[Course Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live" \t "psplayer)

[Course Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live)

[Hi everyone, my name is Jeremy Clark.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=0) [Welcome to my course, C# Interfaces. I'm](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=8.63) [an international speaker and consultant](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=11.586) [who makes developers better. I struggled](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=13.156) [for a long time with interfaces, but after](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=16.22825) [getting a good understanding, I found that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=18.688333333333333) [interfaces help make my code easier to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=20.588999999999995) [maintain, extend, and test. This course is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=22.994333333333334) [a practical introduction to understanding](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=26.11214285714286) [interfaces and how to get over the hurdles](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=27.549166666666665) [that many developers struggle with. Some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=29.987) [of the major topics that we will cover](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=32.33444444444445) [include definitions and technical bits,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=33.898) [using interfaces to make our code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=36.627) [flexible, creating and implementing our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=39.12900000000001) [own interface to connect an application to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=40.91533333333334) [different data sources, and practices that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=42.95714285714286) [help us use interfaces more effectively.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=44.97142857142856) [By the end of this course, you'll be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=48.333) [comfortable using and implementing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=49.964400000000005) [interfaces to create a layer of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=51.12433333333333) [abstraction in your own code, and that can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=52.99483333333333) [make code easier to maintain, extend, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=55.40537500000001) [test. Before beginning the course, you](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=57.755) [should be familiar with the basic features](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=60.199571428571424) [and syntax of the C# language. And after](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=62.20025) [completing the course, you should feel](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=65.3442) [comfortable diving into courses on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=67.0985) [dependency injection, design patterns,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=68.9055) [unit testing, and mocking. I hope you'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=71.11200000000001) [join me on this journey to better C# with the C# Interfaces course at Pluralsight.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=aa8236a4-85e3-4cc6-8af2-fe3c723d5964&clip=0&mode=live&start=73.96833333333335)

[Introducing Interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live)

[Course Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live)

[We all want code that is flexible and easy](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=0) [to maintain and test. Interfaces in C#](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=3.419) [have been a great tool to help me get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=6.266000000000001) [there, and they can help you too. I have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=8.6346) [used interfaces to create a plug-in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=11.098500000000001) [architecture to quickly add functionality,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=12.606) [I've used interfaces to build a rules](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=15.414) [engine for a business application, I have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=17.089) [used interfaces to isolate code for unit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=20.13675) [testing, and I've used interfaces to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=21.929142857142857) [separate my code from third-party tools](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=24.084) [that were likely to change. As developers,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=26.218) [we want code that is easy to maintain,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=29.942111111111114) [code that flexes under change rather than](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=32.316) [breaking, we want code that is easy to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=35.15175) [extend, code that can respond quickly to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=37.996428571428574) [new requirements, and we want code that is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=40.50742857142857) [easy to test. Interfaces can help us add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=43.66749999999999) [all of these qualities to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=46.06525000000001) [applications. When I first encountered](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=49.43499999999999) [interfaces, they were a mystery to me. I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=51.64619999999999) [understood the technical bits, and I could](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=54.0304) [tell that they were important, but I did](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=55.98887499999999) [not understand why I would use them. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=58.2337) [went on for quite a while. I was really](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=60.83371428571429) [excited when I went to a conference and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=63.576333333333324) [there was a session on interfaces. I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=65.44300000000001) [thought, this is great! I'll sit here for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=68.17060000000001) [75 minutes, and then I will finally](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=70.68766666666664) [understand where to use them. So the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=73.00885714285715) [speaker gets up and says let's say you](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=75.80400000000002) [have an IFoo interface and you implement](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=78.05914285714286) [it with a bar class. And internally, I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=80.6945) [screamed, no! Don't give me a foobar](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=84.31319999999998) [example. I need a real-world reason to use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=88.02483333333332) [these things. Needless to say, I did not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=91.19277777777774) [get the insight that I needed that day.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=93.27300000000002) [But over time, I did quite a bit of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=96.093) [reading, and I had conversations with some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=97.635) [really smart people, and I spent time](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=100.573) [trying to wrap my head around the good and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=103.188) [bad of abstraction, and I also made a lot](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=105.418) [of mistakes along the way. What I found is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=108.324) [that interfaces are really awesome. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=112.54833333333335) [was a long and frustrating journey for me.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=114.95022222222222) [I do not want other developers to have to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=117.432) [go through that same frustration, so we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=119.655) [are going to look at the practical bits.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=122.35437500000003) [That way, we can understand how to take](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=125.196) [advantage of this great tool. We will look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=127.058) [at the what, why, how, and where of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=130.70450000000002) [interfaces. First, we start out with the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=134.52399999999997) [what. This includes definitions and some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=137.03014285714286) [of the technical bits. Then we move on to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=138.7194285714286) [the why so that we can see how interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=141.945) [can make our code easier to maintain,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=144.27888888888887) [extend, and test. When we look at the how,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=147.402375) [we will create our interfaces and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=150.67559999999997) [implement them. This is where I have seen](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=153.065) [the most benefit in my own code. And along](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=155.55466666666675) [the way, we will see the where. This is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=158.20775000000003) [the practical part where we can see where](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=161.37233333333333) [we should be using interfaces and also how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=163.41757142857145) [interfaces provide a good jumping-off](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=166.059) [point to explore topics such as dependency](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=167.756) [injection and mocking. By the time we are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=170.3195) [done, you will be comfortable using and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=173.08477777777776) [implementing interfaces whether they are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=174.99774999999997) [included in the. NET framework or written](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=176.71085714285718) [by someone else, and you will be able to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=179.84942857142855) [create your own interfaces to add a layer](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=181.85733333333337) [of abstraction in your code, all with the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=183.805875) [goal of code that is easier to maintain,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=186.10088888888896) [extend, and test. This course assumes that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=189.81942857142855) [you have a basic understanding of the C#](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=192.61849999999995) [language including things such as classes,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=195.18133333333333) [inheritance, properties, and methods. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=198.36740000000003) [samples include specific technology such](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=201.5834) [as XAML, Web API, and Entity Framework,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=203.796) [but you do not need to understand those](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=206.68874999999997) [details in order to get the most out of the course.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=0&mode=live&start=208.676875)

