[Course Overview](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live)

[[Autogenerated] everyone. My name is Steve](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=5.44) [Smith, a k r. Dallas and welcome to my](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=7.03) [course C Sharp designed patterns. Proxy.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=9.59) [I'm an experienced dot net developer,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=13.37) [architect and trainer. My on site and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=15.13) [remote workshops, as well as my plural](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=17.91) [site courses, have helped thousands of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=19.87) [developers and teams to write better code](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=21.68) [faster. You'll find me online under the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=23.63) [name Our Dallas. Design patterns have](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=26.44) [fascinated me for years. They're like](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=29.43) [individual tools you can add to your tool.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=31.61) [Kit is a software developer they don't](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=33.44) [take long to introduce, but they could](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=35.69) [take a lot of practice to master. In this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=37.34) [course, we're going to explore the proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=40.14) [design pattern, one of my favorites for](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=42.33) [its overall usefulness. Some of the major](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=44.52) [topics that we will cover include What](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=47.28) [problem is the proxy pattern meant to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=49.93) [solve what software design principles](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=51.71) [apply to this pattern? How can you apply](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=54.68) [the proxy pattern in four specific ways in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=57.34) [your applications? And what other design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=60.23) [patterns are similar to this one? By the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=62.95) [end of this course, you'll be able to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=66.77) [recognize situations where the proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=68.22) [pattern makes sense and be able to apply](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=70.15) [it with confidence. I hope you'll join me](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=72.48) [and learning about the proxy design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=75.29) [pattern for C Sharp, and I hope you'll](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=76.78) [continue exploring other design patterns as well here on plural site.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=c1a31eeb-f984-491a-b28b-2fbf2a9c7243&clip=0&mode=live&start=78.8)

[Applying the Proxy Pattern](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live)

[[Autogenerated] Hi there. I'm Steve Smith,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=0.74) [a k a r Dallas. You confined me online at](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=2.44) [our Dallas dot com or at our Dallas on](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=5.28) [various social media networks and YouTube.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=7.88) [I also record short developer tips on my](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=10.62) [podcast weekly deaf tips dot com. In this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=13.02) [short course, we're going to introduce and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=16.37) [learn to apply the proxy design pattern in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=18.63) [C sharp. The proxy pattern is very useful](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=21.16) [and commonly used in a wide variety of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=24.52) [contexts. Once you're done with this short](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=26.63) [course, you'll be ready to start using](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=29.45) [proxies appropriately in your own](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=31.34) [applications. Let's get started first.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=33.35) [Let's talk about what problems does the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=39.17) [proxy pattern solve. Next, you'll see how](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=41.39) [it's structured and how it fits into your](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=45.12) [existing code base. Then you'll see how to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=47.51) [apply the pattern in real code through a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=51.08) [number of examples. When you're done,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=53.73) [you'll also be able to recognize several](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=57.1) [related patterns and some underlying](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=59.19) [principles that relate to the proxy design pattern](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=0&mode=live&start=61.47)

[Problem](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live)

