Software Development Techniques

Lecture 3.1

Loose Ends

- We have a class with a private member
- If we try to access this member on the instance, we will ALWAYS get an error

```
static void Main(string[] args)
{
    MyClass mc = new MyClass();
    mc.name = "Igor";
}
```

```
class MyClass
{
    private string name;
    0 references
    public string Name
    {
        get
        {
            return name;
        }
        set
        {
            name = value;
        }
    }

}
```

- We can only access PUBLIC members of the class
- Default access modifier is PRIVATE

Use of Namespace

- If all of our classes belong to the same namespace, we can access a class (instantiate) from any other class
- If class belongs to another namespace, in order to be accessed we need to add PUBLIC access modifier to a class and use ‘using <namespace> at the point of access

```
namespace ConsoleApp2
{
    2 references
    class MyClass
    {
```

```
namespace ConsoleApp2
{
    0 references
    class Program
    {
        0 references
        static void Main(string[] args)
        {
            MyClass mc = new MyClass();
```

```
namespace MyNamespace
{
    0 references
    public class MyClass
    {
```

```
using MyNamespace;

namespace ConsoleApp2
{
    0 references
    class Program
    {
        0 references
        static void Main(string[] args)
        {
            MyClass mc = new MyClass();
```

Arrays

- Arrays are indexed groups of the uniform elements
- Array needs to be defined using ‘new’ keyword

```
int[] myArray = new int[5];
```

- Array can be instantiated using an integer variable

```
int a = 25;
int[] myArray = new int[a];
```

- All arrays in C# are zero-based

Instantiating Arrays

- Array can be instantiated implicitly
- Array can also be instantiated explicitly
- Note, that elements of the array are accessed using []

```
int[] myArray = { 1, 2, 3 };
```

```
int[] myArray = new int[5];
for(int i = 0; i < myArray.Length; i++)
{
    myArray[i] = i;
}
```

Accessing Array Elements

- You can access elements of the array using [index]

```
for(int i = 0; i < myArray.Length; i++)
{
    Console.WriteLine(myArray[i]);
}
```

- You can also iterate through array using foreach loop

```
foreach(int el in myArray)
{
    Console.WriteLine(el);
}
```

Using Strings and Characters

- String is a collection of characters
- String can be defined and instantiated

```
string s = string.Empty;
s = "abcde";
```

```
string s = "xyz";
```

- We can access string as a whole. It is NOT a character array
- Character ‘char’ is a value type, which represents a single character

```
char c = 'A';
```

- Note that char has single quotes and string has double quotes

Splitting String into Chars

- If you need to treat string as an array, you must convert it into array of char
- If you need to manipulate array and then put it back into string, you must do the following

```
string s = "xyz";
char[] charArray = s.ToCharArray();
Console.WriteLine(charArray[1]);
```

```
string s = "xyz";
char[] charArray = s.ToCharArray();
string z = new string(charArray);
```

Major string methods

- Substring() – extracts the portion of the string starting from specified element to the defined length
- Split() – splits string into substrings using delimiter
- ToLower(), ToUpper() change the case of the characters in the string

Lab Task

- The tourist agency needs to assemble a group of people for a trip (you ask how many in group)
- For each person it records a name in one string ‘Joe Smith’, city of origin and passport number in the form ‘CA123456’ (different for each one), number of bags and total weight of luggage
- You must be able to get the information interactively (for each person) and assemble it into array

Lab Task (Cont'd)

- During the entry (in the properties of the tourist class) you must check the format of the passport using Char.IsDigit() and Char.IsLetter() methods
- After the group is finished you must report all people using First Name (split the name), passport number with first three numbers substituted with XXX and number of bags they travel with