

Exercise 1: The UI Placeholder

Scenario: You are displaying a username in a header. If the `userName` string is null, you want to show "Guest."

- **Task:** Use the `??` operator to assign the value to `displayName`.
- **Starting Code:**

C#



```
string userName = null;  
// string displayName = ...
```

Exercise 2: Object Property Guard

Scenario: You have a `WebPage` object that contains a `MetaData` object. You want to retrieve the `Title` from the metadata.

- **Task:** Use the Null-Conditional (`?.`) and Null-Coalescing (`??`) operators to get the title. If the `MetaData` or the `Title` is null, fall back to "Default Page".
- **Starting Code:**

C#



```
public class MetaData { public string Title { get; set; } }  
public class WebPage { public MetaData PageInfo { get; set; } }  
  
WebPage myPage = new WebPage(); // PageInfo is currently null  
// string currentTitle = ...
```

Exercise 3: Ensuring a Collection Exists

Scenario: You are writing a method to add a tag to an article. The Tags list might not have been initialized yet.

- **Task:** Use the `??=` operator to initialize the Tags list only if it is currently null, then add the new tag.
- **Starting Code:**

C#



```
public class Article {  
    public List<string> Tags { get; set; }  
}  
  
Article myArticle = new Article();  
string newTag = "CSharp";  
  
// Use ??= here to ensure Tags isn't null  
// myArticle.Tags.Add(newTag);
```

Exercise 4: Configuration Fallbacks

Scenario: Your app looks for a connection string. It should check `envVariable` first. If that's null, check `appSettings`. If that's also null, use "LocalDB".

- **Task:** Chain the `??` operator to check three levels of data.
- **Starting Code:**

C#



```
string envVariable = null;  
string appSettings = null;  
// string connectionString = ...
```

Exercise 5: Method Return Safety

Scenario: You have a method `GetDescription()` that might return a null string. You want to print the result in Uppercase.

- **Task:** Use the `??` operator to provide an empty string `""` as a fallback so that `.ToUpper()` never throws a `NullReferenceException`.
- **Starting Code:**

C#



```
string description = GetDescription(); // This returns null

// Use ?? to ensure you can safely call .ToUpper()
// string shoutyDescription = ...
```