[[Autogenerated] The first thing you need](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=0.44) [to understand is the problem that the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=1.41) [proxy design pattern is designed to solve,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=2.93) [which is that you need to control access](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=5.71) [to a type for performance security. For](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=8.7) [other reasons. The proxy design pattern is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=11.83) [all about controlling access to another](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=15.31) [instance. Let's look at a real world](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=18.34) [example of using proxies. One of my](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=21.8) [hobbies happens to be beekeeping, so let's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=24.64) [use that for our example. Imagine that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=27.24) [someone wants to buy honey. The direct way](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=30.09) [to get honey is to go to a beehive full of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=33.68) [honey bees. Since honey bees produce](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=36.73) [honey, however, those honey bees give me](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=39.21) [somewhat protective of their honey instead](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=42.95) [of trying to gain access to the honey](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=46.19) [directly. A better idea is to use a go](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=48) [between in the form of a beekeeper who is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=51.26) [properly trained and equipped to access](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=54.45) [the honey. In this example, the beekeeper](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=57.22) [is acting as a proxy or a surrogate for](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=60.27) [the beehive controlling access and in this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=63.02) [case, protecting both you and the bees](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=65.87) [from one another. Now you need to purchase](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=68.95) [the honey from the Bee Keeper. You select](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=73.03) [the jars of honey you want, and then it's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=76.16) [time to pay. Now you don't have cash on](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=78.94) [hand, so you might write a check. The](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=82.28) [check is a proxy to It's a go between for](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=86.05) [your bank and the Beekeepers Bank, and it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=90.23) [is controlling access to a certain amount](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=93.2) [of funds in your account. The beekeeper](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=95.4) [can use that check to access money from](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=99.43) [your account and move it into their](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=102.04) [account. Because of the nature of that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=104.65) [proxy, it turns out that money itself is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=107.16) [actually just a proxy for value. But](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=110.88) [that's going beyond the scope of what we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=113.2) [can cover in this course. Now let's talk](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=114.7) [about some common software example. An](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=117.71) [application example might be for a user](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=120.12) [interface that loads new content on](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=122.73) [demand. Like many social media](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=125.19) [applications support, this infinite scroll](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=127.21) [behavior may benefit from having a proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=130.28) [to use as a placeholder layout for content](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=133.29) [that hasn't yet been retrieved from a back](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=136.28) [in service. The proxy layout allows the U](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=138.21) [I to render and scroll while the AFT waits](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=141.56) [for the actual data to arrive from across](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=144.39) [the network. In this example, the actual](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=146.52) [image and associated data is expensive. To](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=149.55) [get directly in terms of time, an](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=152.1) [application responsiveness. The proxy is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=154.46) [orders of magnitude faster and thus allows](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=157.92) [for a much smoother user experience.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=160.44) [You've almost certainly used acts with](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=163.24) [this feature in place. Try to imagine for](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=164.88) [a moment how much worse the experience](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=167.39) [would be if every time you scrolled of you](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=169.09) [more content, the APP would simply block](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=171.55) [and hang while it waited to load the next](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=174.04) [individual. You, I item under the covers](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=176.39) [that applications user interface is likely](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=180.32) [written toe work with a proxy for the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=182.95) [actual data that exists somewhere else](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=184.63) [over a network call. In this way, the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=187.11) [client APS user interface code doesn't](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=189.91) [need to know about things like network](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=192.34) [protocols or security, but could just](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=194.07) [focus on getting the data needs to display](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=196.35) [the user interface. When the U I calls the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=198.61) [Twitter grab a book service proxy, it's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=202.37) [the proxies. Jobs know how to connect to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=206.19) [the real data somewhere in this case, by](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=208.4) [making a network call to remote service in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=210.85) [point. Using this pattern helps follow](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=213.2) [separation of concerns, ensuring that the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=215.37) [U. I and the knowledge of the distributed](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=217.86) [nature of the application in its data are](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=220.15) [separated from one another. What would](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=222.84) [this look like without using a proxy.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=225.61) [Let's assume for a moment that back and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=228.58) [service is exposed as some kind of Web A P](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=230.13) [I. Now, any time the user interface code](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=232.53) [needs some data from the server, it will](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=235.31) [need to create an http client, construct a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=237.28) [request making a sink call to an A p i n](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=240.31) [point and then wait for the response and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=243.32) [then make use of the data. If you do that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=245.38) [in more than a few places, it adds a lot](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=247.67) [of coupling to the U I. What happens if](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=249.78) [something changes with that? A. P I What](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=252.71) [if it's no longer using rest, but instead](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=255.01) [is using gr PC or graft you? Well, what if](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=257.4) [it's security protocol changes or your HDB](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=260.91) [library needs to change? What if now](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=263.49) [you're going to store all that data on](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=265.86) [disk somewhere and you're gonna read it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=267.83) [using Jason or XML directly maintaining](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=269.4) [that you I code that's tightly coupled to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=272.78) [a particular network protocol is gonna be](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=275.11) [much more difficult if it's all mixed in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=277.5) [with the cone itself and not encapsulated in a single location](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=1&mode=live&start=279.94)

[Usage and Design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live)

