**Lesson 2 Notes**

**Assembly –** a deployment unit. Represents one file on disk. If you have 4 projects in your solution, there will be 4 assemblys.

**Namespace**

You can have same types within different assemblies. Problem is when you try to use two different assemblies with the same type. To limit the possibility of this, you use namespaces. It’s sole purpose is for scoping.

A type is unique as far as it’s fully qualified name is unique. Fully qualified name is namespace + type name. The compiler always works with fully qualified namespaces.

Namespaces are always pascal cased. They follow identifier rules.

The defacto standard is: company name.product[.subnamespaces]

Company types are included in company namespace. Product types are in the product namespace.

Generally, the namespace name follows the assembly name.

The compiler always required the fully qualified type name. The compiler has a shortcut so you don’t have to use the FQTN every time.

Using name;

Now you can just use ‘product’ in your code.

Example. Int32 is not the FQTN. It is actually System.Int32. So you would put ‘using System’ a the top of the page. They are USING DECLARATIONS.

Using Keyword followed by Namespace name;

Namespace Nile.Host (contains two namespaces… Nile… and sub namespace Host).

To create a namespace, you create a namespace statement.

Namespace ‘name of namespace’

{

}

You can also nest namespaces; but, it isn’t advisable.

Projects talk to each other through assemblies

Declaring a class:

Class T

{

}

This declares the existence of this type with this name. Instead of the curly braces are the members of the class.

Class

Instance/Object

A class is a template (a blueprint). It describes functionalities.

An Instance is the actual creation of that class (type).

Rectangle

Length

Width

A Rectangle class would declare that there is a length and a width. You could also have a function to calculate the area given the length and width.

You could have a function to draw the rectangle.

The new keyboard takes a type and creates and instance of it in memory. So your variable is storing an instance of the class.

Classes are all about grouping together the functionality and properties of something.

Classes are almost always nouns. Are always pascal case. The fields are camel cased.

Class definition

[Access] class T

Types can only be one of two accessibility types. **Public or Internal.**

**Accessibility Types:**

**Public –** anyone can use it.

**Internal –** anything in the assembly can use it.

**Private –** only the type (class) can use it.

Accessibility determines who has access at compile time.

**Variables that are a part of a class are referred to as fields**

**(Class Members)**

**Fields**

**Properties  
Methods**

**Functions**

[access] T funcId([params])

Public Functions are Pascal Cased

Functions are always named using verbs because they are actions

(look up methods)

Inside functions, there is always an initial parameter, even when the signature is empty. It is the This parameter. It represents the calling instance. It gives you access to the members of the instance.

So the following two functions are the same:

Public decimal GetPrice()

Public decimal GetPrice(this)

**A function cannot be a member of a type (class)**

**So functions inside of a class is a method.**

**Fields represent data**

**Methods represent functionality**

**Properties**

[access] T id

{

Get{}

Set{}

}

Get and Set are methods

You have no control over what a user does with a field. Fields work just like regular variables.

Properties are a mix of fields and methods. They have the syntax of fields. But they have the behavior of methods. When reading a property, you are calling a method. The user sees them as fields; but, we have control over what is written because they are actually methods.

Fields store data. So if you need to save data through a property, you have to use a field. Create a private field in order to save these fields. **Fields are always camel cased.**  Start private fields with an underscore. Parameters will often have similar names as private fields. Using an underscore helps to keep these from being confused.

Data Property: Many properties are used to store data. This is where the private fields come in . These are referred to as backing fields.

Properties allow you to manipulate the data. Fields cannot do this.

If you are going to expose data, use properties, not fields.

Properties can be any kind of accessor. They are usually public, but can be any kind.

Summary and value are the only kinds of descriptors (look up) you can put on properties.

Public decimal Price

{

Get {return \_price;}

Set {price = \_value;}

}

This is so used, they have come up with a short cut called auto properties:

Public decimal Price {get; set;}

You cannot use the short cut if you do any kind of modification in the property.

If you want to initialize a field backed by a property, use equal and the value after the get; set; You can only do this on auto properties.

Ex: public decimal Price {get; set; } = 0;

Constant values are baked into source code. The only way to change the value is to recompile the code.

Constants are one field you might want to make public. A property cannot be a constant because it exposes methods.

Public decimal DiscontinuedDiscountRate = 0.10M;

Look up difference between CONST and ReadOnly as far as compile time, etc.

You don’t have to initialize a ReadOnly. The main use for ReadOnly is for setting things? That are expensive… like database connections.

|  |  |  |
| --- | --- | --- |
| **Property** | Method |  |
| Fast |  |  |
| Gets – no side effects | Get – side effect |  |
|  |  |  |
|  |  |  |

DateTime.Now() called 3 times would have a side effect. Properties return the same value over and over until something happens to change the value…. By calling the setter. DateTime.Now would be a method because calling it 3 times would have 3 different results.

If the member you are trying to represent is not data, use a method. Properties represent data.

If you need parameters, use a method. Properties only have one ???.

If in doubt, use methods and not properties.

If a good amount of memory is going to be used, do a method, not a property.