[Course Overview](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live" \t "psplayer)

[Course Overview](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live)

[Hi everyone. My name is David Starr, and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=4.81) [welcome to my course, C# Design Patterns:](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=7.38) [The Null Object, one in a series of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=10.225) [patterns courses. Why would you want to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=13.58) [learn this pattern? Well, because with](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=16.34) [this pattern, you can stop writing null](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=18.62) [checks. That's right, you heard me. Right](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=20.64) [far fewer null checks and do so safely.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=23.24) [I'm a Principal Cloud Architect at](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=27.69) [Microsoft and have been a strong and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=29.42) [consistent supporter of using design](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=31.42) [patterns where they make sense. I've been](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=33.35) [teaching design patterns at various levels](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=35.88) [for several years. You can find me on](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=38.26) [Twitter @ElegantCoder. This course is](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=40.77) [going to teach you the Null Object design](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=43.24) [pattern, when to use it, and how to do so](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=45.63) [appropriately. Some of the major topics](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=48.23) [we'll cover include the origins of null.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=50.91) [Null checks are often all over our code](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=52.715) [base. Writing null checks is now a habit](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=56.24) [with full IDE support. And finally, we'll](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=59.09) [see how to eliminate the need for null](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=62.09) [checks using this pattern. By the end of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=63.97) [this course, you'll have seen the Null](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=66.89) [Object in practice. And before the course,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=68.8) [you should be familiar with basic C# or](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=71.82) [some other object‑oriented language. From](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=74.89) [here, you should feel comfortable diving](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=77.65) [in to other C# Design Pattern courses. And](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=79.5) [I hope you'll join me on this journey to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=82.85) [learn the Null Object design pattern with the C# Patterns course, at Pluralsight.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=d1387f1a-8f30-4a0d-b4d0-d093e09cefc9&clip=0&mode=live&start=84.99)

[Introduction](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live)

[Overview](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live)

[Hello, this is David Starr, and I've been](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=2.3) [running software for more years than I](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=4.25) [care to admit. One thing I've found is](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=6.06) [design patterns. They're helpful when](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=8.66) [talking with other developers about a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=10.91) [solution and in solving problems I see in](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=12.41) [code again and again. A design pattern is](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=14.74) [essentially a known solution to a commonly](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=18.42) [recurring problem. In this short course,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=21.07) [we're going to look at the null object](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=23.66) [design pattern and see how it can improve](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=25.44) [the code we write. First, we're going to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=28.65) [start with the origins of null. Where did](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=32.72) [this irritating little bit of nothingness](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=34.8) [come from? And then look at the problem](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=36.55) [that we're going to try and solve around](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=38.64) [null. Now it may just seem an irritant,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=40.405) [but it can have severe implications, and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=42.575) [we're going to introduce the null object](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=45.97) [pattern as a way to deal with nulls and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=48.1) [see how that pattern helps us resolve some](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=50.63) [of the problems in question. And then](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=53.43) [finally, using null objects in practice](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=55.55) [will let us see the null object pattern working in live code, of course,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=0&mode=live&start=58.44)

[Meet the Null Object Pattern](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live)