[[Autogenerated] Now let's look at how the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=1.19) [proxy is structured. Just as in the real](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=2.23) [world example, with the Beekeeper, a proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=5.46) [in the software application acts as a go](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=8.24) [between between a resource here](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=10.5) [represented Azriel service and a client.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=12.82) [Typically, the proxy will mirror the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=16.34) [interface of the real service. If the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=18) [client needs a different interface, you](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=20.2) [should look at something like the adapter](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=22.32) [design pattern instead of the proxy. When](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=23.81) [the client makes a request to the proxy,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=27.25) [the proxy has an opportunity to perform](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=29.42) [any logic needed before forwarding the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=31.5) [request on to the real service. In some](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=33.61) [cases, it may not choose to call real](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=36.64) [service at all. Maybe the client doesn't](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=38.16) [have permission to access the real](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=40.77) [service. Or maybe using the real service](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=42.49) [is expensive from a resource standpoint,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=44.65) [so proxy only calls it periodically and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=46.96) [otherwise cashes the result. And just use](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=49.36) [is that after calling the real service,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=51.37) [that proxy might do additional work before](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=54.55) [returning the response to if it's acting](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=56.83) [as a cash, this is when it would keep a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=59.45) [copy of the response. Sometimes the proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=61.32) [won't have enough information to restrict](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=64.1) [access to a resource until it has the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=65.97) [resource itself, so some protection logic](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=68.46) [might occur after the request has been](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=71.2) [made. In any case, even if the proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=72.96) [restricts access to the real service, it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=76.05) [will still need to return some kind of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=78.66) [response to the client. And importantly,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=80.28) [the client should be completely unaware of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=83.54) [whether it is working with the real](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=85.94) [service or with a proxy. The basic](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=87.61) [structure for the proxy design pattern is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=91.06) [to create a new proxy class that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=93.54) [implements the same interface or base type](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=95.4) [as the real service. The proxy then calls](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=98.22) [out to the real service. In the case of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=101.56) [every moat proxy, this call may be across](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=103.67) [process or often even network boundaries.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=106.6) [But in other scenarios, it's often Justin](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=109.61) [in process method Call. Remember, the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=111.54) [client should not be aware that the proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=113.92) [is involved. One of the reasons for using](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=115.99) [the proxy pattern is to keep the client](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=118.4) [ignorant of the details of how it is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=120.51) [accomplishing its task. We can leverage](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=122.54) [polymorphism because both the proxy and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=124.91) [the real service implement the same](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=127.49) [interface, and the client should depend on](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=128.97) [that interface. At the end of the day, the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=131.18) [client just wants some honey, it shouldn't](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=134.13) [need to change based on whether that honey](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=136.33) [is access directly from the hive or with](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=138.39) [the help of a beekeeper or from a mail](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=140.83) [order service. As long as honey is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=142.8) [obtained as the result of the operation,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=144.87) [the client is satisfied and then the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=146.9) [wiser. An alternative structure for using](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=148.91) [the proxy has the proxy inherit from the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=153.23) [real service. This approach still](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=156.56) [leverages polymorphism, and the client](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=159.11) [will still have a dependency on the real](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=161.21) [service. But instead we'll get the proxy.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=163.14) [However, this approach is less desirable](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=165.64) [because it is a less flexible design. It](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=168.5) [is a bit simpler, and it will work in many](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=171.12) [scenarios, especially if you don't have](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=173.38) [the ability to modify real service so that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=175.48) [it inherits from a new common interface or](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=178.17) [base type. However, this approach does](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=180.49) [require that really service has marked any](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=183.15) [necessary methods or properties that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=185.88) [you're going to use as virtual so that the proxy can override them.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=2&mode=live&start=187.7)

[Proxy Pattern Variants](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live)

[[Autogenerated] there are four main](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=1.3) [variants or use cases of the proxy design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=2.23) [pattern. There's the virtual proxy, which](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=5.11) [is used to stand in for expensive to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=8.88) [create objects. The remote proxy, which is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=11.21) [used to hide the details of working with](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=15.28) [remote data or service, is the smart](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=17.27) [proxy, which performs additional actions](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=20.36) [when a resource is accessed, and the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=23.08) [protective proxy, which controls access to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=25.94) [a sensitive resource by checking for](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=28.81) [whether or not the client is authorized to perform those operations.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=3&mode=live&start=31.17)

[Virtual Proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live)

