Aim: Implementing the factory method pattern using design patterns and principles.

Program:

namespace Factory.NetOptimized;

using static System.Console;

/// <summary>

/// Factory Design Pattern

/// </summary>

public class Program

{

public static void Main()

{

// Document constructors call Factory Method

List<Document> documents = [new Resume(), new Report()];

// Display document pages

foreach (var document in documents)

{

document.CreatePages(); // Factory method

WriteLine($"{document} --");

foreach (var page in document.Pages) WriteLine($" {page}");

WriteLine();

}

// Wait for user

ReadKey();

}

}

/// <summary>

/// The 'Product' abstract class

/// </summary>

public abstract class Page

{

// Override. Display class name

public override string ToString() => GetType().Name;

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class SkillsPage : Page

{

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class EducationPage : Page

{

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class ExperiencePage : Page

{

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class IntroductionPage : Page

{

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class ResultsPage : Page

{

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class ConclusionPage : Page

{

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class SummaryPage : Page

{

}

/// <summary>

/// A 'ConcreteProduct' class

/// </summary>

public class BibliographyPage : Page

{

}

/// <summary>

/// The 'Creator' abstract class

/// </summary>

public abstract class Document

{

// Gets list of document pages

public List<Page> Pages { get; protected set; } = null!;

// Factory Method

public abstract void CreatePages();

// Override

public override string ToString() => GetType().Name;

}

/// <summary>

/// A 'ConcreteCreator' class

/// </summary>

public class Resume : Document

{

// Factory Method implementation

public override void CreatePages()

{

Pages =

[

new SkillsPage(),

new EducationPage(),

new ExperiencePage()

];

}

}

/// <summary>

/// A 'ConcreteCreator' class

/// </summary>

public class Report : Document

{

// Factory Method implementation

public override void CreatePages()

{

Pages =

[

new IntroductionPage(),

new ResultsPage(),

new ConclusionPage(),

new SummaryPage(),

new BibliographyPage()

];

}

}

Output:

