Day2

Method Overloading

- When you define a set of methods with same name but with different number or type of parameters, the method is said to be overloaded.

Static Members

Static Members

- Static members must be invoked directly from the class level, rather than from using object reference

Static Members

- static keyword can be applied to the following:
- Data of a class
- Methods of a class
- Properties of a class
- Constructor
- The entire class definition

Static Data Field vs Instance Data Field

- When you define instance-level data, each object maintains its own independent copy of the data.
- In contrast, when you define static data of a class, the memory is shared by all objects of the class.

Static Methods

- Static methods can access only the static elements of the class

Static Constructor

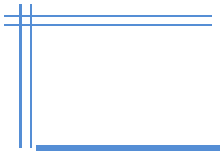
- Static constructor will be called
  - either before the first object of the class created.
  - Before the first access of the static elements of a class
- Static constructor will execute only once for a class.
- Is the ideal place to initialize static members of a class with a value not known at the time of writing the program

Rules for defining static constructor

- A given class may define only a single static constructor.
- In other words, the static constructor cannot be overloaded.
- A static constructor does not take an access modifier and cannot take any parameters.
- A static constructor executes exactly one time, regardless of how many objects of the type are created.
- The runtime invokes the static constructor when it creates an instance of the class or before accessing the first static member invoked by the caller.
- The static constructor executes before any instance-level constructors.

Defining Static Classes

- When a class has been defined as static, it is not creatable using the new keyword,
- and it can contain only members or data fields marked with the static keyword.



Local Functions & Static Local Functions

Local Functions

- A local function is a function declared inside another function
- It is a private function
- Overloading not allowed for local functions
- Local functions are used for code reuse that is not exposed outside of where it is needed.

Static Local Functions

- Static Local Functions are local functions declared with static keyword
- Static local function is used in order to avoid a serious limitation of local functions.
- Local functions can access/modify the data of its parent function where as static local function cannot do that.

Access Specifier

Access Specifier	Description
Public	No Restriction. Can be accessed from anywhere
Private	Private items can be accessed only by the class (or structure) that defines the item.
Protected	Protected items can be used by the class that defines it and any child class. They cannot be accessed from outside the inheritance chain.
Internal	Accessible only from the current assembly

By default, members of a class are implicitly private, while classes are implicitly internal.

Inheritance

Inheritance

- Inheritance creates new classes by taking functionality from existing classes.
- In C# colon(:) symbol is used to separate parent class from child class.
- One class can have only one base class.

Inheritance – defining constructors – base keyword

- Child class constructor whenever called, will implicitly call the parent classes's parameter less constructor.
- An explicit call to the parent class constructor can be made by using base keyword in child class constructor header.

virtual and override Keywords

override

- for a subclass to define its own version of a method defined by its base class, using the process termed method overriding.
- When a subclass wants to change the implementation details of a virtual method, it does so using the override keyword.

virtual

- If a base class wants to define a method that may be (but does not have to be) overridden by a subclass, it must mark the method with the virtual keyword.
- These methods are called as virtual methods

Sealed methods

- Sealed keyword can be used in an overriden method in a child class to prevent its further overriding in the inheritance chain.

Hiding/ Shadowing

- Is just the opposite of overriding
- If a child class contains a member that is identical to a member defined in a base class, the derived class has shadowed/hided the parent's version.
- You can use **new** keyword to explicitly declare that this member is hiding similar element from the parent.
- You can also apply the new keyword to any member type inherited from a base class (data member, method , constant, static member, or property).