[[Autogenerated] a virtual proxy is a stand](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=0.94) [in for an object that is expensive to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=3.19) [create. For real, it's purpose is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=5.15) [generally to optimize for performance](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=7.66) [instead of being the real object. The](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=10.81) [proxy knows how to get the real object](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=12.85) [when required, after which it delegates](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=15.11) [all calls back to that real object, too.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=17.93) [Common examples of this approach are](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=21.09) [placeholders within you. I screens to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=22.75) [allow the screen to render quickly, even](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=25.35) [if real data isn't yet available and lazy,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=27.32) [loaded entity properties, which are only](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=30.29) [populated if the property is accessed, or](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=32.73) [perhaps when it is first in numerator. Now](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=35.6) [let's look at a demo of how to use the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=41.1) [virtual proxy in C Sharp. Let's start by](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=43.33) [looking at this entity that has some](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=47.81) [collections that are expensive to create.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=49.65) [The first thing I want to look at are the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=52.93) [two properties online's 12 and 13. Here,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=54.64) [home entities and away entities note that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=57.94) [both of these are virtual. These entities](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=61.08) [represent things that we may not always](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=64.18) [need from the expensive to fully load](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=66.29) [entity class and which therefore we only](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=68.82) [want to fetch when we need them. The other](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=71.45) [thing to look at is that the constructor](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=74.64) [for this class is marked as protective. So](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=76.87) [only within this class or within its](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=80.71) [Children can we actually create an](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=83.6) [instance of this entity. That's they're](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=85.33) [just so that we can control how we get](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=87.38) [access to a instance of this. And that way](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=89.9) [we can inject in our proxy type. Which](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=92.53) [brings us to line nine. Here we have the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=95.93) [place where we're going to actually](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=98.95) [specify the virtual proxy that we're going](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=100.26) [to use instead of the type itself. This is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=102.95) [also representing a factory method. And](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=106.21) [so, if you want to learn more about have](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=109.48) [used factory methods, you can check out](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=111.28) [that design pattern course as well,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=113.37) [actually load these entities from wherever](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=116.14) [it is that they're persisted. We would use](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=118.3) [a data source of some kind, and so I have](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=120.69) [an expensive data source here. All this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=122.59) [does is looped through and return a list](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=125.64) [of these expensive entities and also adds](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=129.04) [a note to the history on the parent entity](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=131.52) [that says that it fetched these expensive](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=135.07) [entities. We're gonna use that to see when](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=136.75) [we actually get that data. Now, if we look](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=139.56) [at our unit test for this, the first unit](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=142.36) [test here simply verifies that the only](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=146.13) [thing that will happen when we call that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=149.03) [create method is that the constructor will](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=150.76) [have been called that will be stored in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=153.39) [the history of this entity. Can you could](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=154.97) [see that this test is passing. Our second](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=157.09) [test shows that after we created, if we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=160.29) [then go and access the home entities](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=163.62) [property, then we should see another item](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=166.53) [in the history. And if we then access the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=169.11) [away entities property, we should see 1/3](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=171.52) [item in the history showing that those](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=174.28) [things were loaded by the expense of data](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=176.09) [source. You can see this is passing also,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=178.36) [so the behavior is what we expect. Now](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=181.12) [let's look at how we implemented it.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=183.47) [Here's an example of how to implement a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=185.94) [property so that we can add this proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=188.02) [behavior when a request comes in and looks](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=190.39) [for the away entities collection. If it's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=193.6) [NOL, then we're going to specify here](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=196.71) [online. 13 how to go and fetch that data](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=199.15) [from the expense of data source.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=201.96) [Otherwise, we're just going to return it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=204.23) [because we've already said it previously.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=205.86) [Now note that this is not thread safe, so](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=209.33) [If you do have multiple threads trying to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=211.6) [access away entities at the same moment,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=213.45) [it's likely that you'll have multiple](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=216.44) [calls to that expensive data source to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=218.33) [fetch that data. However, once it's been](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=220) [set one or more times after that, it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=222.57) [should always just return the data that's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=225.21) [now populated in that property. Note that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=227.48) [home entities is implemented similarly,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=230.12) [and the two are essentially the same.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=232.51) [Lastly, as part of the stem, I want to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=235.52) [show that there is a way that you can](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=237.03) [implement this without having to use your](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=238.33) [own separate proxy class implementation,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=240.7) [as I've done here. And that is to use](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=243.26) [what's called the lazy of tea type that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=245.75) [ships in dot net. This is a lazy,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=248.11) [expensive to fully load entity. It's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=250.83) [similar to the expensive to fully load](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=253) [type that we were just looking at. But](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=255.16) [now, instead of using virtual properties](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=256.9) [for those home in a way, entities, it's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=259.99) [using lazy of tea where t is the type of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=262.33) [collection that we're referring to in this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=265.82) [case, still a list or innumerable of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=267.98) [expensive entities in this case we have](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=270.59) [instead of auto properties, we have a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=274.17) [backing field, the underscore home](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=276.18) [entities. And then we have the exposed](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=278.68) [property, which is just the eye](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=280.86) [innumerable capital home entities. Now it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=282.13) [returns back. Underscore home entities dot](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=285.7) [value note that the types are not exactly](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=287.94) [the same. The backing field is a lazy of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=290.54) [ayn, durable, expensive entity, and the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=294.07) [public property is an eye innumerable of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=296.09) [expensive nd they match in the lazy of tea](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=298.48) [represents the t of the property. And when](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=302.27) [you use the lazy type, the dot value of it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=304.72) [returns back something of type T. All](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=308.36) [right, so you can see that both home](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=311.41) [entities and away entities are implemented](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=313.51) [the same way inside of the constructor.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=315.72) [Now you can see that we specify home](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=318.39) [entities equals that new and Stan she](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=322.17) [ation of the lazy of tea. And inside of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=324.52) [there, we specify a lambda for how to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=327.44) [populate the actual data. In this case,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=329.83) [it's that call too expensive data source](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=332.77) [dot get entities. Now we're passing in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=334.59) [this just so that we can add to the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=336.88) [history like we were doing before so we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=338.46) [can see the actual logging of this and in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=340.29) [effect, so both holding away entities get](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=342.76) [in. Stan she ated here as these lazy of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=346.07) [tea types, but they don't actually make](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=348.18) [those calls to that expensive data source](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=350.58) [until something tries to access them. So](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=353.11) [if we look at our tests, you can see that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=356.12) [in the first case we have something that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=358.35) [just will log construction and nothing](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=360.22) [else. And so we see the constructor being](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=362.24) [called was the last record in the history,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=364.43) [just like the other example. And then in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=366.94) [the next test, you can see that as we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=369.54) [continue to access those different](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=371.97) [entities, we can see what those different](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=373.56) [results are in the history because it's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=375.84) [doing network right at that moment, if we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=378.78) [actually view the output from this test,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=381.49) [you can see here that initially the object](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=384.54) [is created and then the constructor is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=386.59) [called. Then we access home entities, and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=388.25) [the full history now has the constructor](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=390.86) [being called and then one call to get](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=393.04) [expensive entities, and then we access at](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=394.91) [away entities. And the history now has](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=397.56) [three elements in it, including two](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=399.47) [different calls to fetch those expensive](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=401.36) [entities from the source. So that's a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=402.96) [couple of different ways to implement a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=406.82) [virtual proxy, doing it completely by](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=408.28) [hand, or using lazy of tea in C sharp for you to use this design pattern](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=4&mode=live&start=410.87)

