SOFTWARE GUILD

Enumerations

.NET Cohort

Coding Bootcamp

SOFTWARE GUILD

Lesson Goals

- Learn how enumerations (enums) are used in C# to simplify code
- Learn some neat tricks for working with them

What’s an Enum?

- An enumeration, or enum, is a programmer-defined type (just like classes are programmer-defined types)
- Enums are *value types* that have only two members:
  1. Named constants
  2. Integer values

Example Enum

Here is an enumeration representing a traffic light. It has three members: Green, Yellow, and Red.

Notice that the members are **comma separated**.

Be aware that every label has an underlying integer behind it, which is optional. If you don't specify, it will default to 0 and count up.

So, the two block of code to the right do the same thing

```
public enum TrafficLight
{
    Green,
    Yellow,
    Red
}
```

```
public enum TrafficLight
{
    Green = 0,
    Yellow = 1,
    Red = 2
}
```

Assigning and Casting

- We can declare variables and properties as the enumeration type, but if we want to actually print or store the underlying integer we must *cast* it.
- The typical method of casting an enum value is: (int)Variable.
- We can use the Enum.GetName() method if we want to display the text value of the enum.

Enum in a traffic light

DEMO

More About Numbering

By default, it counts up from zero.

If we specify a number, then stop specifying, it will simply count up from the last known number

We can also specify a lower number in the middle of the set.

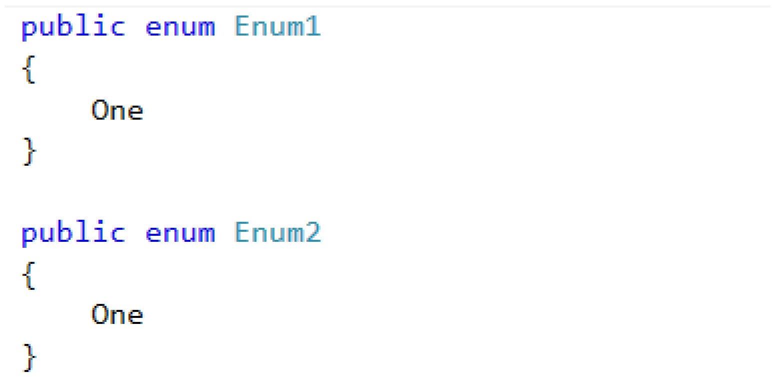
We can also duplicate numbers, and even use a previously defined label as a reference.

```
public enum CardSuits
{
    Hearts,     //0
    Clubs,      //1
    Diamonds,   //2
    Spades,     //3
    MaxSuites   //4
}

public enum FaceCards
{
    Jack = 11,      //11
    Queen,          //12, not specified so it counts up
    King,           //13
    Ace,            //14
    NumberOfFaceCards = 4,
    ThisWillBe5,    //5, counts up from last value
    HighestFaceCard = Ace  // note we can reuse
}
```

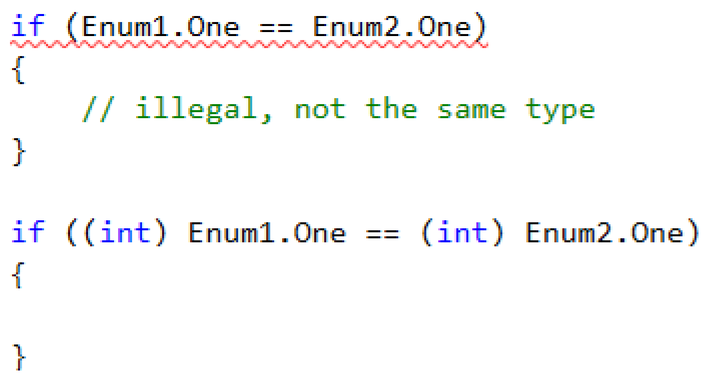
Word of Warning

- Even though enums are ints underneath, we can’t compare two different enum types. Instead, we have to convert them to ints first.



```
public enum Enum1
{
    One
}

public enum Enum2
{
    One
}
```



```
if (Enum1.One == Enum2.One)
{
    // illegal, not the same type
}

if ((int) Enum1.One == (int) Enum2.One)
{

}
```

Conclusion on Enums

- Enums are useful for making code more readable, especially when dealing with relatively static lists, like statuses and labels
- Typically, for database work, we use enums for “Type” tables… OrderType, CustomerType, EmployeeStatus, etc.
- However, if you want to display a real description (with spaces, etc.), a small class is more appropriate than an enum.