[To even talk about nulls, we need to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=1.98) [introduce Sir Tony Hoare, a very](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=3.79) [accomplished computer scientist whose](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=6.68) [contributions to the field are legendary.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=8.62) [He's renowned for his invention of the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=11.5) [Quicksort algorithm, but he contributed](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=13.5) [far more to computer science, like the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=15.88) [addition of multiple languages. He created](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=18.29) [the null reference in 1965. It was during](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=21.65) [this activity of creating new languages](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=25.72) [that he decided to expose a location of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=27.96) [null memory to the programmer, and the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=30.41) [null reference was born. He refers to this](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=33.33) [as his billion‑dollar mistake, referencing](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=37.01) [the amount of money lost debugging,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=39.82) [finding, and fixing null reference issues,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=42.4) [costing staggering amounts of time and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=45.38) [money. So what do nulls do to our code](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=47.55) [today? How many times do we write this](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=51.61) [code, particularly in view constructors](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=53.91) [for web applications, for example, or in](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=56.47) [controllers? A null check is practically a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=58.79) [requirement when accepting nullable](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=61.53) [arguments into functions or constructors](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=63.22) [like this. Each null check increases a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=65.32) [measure known a cyclomatic complexity,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=68.37) [which is simply a measure of the number of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=71.24) [logical branches in your code. Bigger](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=73.75) [numbers are bad. At this point, we've got](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=76.09) [a cyclomatic complexity score of 2, and we](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=78.71) [haven't even written anything useful yet.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=81.4) [And how many times have we done this and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=83.94) [seen it in our code? We have to be](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=86.55) [careful, right? What if an object property](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=88.24) [we depend on is null? What's our](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=90.53) [cyclomatic complexity score now? I'll](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=93.3) [leave that to the viewer to research for](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=95.81) [fun, but it's clear that our code](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=97.56) [complexity is rising, and we haven't even](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=99.45) [written anything truly useful yet. The](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=101.85) [program calling Person.Render may not know](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=105.18) [that the Person object needed for](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=108.61) [rendering has not been initialized. This](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=110.11) [is a recipe for a null reference exception](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=113.16) [to be thrown by the PersonView class or to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=116.01) [implement some other horrific workaround.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=120.16) [But what if there were a default](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=123.44) [implementation of the Person class? Let's](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=125) [call it NullPerson, and it was always used](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=127.66) [in place of a null person value instead of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=130.53) [letting that value be null within the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=133.69) [PersonView. In other words, PersonView can](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=135.93) [use the NullPerson type in its render](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=138.97) [method and not worry about getting a null](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=141.7) [reference exception. One way to implement](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=144.13) [a NullPerson is shown here through](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=146.83) [inheritance. Another way to structure the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=149.03) [NullPerson would be for it to implement a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=153.69) [common interface used by the Person class.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=156.53) [The NullPerson would just provide a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=158.865) [default implementation. Let's see this in](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=161.31) [a little code. Using the interface method](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=163.96) [of creating a NullPerson object just means](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=167.95) [that we're essentially going to return](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=170.33) [some default values that will not cause](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=172) [the null reference exception when it's](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=174.57) [referenced in code. The First and LastName](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=176.93) [properties will always return something.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=179.76) [In this case, my name. This is why every](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=181.435) [time I think of a null object pattern, it](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=184.98) [makes me think it might instead be named](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=187.01) [default object pattern. Nevertheless,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=189.43) [having the null object to use is only the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=192.54) [first part of the story. The real goodness](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=194.91) [happens when our recipient of a person](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=198.77) [type can always depend on the person being](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=202.12) [non‑null. Now we don't need to perform any](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=205.57) [null checks, our code complexity score](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=208.71) [drops, our code comprehension increases,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=211.31) [fewer lines of code are needed. Nirvana, right?](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=1&mode=live&start=213.775)

[The Null Object Pattern in Code](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live)