[Remote Proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live)

[[Autogenerated] a remote proxy is one of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=0.79) [the most common uses for this design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=2.16) [pattern. The goal of a remote proxy is to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=4.13) [act like a local resource while hiding the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=7.79) [details of how to connect to a remote](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=10.54) [resource over a network. The road proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=12.67) [centralizes all knowledge of the network](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=16.49) [details, and often these proxies can be](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=18.47) [generated automatically based on some](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=20.87) [service definition file, like Whizzed A ll](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=23.34) [Proto or a swagger, or open a P I](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=26.23) [specifications. Let's take a look at a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=29.22) [demo of using the remote proxy in C Sharp](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=34.19) [for a remote proxy. A simple example is to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=38) [set up a J. R P C or rest full server and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=40.55) [then try and create a client that will](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=44.6) [talk to it using visual studio. So to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=46.21) [demonstrate that this is working, I've](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=49.74) [created a small test. I've started a G R P](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=51.06) [C service here inside of the solution. You](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=53.85) [can see it's running here when I run the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=56.79) [test. It actually makes a call to the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=58.94) [service, and you can see the test](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=63.78) [succeeds. The service is right here. It's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=65.08) [just a greeter service created with the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=68.57) [default GR PC project in visual Studio](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=71.27) [2019. Inside of my greater tests, I've](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=74.05) [created this client by adding a reference](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=81.31) [a service reference to that project. So up](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=84.47) [here, inside of this project, under its](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=87.72) [dependencies, we added a new connected](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=89.98) [service. And from here we did a service](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=92.7) [reference and specified this greeter here](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=96.71) [specifying the profile that it's using the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=99.97) [process is similar. If you're gonna talk](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=103.45) [to an open A P I service reference for a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=105.01) [rest ful Web service. Once we've added](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=107.82) [that reference, we can then work with our](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=111.19) [greeter client and you can see the code](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=113.2) [for communicating with on end point is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=115.25) [pretty straight forward. This is the what](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=117.87) [the remote proxy is doing for us is it's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=119.51) [making it. So we don't have to deal with](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=121.57) [the details of how we want to communicate](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=123.19) [with this end point. If we want to see](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=125.63) [what this code looks like in this case,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=127.86) [this is generated code. We can say go to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=129.46) [definition on that client, and here we'll](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=132.13) [see all the code involved in doing that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=134.52) [communication. So this is the remote proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=137.53) [right here. And in this case, this remote](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=139.92) [proxy code is generated by the protocol](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=142.8) [buffer compiler, and it's given to us by](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=145.6) [visual studio. When we use that tool it](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=149.19) [you could also do it from the command line](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=150.98) [using another approach. In this class, you](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=152.44) [can review it and see all the details for](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=154.82) [how it's gonna set up a communication to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=156.77) [talk to that GR PC server. And this code](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=158.99) [is located inside of your O B J debug path](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=162.94) [down here, you'll see agreed to the Greek](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=167.28) [gr PC that C s file where that could](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=169.03) [actually lives. If you delete these files,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=171.93) [you can regenerate them every time you](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=174.71) [rebuild. It will recreate the files based](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=176.63) [on the information that's stored inside of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=178.83) [your project. One of the most common](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=180.74) [features of remote proxies is that they](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=183.39) [are generated from some kind of definition](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=185.42) [language in this case, the proto buff](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=187.96) [definition of the G r P C protocol. That's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=190.7) [pretty much all there is to it to get](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=194.99) [started using a remote proxy in your applications using C Sharp](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=5&mode=live&start=196.65)