[Definitions](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live)

[In this module, we will look at the what](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=1.167) [and why of interfaces. We will start by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=3.098) [defining what interfaces are. Then we will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=7.4639999999999995) [move on to explore the differences between](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=9.713500000000002) [concrete classes, abstract classes, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=11.854) [interfaces. They all have some similar](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=15.112) [functionality, but there is some things](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=17.543666666666667) [that work better in certain environments.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=18.810750000000006) [Then we will see how interfaces can add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=21.218) [flexibility to our code. When things](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=23.225) [change in the code, ideally, the code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=26.14742857142857) [should flex rather than break. Interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=28.32085714285714) [can help us with that. Here is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=30.7075) [definition of interfaces from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=34.03342857142857) [Microsoft documentation. Interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=35.951) [describe a group of related functions that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=37.90716666666667) [can belong to any class or struct. That](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=40.41733333333334) [definition is a bit obscure. The best way](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=43.89366666666666) [to think of an interface is as a contract.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=46.90180000000001) [When a class implements an interface, it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=49.18900000000001) [fulfills that contract by saying I have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=51.77400000000001) [these functions. And when we talk about](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=54.885799999999996) [functions in interfaces, we mean](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=57.120571428571424) [properties, methods, events, and indexers.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=59.349599999999995) [We will work primarily with methods in our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=62.753) [examples, but I found the other types of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=64.541) [members to be quite useful as well. To](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=66.671) [explore the difference between concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=70.5595) [classes, abstract classes, and interfaces,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=72.157) [our example will use regular polygons. A](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=75.22) [regular polygon is a shape that has three](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=78.181) [or more sides where each side is the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=80.197) [length. So a square is an example of a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=83.54140000000001) [regular polygon because it has four sides](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=85.75655555555555) [that are all the same length. A rectangle](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=87.82450000000003) [would not be a regular polygon since the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=90.72825) [sides are different lengths. Here, we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=93.102) [a square and an equilateral triangle.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=96.01966666666668) [Regular polygons have a couple of features](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=98.891) [that we can think about. The first is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=100.704) [perimeter. The perimeter is the distance](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=104.12179999999998) [around the shape. The nice thing about the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=106.80312499999997) [perimeter is that we can calculate it the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=109.25849999999998) [same for every polygon. This is just the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=111.48055555555554) [number of sides multiplied by the length](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=113.85449999999999) [of each side. Another feature of regular](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=116.16850000000001) [polygons is the area. This is the space](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=118.88500000000002) [inside the shape. To calculate the area of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=121.93585714285716) [a square, we multiply the length by the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=124.17828571428574) [length. To calculate the area of an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=127.29114285714287) [equilateral triangle, we multiply the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=129.07657142857144) [length by the length and then multiply by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=130.76971428571431) [the square root of 3 divided by 4. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=133.84137500000006) [calculation for area varies depending on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=137.28425000000007) [the polygon. We need to make sure we take this into account in our code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=1&mode=live&start=139.5093333333333)

[Demo: Concrete Class, Abstract Class, and Interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live)

[Now we will look at a quick sample. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=0.984) [will write code for a regular polygon](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=3.5207499999999996) [using a concrete class, an abstract class,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=5.122) [and an interface. This will give us an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=8.114) [idea of the differences in these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=10.263) [approaches. Here we are in Visual Studio](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=13.442999999999996) [in the Polygons solution. This contains](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=15.115249999999998) [two projects. Polygons is a console](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=18.375999999999998) [application that will display some data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=20.999428571428577) [for us, and Polygons. Library will contain](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=22.781600000000005) [the classes that we'll be working with.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=25.333833333333335) [Our goal is to create objects that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=28.224) [represent a regular polygon using a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=30.006) [concrete class, an abstract class, and an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=32.362) [interface. Let's start by looking at the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=35.83924999999999) [ConcreteRegularPolygon. A concrete class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=37.406) [is just a class. The reason I used the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=40.857000000000006) [word concrete is to differentiate it from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=43.401444444444444) [the abstract class that we'll be seeing in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=45.20850000000001) [just a bit. When we look at this class, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=47.36625000000001) [see we have two properties, NumberOfSides](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=49.22079999999998) [and SideLength. These are both automatic](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=51.7756) [properties. This is a shorthand syntax for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=54.95240000000001) [when we don't need any kind of special](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=56.857749999999996) [behavior, but it does the same thing as if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=59.22885714285713) [we were to have a full property with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=60.84045454545457) [backing field. To show this, let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=63.35271428571428) [ahead and create a full property for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=65.04244444444446) [SideLength. To do this, I'll use the code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=67.29699999999998) [snippet propfull and then hit Tab twice.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=69.475625) [Our type is integer, we'll have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=73.956) [lowercase sideLength for the backing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=75.94050000000003) [field, and we'll have an uppercase](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=79.21600000000002) [SideLength for the property name. So this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=81.30685714285717) [created a backing field along with a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=84.19114285714282) [property with a getter and setter that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=86.47) [interact with that field. Now the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=88.58749999999998) [automatic property syntax we had before is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=90.42528571428572) [a shorthand for this. The reason I'm](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=92.52433333333333) [pointing this out is we'll see something](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=94.70587500000002) [that looks like an automatic property, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=96.30571428571429) [means something different. For now, let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=98.87379999999999) [just put things back the way they were. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=101.04966666666667) [addition to our properties, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=103.35385714285715) [constructor that sets those properties](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=105.60042857142857) [based on incoming parameters, and we also](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=106.9666) [have both GetPerimeter and GetArea](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=109.93814285714288) [methods. Since the calculation for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=111.4775) [Perimeter is the same for all of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=113.7) [shapes, we can put it in here, but the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=115.612) [calculation for Area changes with each of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=118.82714285714286) [our shapes so we don't have any way to put](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=120.876) [it into a base class itself. It will be up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=123.57124999999999) [to the child class to implement its](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=126.0778888888889) [special functionality. So what we do in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=128.355) [our regular polygon is just throw a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=130.7126666666667) [NotImplementedException. So let's look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=133.8665) [a class that inherits from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=135.48711111111112) [ConcreteRegularPolygon, and that is our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=136.556) [Square class. We see that our Square does](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=139.006) [inherit ConcreteRegularPolygon, and it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=142.083) [provides its own constructor that passes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=145.3342857142857) [the length through to the base class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=147.07344444444445) [constructor. In addition to the length, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=149.5475555555556) [also pass 4 to the base class constructor](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=151.48099999999994) [because squares have 4 sides. We also have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=153.72599999999997) [an override of the GetArea method, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=156.8935) [this provides the calculation that we need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=159.02599999999998) [for a square. Now let's flip over to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=161.60100000000003) [console application to see this in action.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=163.9045714285714) [Here, we're create a Square object with a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=167.055) [SideLength of 5 and then displaying the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=168.85) [values for the properties, as well as the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=171.258) [2 methods. Let's run this application to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=174.16920000000002) [see what happens. In here, we can see the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=177.24887499999994) [Number of Sides is 4, the Side Length is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=179.59180000000006) [5, the Perimeter is 20, and the Area is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=181.87022222222228) [25. Now when we're dealing with Concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=185.2918333333334) [class like we have here, there's nothing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=187.3052857142858) [that forces us to override the GetArea](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=189.5835714285714) [method. So we could come to our Square and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=192.30185714285713) [comment this out. And I'll just use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=194.7052222222223) [keyboard shortcut Ctrl+K, Ctrl+C to do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=196.76375000000002) [that. If we build our application, we see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=199.71283333333326) [that it still builds successfully, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=201.79722222222216) [when we run it, we'll see different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=203.76357142857145) [output. Since we did not provide an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=206.79100000000003) [override of the GetArea method, it ran the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=208.62400000000002) [one that was in our base class, and that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=210.60222222222228) [threw a NotImplementedException. So a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=213.12214285714288) [drawback of using a concrete base class is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=216.4735) [this instance is there's nothing that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=218.54600000000002) [forces us to provide an override. Let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=220.57642857142858) [ahead and put this code back and make sure](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=223.4318888888889) [that it still runs the same. Okay, so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=225.7525) [we've seen a concrete class. Let's look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=229.50485714285713) [the same thing with an abstract class. For](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=231.52787499999997) [this, we'll look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=233.49742857142854) [AbstractRegularPolygon. Well, you might be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=234.966) [wondering what an abstract class is. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=237.81957142857138) [official definition is that an abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=240.18433333333337) [class has one or more abstract members.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=242.05966666666666) [This will make a little more sense once we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=243.81199999999998) [look at this a more closely. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=246.4286) [AbstractRegularPolygon has the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=248.46939999999998) [properties, NumberOfSides and SideLength,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=250.143) [and again, these are automatic properties.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=253.094) [It also has a constructor that's very](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=255.894) [similar to our concrete class, and we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=257.508) [an implementation of the GetPerimeter](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=260.239) [method with the same calculation. But](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=261.872) [notice that the GetArea method is a bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=265.0538) [different. In this case, we do not provide](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=267.7722000000002) [any implementation for GetArea. We only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=269.82262499999996) [provide the declaration. And because we've](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=273.17660000000006) [done that, this is marked as abstract.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=275.6326250000001) [This means that it will be up to the child](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=277.54133333333334) [class to provide an implementation for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=280.5028571428572) [this GetArea method. And since we have at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=282.7316) [least one abstract member, we must mark](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=285.5532500000001) [our entire class as abstract as well. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=287.6165) [let's see how we use the abstract class.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=290.401111111111) [For that, we'll look at a triangle. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=293.301) [code looks very similar to what we saw](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=296.6816666666667) [with a square. First, we inherit from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=298.343) [AbstractRegularPolygon, so we do have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=300.726) [base class, and our constructor just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=303.012) [passes values through to that base class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=305.23457142857154) [constructor. Just like our square, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=308.3384285714286) [provide an override of the GetArea method,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=309.95471428571415) [but we can see that the calculation is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=311.93712500000004) [quite a bit different here. So let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=313.95425) [ahead and add this to our console](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=316.27799999999996) [application as well. I already have some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=318.9882857142858) [code here, which I'll uncomment with the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=321.1460000000001) [keyboard shortcut Ctrl+K, Ctrl+U, and it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=322.8386666666666) [shows a triangle with the SideLength of 5,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=325.75500000000005) [and then we display the properties. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=328.614) [we run this, we'll see an output very](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=331.2718888888889) [similar to what we had with the Square](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=332.783) [that shows the Number of Sides, the Side](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=334.55100000000004) [Length, the Perimeter, and the Area. But](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=336.832625) [there is a significant difference between](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=339.905) [using an abstract class versus a concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=341.58514285714284) [class as a base class. If we go back to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=343.9688333333333) [our Triangle and comment out the GetArea](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=347.2868888888889) [method and then build our application, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=349.21199999999993) [see that we get a build failure, and the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=351.37675) [error message says Triangle does not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=354.54350000000005) [implement inherited abstract member](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=356.92260000000005) [GetArea. When we inherit from an abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=359.579) [class, we must implement all abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=362.3444285714286) [members on that base class. If we do not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=364.6788571428572) [implement all the members, then our code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=367.8986250000001) [does not compile, and that means we move](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=369.67249999999996) [runtime errors to compile-time errors. If](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=372.6544285714285) [I have a choice between a runtime error](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=375.4055555555555) [and a compile-time error, I'd rather have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=377.45) [the compile-time error. So now that we've](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=379.491) [seen the concrete class and the abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=383.03100000000006) [class, let's look at the interface. Here,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=385.22099999999995) [we have an interface called](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=388.07257142857145) [IRegularPolygon. By convention, interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=390.7904285714287) [names start with a capital letter I. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=392.19028571428566) [is not required, but all of the interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=394.81885714285715) [in the. NET framework are named this way](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=397.1383750000001) [so this is what developers expect. An](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=399.13037499999996) [interface is a bit like a purely abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=402.65200000000004) [class. And by purely abstract, I mean one](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=405.21883333333335) [that only has abstract members. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=409.14912499999997) [interface is declarations only. There is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=411.7362) [no implementation code, and so things are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=414.74780000000004) [a little bit different here. Notice the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=417.2617777777778) [NumberOfSides and SideLength properties.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=419.7386666666667) [These look like automatic properties, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=422.048) [they are not automatic properties.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=424.6633333333333) [Instead, these are declarations. Any class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=427.005) [that implements the IRegularPolygon](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=429.8968) [interface must have a property named](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=431.50079999999997) [NumberOfSides that's of type integer and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=434.94466666666665) [contains both a getter and a setter, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=437.52975) [the same is true for the SideLength](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=440.13875) [property. This is a bit confusing because](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=442.54650000000004) [they look like automatic properties, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=444.8514999999999) [in an interface, it is only a declaration.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=446.6743333333334) [In addition to the properties, we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=450.328) [declarations for the GetPerimeter and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=452.1763333333334) [GetArea methods, and again, notice these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=453.9464) [are declarations only. There is no](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=456.67519999999996) [implementation code. One other thing to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=459.43880000000007) [note about these members is they do not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=461.4265000000001) [have access modifiers. All of the members](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=464.28242857142857) [of an interface are automatically public,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=466.6044999999999) [and that makes sense when you think about](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=468.3833333333334) [it. If we have a contract, both parties](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=471.65400000000005) [need to be aware of all of the terms that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=473.9424444444445) [are involved. We cannot have any secret](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=476.6487999999998) [members. And in fact, if we try to add an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=479.1754999999999) [access modifier, such as public, we'll see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=481.41260000000017) [that our code no longer compiles. So our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=483.66814285714275) [members of our interface cannot have any](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=487.99425) [access modifiers. The interface itself can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=490.498) [have an access modifier. In this case, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=493.413) [have a public interface, but we can make](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=495.7840000000001) [those private, protected, or internal if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=497.90428571428566) [we needed to. So let's look at a class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=500.00949999999995) [that implements this IRegularPolygon, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=502.6612499999999) [for that, we'll look at an Octagon class.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=504.43420000000003) [Now something that's important that's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=508.222) [about the terminology, notice I said](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=509.33700000000005) [Octagon implements IRegularPolygon. It](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=511.7266666666667) [does not inherit from IRegularPolygon.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=514.7916666666666) [When we implement an interface, we promise](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=517.635) [that we will have all of the members](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=519.6654444444445) [provided. In this case, it's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=521.717) [NumberOfSides, SideLength, GetPerimeter,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=523.9536666666667) [and GetArea. The declaration syntax is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=526.2833333333333) [little strange because it does look like](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=529.787857142857) [we're inheriting from IRegularPolygon. But](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=531.8598571428569) [we need to remember in C# that if we don't](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=534.6429) [specify a base class, our class inherits](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=536.9292) [from Object, so we could be more explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=539.5612500000001) [here and say that Octagon inherits from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=542.2569999999998) [Object and implements IRegularPolygon.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=545.399) [Since our interface does not provide any](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=548.493) [implementations for us, it's up to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=550.602) [Octagon class to provide all of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=552.449) [implementations. So here we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=556.0295000000003) [implementations of NumberOfSides and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=557.7029999999999) [SideLength, and here, these are automatic](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=559.4140000000001) [properties. I really wish that syntax was](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=563.2540000000001) [different, but this is what we have in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=565.8272857142854) [environment. We also have a constructor](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=568.622333333333) [that sets those two properties. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=569.968) [addition, we provide implementations for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=572.4145000000001) [both GetPerimeter and GetArea. Notice that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=574.5406000000002) [these are not overrides. They are just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=578.1013333333334) [implementations that we're providing to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=580.5400000000002) [satisfy the interface. So let's go to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=582.6340000000001) [console application and add the Octagon.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=585.9067499999999) [Here we have an Octagon object with the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=588.238125) [SideLength of 5, and then we display its](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=591.7739999999999) [properties. When we run the application,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=594.5988333333333) [we'll see a similar output to what we had](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=595.9697500000002) [with Square and Triangle. And just like](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=598.05475) [with our abstract class, we are forced to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=600.8748571428574) [implement all of these methods. If we were](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=604.2137142857141) [to comment one of these out, such as](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=607.2363333333334) [GetPerimeter, and try to rebuild our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=609.0398571428572) [application, we'll see that we get a build](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=610.9314999999999) [failure. In this case, Octagon does not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=613.5512) [implement interface member GetPerimeter.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=617.1571428571427) [If we do not provide implementations for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=619.548) [all of the members of the interface, then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=621.881) [our code breaks and no longer builds. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=624.15325) [just like with our abstract class, we do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=627.1948571428571) [get compile-time errors instead of runtime](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=629.536) [errors. So this is just a quick overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=631.49625) [so we could see how concrete classes,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=634.8584285714286) [abstract classes, and interfaces work.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=637.1360000000001) [There are several similarities between](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=640.111) [abstract classes and interfaces, but there](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=641.978) [are also quite a few differences as well.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=644.6092500000001) [We'll be looking at those differences later on in the course.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=2&mode=live&start=646.6591428571429)

