**Do Factory Prototype Design Pattern**

**Notes:-**

**1-Specify the kind of objects to create using a prototypical instance, and create new objects by copying this prototype (usage medium)**

**2-we will use MemberwiseClone that apply shallow copy**

**namespace DoFactoryProtoType02.Interfaces{**

**public interface IColorPrototype{public IColorPrototype Clone();}}**

**using DoFactoryProtoType02.Interfaces;**

**using System;**

**namespace DoFactoryProtoType02.Models{**

**public class Color : IColorPrototype{**

**public int \_red;**

**public int \_green;**

**public int \_blue;**

**// Constructor**

**public Color(int red, int green, int blue){**

**this.\_red = red;**

**this.\_green = green;**

**this.\_blue = blue;}**

**// Create a shallow copy**

**public IColorPrototype Clone(){**

**Console.WriteLine(**

**"Cloning color RGB: {0,3},{1,3},{2,3}",**

**\_red, \_green, \_blue);**

**//apply shallow copy**

**return this.MemberwiseClone() as IColorPrototype;}}}**

**using DoFactoryProtoType02.Interfaces;**

**using System.Collections.Generic;**

**namespace DoFactoryProtoType02.Models{**

**public class ColorManager{**

**private Dictionary<string, IColorPrototype> \_colors = new Dictionary<string, IColorPrototype>();**

**//We apply indexer to store the key , value IColorProtoType and apply Clone**

**// Indexer**

**public IColorPrototype this[string key]{**

**get { return \_colors[key]; }**

**set { \_colors.Add(key, value); }}}**

**using DoFactoryProtoType02.Models;**

**using System;**

**namespace DoFactoryProtoType02{**

**class Program{**

**static void Main(string[] args){**

**ColorManager colormanager = new ColorManager();**

**// Initialize with standard colors**

**colormanager["red"] = new Color(255, 0, 0);**

**colormanager["green"] = new Color(0, 255, 0);**

**colormanager["blue"] = new Color(0, 0, 255);**

**// User adds personalized colors**

**colormanager["angry"] = new Color(255, 54, 0);**

**colormanager["peace"] = new Color(128, 211, 128);**

**colormanager["flame"] = new Color(211, 34, 20);**

**// User clones selected colors**

**Color color1 = colormanager["red"].Clone() as Color;**

**Color color2 = colormanager["peace"].Clone() as Color;**

**Color color3 = colormanager["flame"].Clone() as Color;**

**color1.\_blue = 222;**

**// Wait for user**

**Console.ReadKey();}}}**