[Smart Proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live)

[[Autogenerated] a smart proxy is used to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=1.01) [add additional logic around access to a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=3.13) [resource. These could be useful to perform](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=6.33) [resource counting or to manage the cashing](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=9.91) [of a resource or to lock access to shared](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=13.32) [resource is. Let's look an example of how](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=17.01) [we can use the smart proxy in C Sharp.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=22.5) [Smart proxies are often concerned with](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=26.39) [managing access to a shared resource and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=28.71) [doing things like checking whether or not](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=31.31) [it's locked or counting. How many](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=32.99) [different references There are two a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=34.93) [resource before releasing it in this demo.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=36.65) [What we're going to do is look at a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=39.7) [default file system provider that's going](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=41.48) [to attempt to write to the same file from](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=44.52) [multiple different instances of that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=47.07) [provider. In this first test, we create an](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=48.92) [instance of our default file system, which](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=51.67) [is just using the built in system that I](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=53.81) [owe that file library. We're going to take](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=56.24) [these two bits of output that we want to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=58.96) [write, and we're going to try and write](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=60.7) [them both in parallel so you can see](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=62.73) [online 20. We're gonna open up the file](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=65.56) [once and assign that to available called](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=67.35) [file and then online 21. But we would like](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=69.86) [to do. Is this commented code here that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=73.52) [says var file too equals Open it up again,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=75.63) [right? But that's where we're gonna get](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=79.69) [this exception. And so we've added in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=81.38) [Assert that throws in X Unit to catch that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=83.6) [exception. To say that this is the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=86.55) [behavior we expect right now, now that all](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=88.29) [the rest of the code you see lying 25 26](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=90.99) [28 29. That is all the code that we would](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=94.09) [like to have written if this were working](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=96.82) [correctly. But right now we can't. Now you](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=99.54) [can see that this test passes. And that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=102.36) [means that that our assertion here is in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=104.4) [fact catching an Io exception, saying that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=106.55) [we can't open this file. It's already](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=109.1) [locked. Now, if we look at the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=111.59) [implementation for default file, you can](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=113.62) [see it's really just a very thin wrapper](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=116.3) [around the built in system dot io dot](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=118.2) [file. However, we want to use a smart](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=120.92) [proxy around this instead, and that smart](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=124.88) [proxy should be able to detect if we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=126.96) [already have a lock on this resource and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=129.54) [then re use it, or perhaps apply some kind](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=132.16) [of time out a retrial logic in this case,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=135.24) [let's take a look at a test showing how](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=138.58) [that could works. Now we have a test for](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=140.24) [managing those references. Instead of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=142.93) [using default file system, we're gonna use](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=144.81) [our smart proxy. We're gonna use that f s](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=147.07) [instance to open not one but two different](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=149.85) [files using the same open right call that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=153.07) [we were using before. And now you can see](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=155.61) [that we're able to write both of these](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=157.85) [things independently from different](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=159.9) [instances of that file system and then](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=162.33) [close both of those instances. How does](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=164.71) [that work? While inside are smart proxy,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=167.4) [We've got a collection of those different](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=170.49) [streams and we're basically cashing access](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=172.57) [to them. So when you open up a stream to a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=175.19) [particular path, if you're unable to open](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=177.41) [that access, we're gonna catch that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=180.26) [exception, and we're going to see if we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=182.23) [already have an open reference to it, and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=184.01) [then we're going to just return back that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=186.39) [already opened stream to the user. So](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=188.12) [while they might think that they're](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=191.33) [actually separate independent instances,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=192.39) [they're actually getting the same instance](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=194.44) [to that same locked file in both cases,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=196.22) [and that allows the code to operate as we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=199.47) [would like. There's different ways that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=201.29) [you could implement this, and this is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=203.44) [purely for demo purposes. But you can kind](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=204.98) [of see the idea here where we have a proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=207.16) [that implements the exact same interface](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=210.08) [as our default file system interface does.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=212.33) [But now it provides different behavior](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=215.72) [that involves some kind of resource management.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=6&mode=live&start=218.05)