[Programming to an Abstraction](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live)

[Now that we have seen what interfaces are,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=1.124) [it is time to start looking at why we want](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=3.097) [to use them. One big advantage is that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=4.918) [interfaces can make our code more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=7.875) [flexible. This gives us resilience in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=10.408714285714282) [face of change, and applications are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=12.1795) [constantly changing to meet our user's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=14.654599999999997) [needs. This resilience means that when we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=17.22683333333333) [make changes in one part of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=18.991714285714288) [application, we reduce or eliminate the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=21.055571428571433) [need to make changes in other parts of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=22.653875000000003) [application. Our code flexes rather than](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=25.490428571428577) [breaks. This also insulates our code from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=28.57066666666667) [the implementation details. We can deal](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=30.444) [with the code at a higher level by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=33.30159999999999) [focusing on the results of functionality](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=34.95314285714286) [rather than digging into the details. Of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=36.874) [course, we can drill into those details if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=39.652499999999996) [we need to, but they are out of the way so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=41.504363636363635) [that we do that only if we need to. There](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=43.4677) [is a general piece of advice that works in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=47.47) [many situations, program to an abstraction](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=49.72614285714286) [rather than a concrete type. When we are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=51.876333333333335) [dealing with abstractions, we are dealing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=54.98400000000001) [with the higher-level code and we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=56.668428571428564) [avoid getting buried in the details. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=58.96333333333334) [our examples, we will translate this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=61.671571428571426) [advice as program to an interface rather](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=63.397) [than a concrete class. An interface is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=65.787) [abstraction. It adds a seam to our code,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=69.40360000000003) [and this is how we can focus on that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=71.29939999999998) [higher-level functionality. Now we could](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=74.58050000000003) [blindly follow this advice, but that leads](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=76.58957142857145) [to trouble. It is better to understand the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=79.18239999999999) [reasoning behind it. Then we can decide](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=81.31742857142854) [when to follow the advice and when we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=83.15300000000005) [safely ignore it. Interfaces are tools,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=85.575125) [and there are times they are useful and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=88.772) [times when they are not. We saw earlier](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=90.507) [that concrete classes are just regular](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=94.01085714285712) [classes that we use every day. These can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=96.06275) [be classes we create ourselves or classes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=98.834) [from various libraries. For our next](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=101.118) [sample, we will use the. NET collection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=103.45400000000001) [classes. Here is a list of different types](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=105.1892857142857) [of collections that we have available to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=107.77871428571427) [us. We have List of T, which gives us a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=109.6905) [strongly typed collection of objects; we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=112.67614285714285) [have HashTable, which is an unordered bag](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=114.91274999999999) [of objects, this can give us very fast](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=117.87575) [access to individual items; we also have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=120.82000000000001) [Queue, which offers a first-in/first-out](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=123.62471428571428) [collection; and we have Stack that offers](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=125.3332) [the last-in/first-out collection. There](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=129.28750000000002) [are a lot of options to choose from.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=131.179) [Collections have a number of interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=134.075) [that represent different pieces of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=136.066) [functionality. List of T implements seven](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=138.60600000000005) [different interfaces, IList of T, IList,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=140.66983333333337) [ICollection of T, IReadOnlyList of T,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=144.098) [IReadOnlyCollection of T, IEnumerable of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=147.316) [T, and IEnumerable. The functionality we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=150.081) [want is in IEnumerable and IEnumerable of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=153.21650000000002) [T. These interfaces describe the ability](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=157.1521428571428) [to iterate over the items in a collection,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=159.47783333333336) [so we just keep asking for the next item,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=162.205) [next, next, next until we get to the end.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=164.434) [In fact, there is nothing about the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=168.131) [IEnumerable interface that says it needs](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=169.882) [to be a collection, and we'll see that in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=171.64085714285721) [a future demo. For now, we just need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=173.9144444444444) [know that IEnumerable is used by foreach,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=176.7042222222221) [ListBoxes, and LINQ, Language-Integrated Query.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=3&mode=live&start=179.611)

[Demo: Future-proofing Code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live)

