Module 1 Day 10

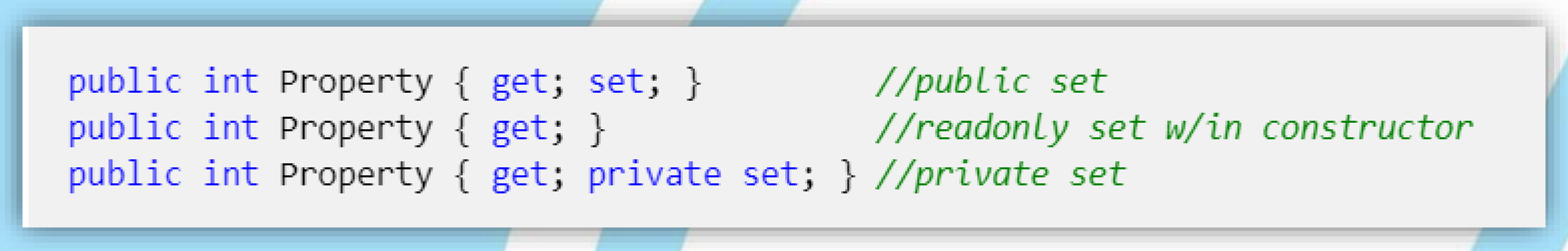
Classes & Encapsulation

Encapsulation

- The action of enclosing something in or as if in a capsule
- From Wikipedia
    - A language construct that facilitates the bundling of data with the methods (or other functions) operating on that data.[
    - A language mechanism for restricting direct access to some of the object's components.
- Mike's words
    - Bundling stuff together which goes together (as in classes)
        - Models real-world as closely as possible - **maintainable**
    - Not showing outsiders any more than they need to know (access modifiers)
        - **Loosely couples** your system; makes system more **flexible**

Encapsulation

- Access modifiers help us encapsulate



```
public int Property { get; set; }         //public set
public int Property { get; }              //readonly set w/in constructor
public int Property { get; private set; } //private set
```

- Read-only Properties
  - Value can *only* be set by the object in its constructor
  - After that, the value cannot change
- How can we better encapsulate the Card class?
  - Which properties should be set only when the card is created?
  - Which properties should be set only by the Card class itself?
  - Which properties should be freely available to be set by the public?

Static

- Member belongs to the class/type, *not* to individual object instances
  - "Class variable or method" vs. "instance variable or method"
- Property or field
  - The data is stored once, regardless of how many instances there are
  - "Shared" by all instances
  - You don't need an instance (object) to access the property
    - Console.ForegroundColor
    - DateTime.Now
- Method
  - You don't need an instance (object) to access the method
    - Console.Writeline
    - Math.Round
- Class
  - Only has static members; cannot be created (new'd)

Lecture Code Goals

- Card
  - Properly encapsulate the Card class
  - Add Suit Symbols
    - https://unicode-table.com/en/#control-character
    - Console.OutputEncoding = System.Text.Encoding.UTF8;
  - Does each instance of a card need a copy of the lookup tables? Can they all share one copy?
    - Then let's make them *static*
- Deck
  - Create a Deck class to represent a standard deck of cards
  - How should we encapsulate the members of the Deck?
- Program
  - Deal a hand to each of 2 players
  - Print out the two hands