[Protective Proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live)

[[Autogenerated] a protective or protection](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=0.42) [proxy is used to control access to a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=2.13) [resource based on certain rules. This can](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=4.93) [help to eliminate having these checks live](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=8.14) [either in the client code or in the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=10.59) [resource itself. Generally, this helps](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=12.71) [with separation of concerns that don't](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=15.84) [repeat yourself principle and the single](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=18.05) [responsibility principle. You can think of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=20.04) [the protective proxy as being a kind of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=22.79) [gatekeeper around the resource. Now let's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=25.16) [look at an example of how to use a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=29.38) [protective proxy in C sharp for this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=31.7) [protective proxy demo. We're going to look](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=35.36) [at this document class. This document](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=37.33) [represents some kind of, ah, Pia for word](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=40.1) [doc, or something that you might upload](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=42.6) [into a system. And it has the notion of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=44.13) [authors and editors that can work with it.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=47.42) [Now you can see in this code right here we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=50.24) [only have two methods that we can update.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=52.88) [This document with. One is to complete a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=54.93) [review which should be performed by an](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=57.55) [editor, and it will just set the date](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=59.68) [reviewed. Noticed that you can't set the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=61.34) [date reviewed any other way. Its center is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=63.53) [private and likewise you can update the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=65.91) [name of this doctor in this case, the rule](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=68.53) [that we would like to enforce is that you](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=70.92) [have to be the author to change the name](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=72.56) [on. So we're going to put that logic](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=74.65) [somewhere. We don't want to pollute the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=76.9) [document itself with this logic.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=79.37) [Necessarily. This is for demo purposes, so](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=81.05) [there's not a lot here. But imagine that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=83.21) [this document has a lot of complex](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=85.01) [business rules in it. And so adding in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=86.56) [additionally, all the security rules would](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=88.97) [just add more complexity to this entity](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=91.71) [than we would like to have in this first](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=93.84) [test. You can see that if we create a new](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=96.24) [user and put them in the role of author](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=98.13) [that and give them a document to work](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=101.07) [with, they're able to update the name](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=102.74) [successfully right. Once they call](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=105.34) [document that update name. The assertion](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=107.52) [verifies that it works, and you can see](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=110.03) [that this test passes because there's the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=111.95) [green check mark right there above the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=113.51) [test name. However, if you're not in the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=115.35) [author role, we have another test that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=118.2) [will run and verify that you will get an](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=120.58) [unauthorized exception when you try and](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=122.48) [call update name and the user is not in](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=125.23) [the author role. Now let's look at](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=128.06) [reviews. Similarly, when the author tries](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=130.28) [to review that document, they're going to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=133.86) [see an unauthorized exception thrown at](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=136.33) [that point as well, because our business](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=138.49) [rule is that only editors can review](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=7&mode=live&start=140.77) [documents. 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And so these could be](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=44.84) [encapsulated into the proxy and then used](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=47.44) [in many places throughout your](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=50.74) [application. Now let's drill down a bit](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=51.95) [further into how certain software design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=55.3) [principles relate to the proxy design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=57.68) [pattern. Often, if we're not using this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=60.09) [pattern, we end up mixing the concerns of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=63.19) [access control or lazy loading or other](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=66.01) [functionality in the resource class itself](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=69.05) [or worse, every client that consumes the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=72.33) [class must perform this work. In either](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=75.27) [case, the concerns of access control are](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=78.31) [mixed with the concerns of the client or](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=81.19) [the resource. Ideally, we want to separate](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=83.23) [thes. If we are mixing access control](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=86.27) [logic with other logic, it's likely we're](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=89.25) [coupling tightly to the specific](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=92.03) [technique, logic or even details like](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=93.62) [network protocols. We would rather have](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=96.31) [loose coupling in our system between our](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=99.56) [applications. Business rules in the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=102.5) [specifics of how we're going to apply](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=104.59) [access control to certain resource is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=106.13) [requiring our client and or the resource](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=109.23) [to know about these details makes our code](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=111.73) [more coupled, making it harder to change](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=114.17) [and harder to test. We'd rather maintain](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=116.52) [loose coupling and put all of our couple](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=119) [of logic in one place. The proxy class.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=121.17) [The third principle that relates to using](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=125.34) [a proxy class is single responsibility,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=127.12) [one of the solid principles. By re](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=130.03) [factoring logic out of the resource or its](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=132.58) [clients and into the proxy, we help ensure](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=134.8) [that each of these classes is able to focus on just it's single responsibility](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=8&mode=live&start=138.24)