[For our next sample, we will call code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=0.467) [from from a library using a concrete class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=2.233222222222222) [and by using an interface. Then we will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=4.6485) [change the underlying type in the library.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=7.805374999999999) [This will show how the code responds to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=9.692749999999998) [those changes, whether it breaks and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=12.651499999999999) [requires changes or whether it flexes and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=14.851571428571429) [continue to work even when things change.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=16.846499999999995) [Often, we are working on projects where we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=20.751) [have different developers or different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=22.566) [teams working on various parts of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=24.512) [application. This example is a smaller](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=26.958499999999994) [version of that scenario. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=29.29522222222223) [responsibility is the UI code. Another](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=31.286166666666666) [team is working on the library that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=33.545) [supplies our data. This is our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=35.316) [FutureProofing solution, and before we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=38.335) [look at the code, let's go ahead and run](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=40.45750000000001) [the application. This consists of three](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=43.76760000000001) [buttons and a ListBox. These buttons don't](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=45.954) [do anything right now. We'll fill in that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=48.20542857142856) [functionality as we go. When we look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=50.885) [the solution, we'll see three different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=53.40933333333334) [projects. At the bottom, we have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=55.915200000000006) [PeopleViewer project. This is the code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=58.350749999999984) [that we're responsible for, the UI of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=60.073857142857136) [application. Above that, we have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=63.53766666666666) [People. Library project. This is another](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=66.06550000000001) [team's code, and we use it to get data for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=67.91033333333333) [our system. The top project is the Common](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=70.65033333333335) [project, and this is a shared library that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=73.27171428571427) [contains common types. Let's take a look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=75.17262500000002) [at the library and see the object that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=77.55299999999997) [we'll be calling. Here, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=80.53833333333334) [PersonRepository class that has two](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=82.77714285714288) [methods, GetPeople that returns an array](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=84.38285714285715) [of Person and GetPerson that returns an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=86.63585714285715) [individual. If we peek into the Person](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=88.8415) [class, we'll see that it's a pretty simple](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=91.225) [object. It contains a number of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=94.80277777777778) [properties, as well as an override of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=96.92416666666668) [ToString method. This represents the shape](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=99.2742222222222) [of the data that we'll show in our UI. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=100.8665) [contents of these two methods is not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=104.02099999999999) [important to us. How they work is another](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=105.449) [team's responsibility. We just need to use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=108.182) [them. And for that, we'll go to our code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=110.86449999999999) [in the PeopleViewer project. Let's look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=112.49539999999996) [the code behind for the main form. Now](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=115.58059999999999) [normally, I don't normally put a lot of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=117.98955555555555) [code in the code behind in my forms, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=119.05) [we want to keep things simple today so we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=121.10822222222222) [can focus on interfaces. So I'll be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=123.0774) [putting things right into the event](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=125.065625) [handlers that we have here. Now notice at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=126.49433333333333) [the top of the class, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=129.071375) [PersonRepository field. This represents](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=131.3656) [the library that we want to get the data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=132.76674999999997) [from. So let's start with our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=135.10833333333335) [ConcreteFetchButton and do just that. now](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=136.859) [if I say repository. GetPeople, we see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=140.78383333333335) [that this returns a Person array, so I can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=145.29475000000002) [create a variable to hold that data. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=147.79240000000001) [we'll say Person array people =](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=150.1895714285714) [repository. GetPeople. Now since we are in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=153.199) [the ConcreteFetchButton, I'm going to use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=156.02083333333337) [that concrete Person array type that's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=157.77366666666666) [coming back. We'll look at something](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=160.0318571428572) [different in just a bit. Now once I have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=161.96499999999997) [the data, I'm just going to foreach over](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=164.0794) [it. So we'll say for each person in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=165.53799999999998) [people, PersonListBox. Items. Add person.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=168.66485714285713) [So we'll just loop through each item and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=173.017) [add it to our ListBox in our UI. So let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=174.674) [go ahead and build and run the application](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=177.2951111111111) [to see the results. Now if we click on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=178.9514) [Concrete Type button, we'll see that we do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=182.4795000000001) [have data that's coming from our library,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=184.31124999999992) [and we see that our Clear button works as](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=186.21375000000006) [well. Well, let's look at the code to see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=189.13971428571423) [what functionality we really need. How are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=190.77855555555553) [we using this People variable? Well, we're](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=194.5957142857143) [foreaching over it. So let's go to help to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=197.65900000000002) [see what foreach needs to work. Now when](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=200.52133333333327) [we look at this definition, we see that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=203.45977777777776) [foreach works on any object that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=206.72600000000006) [implements IEnumerable or IEnumerable of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=209.28100000000003) [T. Now array does implement IEnumerable,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=211.85542857142855) [and that's why we're able to foreach over](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=214.91728571428573) [it. But let's go back to our code and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=217.14077777777777) [write it in a slightly different way for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=219.82999999999998) [our AbstractFetchButton. For the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=222.9575) [AbstractFetchButton, I'm going to use an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=225.034) [IEnumerable of Person instead of a Person](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=227.16375) [array, and we'll populate that with our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=230.57857142857145) [repository's GetPeople method. And just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=233.8965) [like above, we'll foreach over it. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=236.18025) [foreach person in people, PersonListBox.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=238.4488) [Items. Add person. And when we run the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=241.6595) [application, we'll see that we get exactly](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=245.71483333333327) [the same results. So if we click on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=247.82966666666667) [Abstraction button, we do get our ListBox](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=249.97524999999993) [populated, and if we click on our Concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=252.27277777777775) [Type button, we also get our ListBox](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=254.81833333333336) [populated. But now let's take a look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=257.7831666666666) [what happens if our code starts to change](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=259.7507777777778) [underneath us. The people who are creating](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=262.6060000000001) [the library have changed their mind on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=264.509857142857) [this GetPeople method. They've decided](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=266.81574999999987) [that Person array is not the type that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=268.52957142857144) [they want to return. They'd rather return](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=270.70314285714284) [a generic list. So we'll have List of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=273.3355) [Person coming back from this instead of a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=276.0656249999999) [Person array. And after they modify this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=279.28014285714283) [code, the signature is a bit different.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=282.1951666666665) [And what happens if we try to build our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=286.842) [application with the changed code? Well,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=288.432) [we get an error message. And if we look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=290.89616666666666) [what it says, we'll see the error is that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=293.6176250000001) [it cannot implicitly convert type List of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=295.51175000000006) [Person to Person array. Now we could](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=298.0242857142857) [update our code by just saying. ToArray,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=300.41287500000004) [but I don't want to do that because I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=302.8590000000001) [don't really need an array here. In fact,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=305.301111111111) [probably what I would do is come in and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=307.45450000000005) [change it to a List of Person so that the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=309.62536363636366) [type matches, and what we'll see now is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=312.4056666666667) [that our code does build successfully, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=314.40666666666664) [when we run our application, we have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=316.4088571428572) [same functionality when we click our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=318.89316666666673) [Concrete Type button. But what's more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=320.7750000000001) [important is the code that we did not have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=322.5652857142856) [to change. And if we click on our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=325.20166666666665) [Abstraction button, it still works, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=327.0372499999999) [that's because the code for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=329.01700000000005) [Abstraction button only cares about the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=331.2771428571428) [IEnumerable functionality, the ability to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=333.7973333333333) [foreach over the items. If List of Person](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=336.76628571428574) [is changed to another type, such as an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=339.55099999999993) [observable collection, our code doesn't](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=342.1286666666667) [need to change. By programming against](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=344.2215) [just the piece of functionality that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=346.29571428571427) [need, we future proofed this code. But](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=348.3454999999999) [we've actually written more code than we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=351.27299999999997) [need at this point. If we look at the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=353.122) [ListBox, we'll see that it has a property](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=355.7606666666666) [called ItemSource, and ItemSource is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=360.23400000000004) [IEnumerable. So that means that we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=364.4800000000001) [assign the People property directly to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=366.40100000000007) [this. So instead of foreaching over our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=368.4465) [collection, we can just do the assignment](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=370.354) [directly, and we can do that for both of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=372.232) [our methods. Now there is a little bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=374.399) [more code that we need to change do to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=377.268) [this, and that's down here in our Clear](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=378.723) [functionality. In a WPF ListBox, you can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=381.7487777777779) [either interact with the Items collection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=383.89175000000006) [or the ItemSource property, but not both.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=385.7514285714285) [So to clear our ListBox, we can just set](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=389.25) [our ItemSource to null. And when we run](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=391.007) [our application, we'll see that it behaves](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=394.06066666666663) [the same way. Our Concrete Type button](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=396.5576249999999) [still works, and our Abstraction button](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=399.0973333333334) [still works. And again, the Abstraction](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=402.24233333333325) [button still works because we're still](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=404.81466666666677) [programming against that same interface,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=406.6885999999999) [IEnumerable. We have just the piece of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=409.6181999999999) [functionality that we need and no more.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=411.39442857142853) [Now one last question before we leave this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=414.735) [code. I often get asked, couldn't we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=417.17144444444455) [used var here instead of the concrete type](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=419.63637500000004) [or the interface? And the answer is yes.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=422.13424999999995) [If we change our People variable to use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=425.773) [var, then our code would work the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=427.644) [way, but this is a fundamental difference](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=430.0626666666665) [in how we're approaching the code. When we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=432.0930000000001) [use var, what we're saying is give me](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=435.0024444444444) [whatever type is coming back from this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=437.59777777777776) [method. In this case, it would be List of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=439.8782222222222) [Person. When we use IEnumerable of Person,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=442.79155555555536) [we're saying give me whatever type is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=445.151) [coming back from this method as long as it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=446.753) [has the behavior that I need. If we do not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=449.118) [specify the behavior that we need, then we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=452.8287777777777) [may run into issues later on,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=455.04366666666675) [particularly, if our code is more complex](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=457.109) [than what we have here, which it usually](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=459.219) [is. Personally, I do use var in a lot of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=462.25544444444444) [situations. But when I care about the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=464.99030000000016) [functionality, I'll be sure to specify the type or interface that I need.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=4&mode=live&start=466.9071428571429)

