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C# Coding Standards and Naming Conventions

Below are our **C# coding standards**, naming conventions, and best practices. Use these in your own projects and/or adjust these to your own needs.

1. Naming Conventions and Style

do use **PascalCasing** for class names and method names.

```
public class ClientActivity
{
    public void ClearStatistics()
    {
        //...
    }
    public void CalculateStatistics()
    {
        //...
    }
}
```

Why: consistent with the Microsoft's .NET Framework and easy to read.

do use **camelCasing** for method arguments and local variables.

```
public class UserLog
{
    public void Add(LogEvent logEvent)
    {
        int itemCount = logEvent.Items.Count;
        // ...
    }
}
```

Why: consistent with the Microsoft's .NET Framework and easy to read.

do not use **Hungarian** notation or any other type identification in identifiers

```
// Correct
int counter;
string name;

// Avoid
int iCounter;
string strName;
```

Why: consistent with the Microsoft's .NET Framework and Visual Studio IDE makes determining types very easy (via tooltips). In general you want to avoid type indicators in any identifier.

do not use **Screaming Caps** for constants or readonly variables

```
// Correct
public static const string ShippingType = "DropShip";

// Avoid
public static const string SHIPPINGTYPE = "DropShip";
```

Why: consistent with the Microsoft's .NET Framework. Caps grap too much attention.

---

avoid using **Abbreviations**. Exceptions: abbreviations commonly used as names, such as **Id, Xml, Ftp, Uri**

```
// Correct
UserGroup userGroup;
Assignment employeeAssignment;

// Avoid
UserGroup usrGrp;
Assignment empAssignment;

// Exceptions
CustomerId customerId;
XmlDocument xmlDocument;
FtpHelper ftpHelper;
UriPart uriPart;
```

Why: consistent with the Microsoft's .NET Framework and prevents inconsistent abbreviations.

---

do use **PascalCasing** for abbreviations 3 characters or more (2 chars are both uppercase)

```
HtmlHelper htmlHelper;
FtpTransfer ftpTranfer;
UIControl uiControl;
```

Why: consistent with the Microsoft's .NET Framework. Caps would grap visually too much attention.

---

do not use **Underscores** in identifiers. Exception: you can prefix private static variables with an underscore.

```
// Correct
public DateTime clientAppointment;
public TimeSpan timeLeft;

// Avoid
public DateTime client_Appointment;
public TimeSpan time_Left;

// Exception
private DateTime _registrationDate;
```

Why: consistent with the Microsoft's .NET Framework and makes code more natural to read (without 'slur'). Also avoids underline stress (inability to see underline).

---

do use **predefined type names** instead of system type names like Int16, Single, UInt64, etc

```
// Correct
string firstName;
int lastIndex;
bool isSaved;

// Avoid
String firstName;
Int32 lastIndex;
Boolean isSaved;
```

Why: consistent with the Microsoft's .NET Framework and makes code more natural to read.

---

do use implicit type **var** for local variable declarations. Exception: primitive types (int, string, double, etc) use predefined names.

```
var stream = File.Create(path);
var customers = new Dictionary<int?, Customer>();

// Exceptions
int index = 100;
string timeSheet;
bool isCompleted;
```

Why: removes clutter, particularly with complex generic types. Type is easily detected with Visual Studio tooltips.

---

do use noun or noun phrases to name a class.

```
public class Employee
{
}
public class BusinessLocation
{
}
public class DocumentCollection
{
}
```

Why: consistent with the Microsoft's .NET Framework and easy to remember.

---

do prefix interfaces with the letter `I`. Interface names are noun (phrases) or adjectives.

```
public interface IShape
{
}
public interface IShapeCollection
{
}
public interface IGroupable
{
}
```

Why: consistent with the Microsoft's .NET Framework.

---

do name source files according to their main classes. Exception: file names with partial classes reflect their source or purpose, e.g. designer, generated, etc.

```
// Located in Task.cs
public partial class Task
{
    //...
}

// Located in Task.generated.cs
public partial class Task
{
    //...
}
```

Why: consistent with the Microsoft practices. Files are alphabetically sorted and partial classes remain adjacent.

---

do organize namespaces with a clearly defined structure

```
// Examples
namespace Company.Product.Module.SubModule
namespace Product.Module.Component
namespace Product.Layer.Module.Group
```

Why: consistent with the Microsoft's .NET Framework. Maintains good organization of your code base.

---

do vertically align curly brackets.

```
// Correct
class Program
{
    static void Main(string[] args)
    {
    }
}
```

Why: Microsoft has a different standard, but developers have overwhelmingly preferred vertically aligned brackets.

---

do declare all member variables at the top of a class, with static variables at the very top.

```
// Correct
public class Account
{
    public static string BankName;
    public static decimal Reserves;

    public string Number {get; set;}
    public DateTime DateOpened {get; set;}
    public DateTime DateClosed {get; set;}
    public decimal Balance {get; set;}

    // Constructor
    public Account()
    {
        // ...
    }
}
```

Why: generally accepted practice that prevents the need to hunt for variable declarations.

---

do use singular names for enums. Exception: bit field enums.

```
// Correct
public enum Color
{
    Red,
    Green,
    Blue,
    Yellow,
    Magenta,
    Cyan
}

// Exception
[Flags]
public enum Dockings
{
    None = 0,
    Top = 1,
    Right = 2,
    Bottom = 4,
    Left = 8
}
```

Why: consistent with the Microsoft's .NET Framework and makes the code more natural to read.

Plural flags because enum can hold multiple values (using bitwise 'OR').

---

do not explicitly specify a type of an enum or values of enums (except bit fields)

```
// Don't
public enum Direction : long
{
    North = 1,
    East = 2,
    South = 3,
    West = 4
}

// Correct
public enum Direction
{
    North,
    East,
    South,
    West
}
```

Why: can create confusion when relying on actual types and values.

---

do not suffix enum names with Enum

```
// Don't
public enum CoinEnum
{
    Penny,
    Nickel,
    Dime,
    Quarter,
    Dollar
}

// Correct
public enum Coin
{
    Penny,
    Nickel,
    Dime,
    Quarter,
    Dollar
}
```

Why: consistent with the Microsoft's .NET Framework and consistent with prior rule of no type indicators in identifiers.

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