[Related Patterns](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live)

[[Autogenerated] The proxy design pattern](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=0.68) [is related to a number of other patterns,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=1.99) [either in structure or how it is used, or](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=4.74) [sometimes both. The decorator pattern has](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=7.33) [a very similar structure, but you have to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=10.91) [remember that the intent of a decorator is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=13.26) [to add functionality, whereas the intent](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=15.71) [of the proxy is to control access. Note](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=18.17) [that in the case of a smart proxy, this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=22.13) [difference is very slim. You can think of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=24.42) [a smart practice being the most closely](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=26.81) [related to the decorator in terms of](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=28.63) [related patterns. Another pattern is the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=31.05) [prototype. Both the prototype and the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=34.64) [proxy can be used to deal with an object](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=37.42) [that is expensive to create. Typically, we](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=39.67) [would use a virtual proxy for this.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=42.08) [However, the proxy just offers a stub or](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=44.54) [placeholder and fetches the real object on](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=47.54) [demand, while the prototype pattern keeps](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=50.14) [a copy of the object on hand and conclude](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=52.38) [it when required. The adapter is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=55.08) [structurally very similar to the proxy,](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=58.52) [but its purpose is to convert an](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=60.51) [incompatible interface into one that works](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=62.46) [for the client. It's not concerned with](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=64.85) [access control, and finally, the flyweight](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=67.27) [pattern is also very similar to the proxy](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=70.41) [patter However, the Flyway pattern is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=72.8) [designed to manage many references to a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=75.38) [shared instance, while Proxy is designed to wrap a single specific instance.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=9&mode=live&start=77.53)

[Key Takeaways](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live)

[[Autogenerated] As we wrap up this short](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=2.58) [course on the proxy design pattern, let's](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=3.64) [review the key takeaways for this very](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=6.04) [common and useful pattern. Although the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=7.97) [proxy pattern is structurally similar to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=10.94) [several other design patterns, the intent](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=13.3) [of controlling access to another class is](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=15.85) [what sets this pattern apart. Because this](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=18.48) [pattern is so versatile, there are a](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=21.75) [number of common named variants. Virtual](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=23.89) [proxies are placeholders for expensive](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=27.19) [objects. Remote proxies offer a way to](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=29.67) [connect to network. Resource is without](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=32.74) [the client meeting. You know the details](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=34.79) [of how this is done. Smart proxies, ad](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=36.55) [resource counting or locking or some other](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=40.1) [operation around the objects they control.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=42.8) [Protective proxies are used to add](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=46.34) [authorization rules to the objects that](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=48.77) [they wrap frequently. Practically, classes](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=50.98) [can be generated, and this is especially](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=54.56) [common for remote proxies. When used](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=56.74) [appropriately, applying the proxy design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=60.02) [pattern can help your code follow](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=62.19) [separation of concerns and the single](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=64.27) [responsibility principle, as well as](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=66.4) [producing more loosely coupled coat.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=68.45) [You'll find the latest version of the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=70.84) [samples in my get have repo design](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=72.52) [patterns in C sharp shown here. Thanks. I](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=75.07) [hope you found this brief course on the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=81.36) [proxy design pattern helpful. Don't forget](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=82.93) [to leave a review. And if you have any](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=85.38) [questions, you can post them in the](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=87.01) [discussion for him or find me online using](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=88.72) [the information shown here until next time.](https://app.pluralsight.com/player?course=c-sharp-design-patterns-proxy&author=steve-smith&name=b1d0fec4-1b3a-486f-943e-8447901c6b19&clip=10&mode=live&start=91.24)