[Summary](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live)

[In this module, we took a look at the what](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=0.923) [and why of interfaces. An interface is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=2.934) [contract. When a class implements an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=7.342800000000001) [interface, it promises that it will have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=9.104) [certain set of functionality in the form](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=10.970333333333329) [of properties, methods, events, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=13.025142857142859) [indexers. We looked at the differences](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=15.827499999999999) [when using a concrete class, an abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=17.651124999999993) [class, and an interface. In our polygon](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=20.267999999999997) [example, we saw that a concrete class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=22.965874999999997) [could give us runtime errors if the child](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=24.811999999999998) [classes do not override the GetArea](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=27.154000000000003) [method. With an abstract class or an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=28.877714285714287) [interface, we were forced to provide an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=31.31275) [implementation of GetArea otherwise our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=33.502) [code would not compile. We also saw how we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=36.202) [could put common functionality into an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=39.39575000000001) [abstract base class. In a later module, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=41.6015) [will take a closer look at the differences](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=44.10044444444444) [between interfaces and abstract classes.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=46.336) [Then we saw how interfaces can make our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=49.37) [code more flexible. When we program with a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=51.571) [concrete class, our code is brittle. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=54.15) [the underlying collection changes, our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=57.1172) [code breaks. When we program with an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=58.874) [abstraction, the interface, then we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=61.17) [specify that we only care about our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=63.85000000000001) [particular set of functionality rather](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=65.95124999999999) [than any specific implementation. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=67.9927142857143) [allows our code to accept different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=70.293) [collection types without needing to be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=71.937) [modified. In the next module, we will get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=74.90528571428568) [into the how by creating and implementing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=76.87388888888891) [our own interfaces, and this will make our applications easy to extend.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0aabc094-72c4-4b5f-9200-952d532d1ab8&clip=5&mode=live&start=79.215)