[Let's make this a little more tangible.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=1.06) [The proof is in the pudding, so let's see](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=3.39) [null objects in action in real code. What](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=6.06) [we have here is an emulation of a typical](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=9.6) [MVC style pattern that you might see in a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=13.03) [website. In our case, however, the views](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=15.81) [are not going to create web pages. They're](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=18.72) [just going to print straight out to the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=20.58) [command line. Also, our scenario is simply](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=23.1) [that we have a learner browsing the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=26.63) [Pluralsight website, and we want to get](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=29.92) [information about that learner so we can](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=32.53) [render information about them in the top](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=34.84) [right‑hand corner where one would normally](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=37.92) [click to get more information about their](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=40.32) [account. We start by instantiating a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=42.25) [LearnerService, and then on that](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=45.42) [LearnerService we call GetCurrentLearner.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=47.6) [We take that learner, pass it into our](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=51.04) [LernerView, and then ask that view to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=53.69) [render. It's that simple. Let's go ahead](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=56.37) [and run it just to see what happens. Well,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=59.14) [it ran really quickly, and we see that the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=62.59) [User Name is David and the Courses](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=64.94) [Completed is 83. Now, how did all that](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=68.01) [come together? Let's first come up and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=71.66) [look at what a learner is. Notice that](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=74.62) [this Learner type is implementing the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=78.99) [ILearner interface. It does have a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=81.84) [constructor, which takes an Id, UserName,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=85.13) [and the number of courses this particular](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=88.055) [user has completed, and it makes those](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=90.39) [available via properties on the class.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=92.93) [Let's have a look at the LearnerView.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=95.41) [Remember that the LearnerView takes as its](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=99.2) [constructor argument a learner. And what's](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=102.49) [it going to do? Of course, we're going to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=105.87) [check right away for nulls. We're going to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=107.94) [check if the learner herself is null or if](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=111.08) [her username is null. Wouldn't it be great](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=114.83) [if we didn't have to do that? Finally,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=118.06) [let's look at the LearnerService. The](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=120.68) [LearnerService has some comments that I'm](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=123.15) [using to represent code that would](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=125.75) [normally go out maybe to a JWT token and](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=128.23) [look a claim that has the user ID in it or](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=131.36) [by some other means look up the ID of the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=134.88) [learner. In our case right now, the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=138.28) [learnerId is 1. And that was David, as we](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=141.26) [saw earlier down at the bottom of the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=144.62) [screen when we ran our code. The learner](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=146.32) [is calling GetLearner with the ID number](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=149.37) [from a repository. If that learner is](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=152.44) [null, it throws a NullReferenceException.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=155.89) [So we've got three places in our code](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=158.21) [where we're throwing](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=160.07) [NullReferenceExceptions, and rightly so](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=160.81) [using our standard programming models.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=163.29) [Let's go ahead and close this and look at](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=165.94) [our repo. Our repo is simply an internal](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=168.57) [class that builds up some learners in](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=172.27) [memory and allows us to retrieve them by](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=176.21) [passing in the right ID. If a learner](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=179.92) [exists, then we're going to return that](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=182.87) [learner. If that learner does not exist,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=185.38) [your repository call returns null. Now,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=188.41) [what happens when we change our learnerId](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=192.23) [to 2? Let's run that, and we can see that](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=194.55) [Julie has completed 72 courses. If the ID](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=199.54) [is 3, we're going to see that Scott has](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=203.22) [created 92 courses. But what if we've just](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=207.66) [got someone browsing the site who's not](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=212.24) [yet logged in? The lookup for the ID](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=214.54) [might, in this case, return a ‑1. And when](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=217.855) [we run with that ‑1, we're going to get a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=221.63) [NullReferenceException, as one would](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=224.48) [imagine. So we can see that on our](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=226.92) [LearnerService class right here where the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=230.2) [exception is being thrown. So what might](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=233.77) [we do instead? Well, what if we had a null](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=236.43) [object to return instead of throwing that](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=239.78) [NullReferenceException? Let's create one.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=243.39) [Let's come up here to our ILearner](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=246.14) [interface and implement that interface](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=248.03) [with a new derived type that we'll refer](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=250.41) [to as NullLearner, which is a standard](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=252.85) [convention for this pattern. We can then](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=255.64) [come over to ILerner and implement the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=258.67) [missing members. We'll take all of them](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=261.49) [for our ID. Of course, we're going to](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=265.42) [always return ‑1. For UserName, we're](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=268.6) [going to return something very](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=272.32) [identifiable. Let's call it Just Browsing.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=274.38) [And then finally, for CoursesCompleted,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=282.51) [since we don't know who this is, of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=285.58) [course, the answer here is 0. Let's take](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=287.99) [our NullLearner class and move it to its](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=291.94) [own file. By convention, perfect. Now](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=297.42) [let's head back over to our](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=302.05) [LearnerService, and instead of throwing](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=303.89) [this null exception, we can return an](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=307.3) [instance of our new NullLearner type. And](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=311.69) [in theory, we'll be able to go over to our](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=316.88) [LearnerView, which receives this learner](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=319.52) [and take out the null checks. Let's see](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=322.16) [what happens when we run this code. We can](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=327.01) [see down below that the User Name is Just](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=330.14) [Browsing and Courses Completed is 0. This](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=332.94) [means that we got our null object back by](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=335.62) [default from our LearnerService. This is a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=337.86) [very simple and standard implementation of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=341.29) [a null object pattern. And you may be able](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=344.79) [to see by this time why I tend to think of](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=347.64) [this as a default object pattern. But](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=350.6) [again, nevertheless, null object pattern](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=354.7) [is the name, and people will know what you're talking about when you use it.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=2&mode=live&start=357.5)

[Summary](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live)

[In this course, we looked at several](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=0.98) [concepts. Use null object to avoid null](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=2.46) [checks. This simplifies our code, makes it](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=5.76) [easier to read and write, and decreases](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=8.43) [complexity. Returned object is not null,](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=10.65) [meaning when we ask for something, we can](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=14.89) [be sure that what we're getting back isn't](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=17.35) [null. Use interface or inheritance as](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=19.83) [appropriate, or use one over the other as](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=22.97) [you prefer. Both techniques will typically](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=25.57) [give you the same outcome. Using the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=28.04) [interface technique as we did in our code](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=30.26) [simply means that our code depth is](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=33.05) [shallower, thus less complex to read. And](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=35.035) [we get cleaner code, which is always a](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=38.29) [good thing. Thank you for exploring the](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=40.42) [null object pattern with me. I hope it](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=42.84) [helps you as it has for me in writing cleaner, more concise code.](https://app.pluralsight.com/player?course=csharp-design-patterns-null-object&author=david-starr&name=f667633c-61f0-4603-afda-4292fb67564e&clip=3&mode=live&start=44.91)