name = person1.name; // ==> equivalent to ... = person1.GetName();

Console.WriteLine("person1's name is: {0}", Name);
}
```



After a **property** is *defined* it can be used like a **variable**. If you were to write some additional code in the **get** and **set** portions of the **property** it would work like a *method* and allow you to manipulate the data before it is *read* or *written* to the variable.

*Properties* cannot have any logic in their accessors, for example:

```
// Invalid code
public bool IsValid { get; set { PropertyChanged("IsValid"); } }
```

**Properties** can, however, have different *access modifiers* for its *accessors*:

```
public bool IsValid { get; private set; }
```

You can set *default* values as well in the following way:

```
public class Name
{
  public string First { get; set; } = "James";
  public string Last { get; set; } = "Smith";
}
```

That was all regarding **properties**. In the next lesson we will discuss *structs* in C#.