

What is Copy Constructor

A **Copy Constructor** is a special type of constructor that is used to create a new object by copying the values of another object of the same class.

?Why do we use Copy Constructor

- To create an exact copy of an existing object
- To avoid sharing the same reference between objects
- To control how object data is duplicated

:(#Example (C

```
class Person
{
    ;public string Name
    ;public int Age

    Copy Constructor //
    (public Person(Person other
    {
        ;Name = other.Name
        ;Age = other.Age
    }
}
```

:Business Use Case

- Cloning objects in applications
- Creating backup or snapshot of data
- Undo / Redo functionality
- Passing objects safely between layers

What is Indexer

. [] An **Indexer** allows an object to be accessed like an array using square brackets.

:Example

```
class Students
{
    ;[private string[]] names = new string[5]
```

```

        [public string this[int index
        }
        { ;get { return names[index
        { ;set { names[index] = value
        {
        {

```

:Usage

```

;()Students s = new Students
        ;s[0] = "Ayman
;([Console.WriteLine(s[0

```

:Business Use Cases

- Custom collections •
- Permission systems •
- ["permissions["Admin
- Pricing systems •
- ["prices["USD
- Configuration settings •
- Cache management •

(Keywords Summary (Last Lecture

- Class:** Blueprint used to create objects •
- Object:** Instance of a class •
- Constructor:** Initializes object data •
- Default Constructor:** Constructor with no parameters •
- Parameterized Constructor:** Constructor with parameters •
- Copy Constructor:** Copies another object •
- Static Constructor:** Executes once per class •
- Indexer:** Access object like array •
- this keyword:** Refers to current object •
- Encapsulation:** Protecting data using access modifiers •
- Value Type:** Stored in Stack •
- Reference Type:** Stored in Heap •