[Creating Interfaces to Add Extensibility](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live)

[Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live)

[We have seen how interfaces can help us](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=0) [future proof our code. Now it is time to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=2.463) [take a look at how interfaces can make our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=4.823500000000002) [code easy to extend. If we come up with a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=7.066000000000001) [contract that the core application can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=9.674599999999998) [use, then we can plug in any number of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=11.058499999999999) [different implementations that adhere to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=14.174600000000002) [that contract. For this, we will explore](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=17.0856) [the how of interfaces. First, we will see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=20.432111111111116) [how to create our own interface, in this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=22.832999999999995) [case, a repository interface to help us](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=25.14575) [connect to different sources of data. Then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=27.402714285714286) [we will see how to implement this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=30.792625) [interface by coding up a number of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=32.064) [repositories. These will let us get data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=34.98737500000001) [from a web service, from a text file, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=36.37033333333335) [from a SQL Server. After creating these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=39.29740000000002) [different implementations, we will remove](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=41.745250000000006) [code duplication by using a factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=43.699600000000004) [method. This will move specific details to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=46.61500000000001) [a different part of our project so that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=48.59257142857144) [can focus on the important functionality of the code that we're working on.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=0&mode=live&start=50.72)

[The Repository Pattern](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live)

[Let's say that we have an application that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=0.845) [will be deployed at multiple client sites.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=2.35) [Each client has their own preference for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=5.047) [storing and retrieving data. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=7.089) [application needs to get data from a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=9.73575) [variety of sources. It may be a web](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=11.365) [service that gives us a JSON formatted](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=13.841) [representation of the data; or a CSV text](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=15.763) [tile that contains comma-separated values;](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=19.142) [or a relational database, like Microsoft](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=22.322) [SQL Server or SQLite; it may be a document](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=24.799) [database, or a service in the cloud, such](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=28.29344444444444) [as Amazon AWS; or an Azure function call](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=31.352428571428565) [that gives us the data that we need. There](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=34.09311111111113) [is a specific way to interact with each of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=36.89155555555557) [these data sources. When we use a web](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=39.81625) [service, we make HTTP calls over a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=42.087) [network. With a text file, we use our file](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=44.698750000000004) [I/O operations, but we do not want our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=47.2471111111111) [core application code to have to deal with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=49.797875) [these details. Instead, we will set up a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=52.48577777777779) [repository. Here is a description of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=56.5782857142857) [repository pattern from Martin Fowler. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=58.44485714285714) [repository pattern mediates between the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=61.456) [domain and data mapping layers using a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=63.591) [collection-like interface for accessing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=65.795) [domain objects. Let's explore what this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=67.891) [means. The repository pattern lets us](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=71.56814285714283) [separate our application code from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=73.72599999999998) [specific data storage technology. We do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=76.30428571428573) [not want our application code to need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=79.31533333333334) [know how to make HTTP calls or how to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=80.9693) [crack open a file on the file system.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=83.339) [Instead, the repository is responsible for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=86.069) [those details. The repository then exposes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=88.249) [the data as standard C# objects that our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=91.065) [application can use. In our case, we will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=93.849) [create several different repositories. A](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=97.47128571428574) [service repository will know how to make](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=100.071875) [HTTP calls to a web service that returns](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=101.723) [JSON. A CSV repository will know how to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=105.40655555555558) [open a file on the file system and parse](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=107.6014444444444) [the comma-separated values. A SQL](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=109.6825) [repository will know how to connect to a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=112.89850000000001) [SQLite database using Entity Framework. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=115.30828571428572) [addition to these repositories, we will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=118.2086) [create a repository interface. This will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=120.601) [be our contract that has the methods to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=122.68299999999999) [interact with our data, and it's what the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=124.81433333333332) [application will use to communicate with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=127.5765) [our repositories. There are several](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=130.127) [approaches to repositories. We will start](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=132.92099999999996) [out with a CRUD repository where CRUD](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=135.063375) [stands for create, read, update, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=137.64385714285714) [delete. These are the basic operations](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=140.73042857142858) [that we need to fetch and modify our data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=143.427) [objects. Our repository deals with Person](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=147.4914000000001) [objects, so we will call it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=149.99883333333338) [IPersonRespository. This has methods for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=153.02833333333328) [all of our CRUD operations. The AddPerson](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=154.99511111111107) [method lets us create a new record, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=157.51544444444446) [GetPeople and GetPerson methods can be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=160.27714285714285) [used to read records from the data source,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=161.802) [the UpdatePerson method is used for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=164.478) [updates, and DeletePerson is used for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=166.207) [deletes. With the CRUD operations](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=169.68100000000004) [represented, we can now implement specific](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=171.86400000000003) [repositories for the different data sources.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=1&mode=live&start=174.1008333333333)

[Demo: Implementing a Service Repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live)

[Let's look at some code. First, we will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=0.694) [create a repository that implements our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=3.341714285714285) [interface. Specifically, we will create a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=5.364666666666667) [service repository. We will end up with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=8.627714285714285) [multiple repositories. In addition to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=11.45814285714286) [service repository, we will have a CSV](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=13.537666666666665) [repository that uses a text file and a SQL](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=15.420666666666666) [repository that uses a SQLite database.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=18.131222222222213) [Once our application is using these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=20.686999999999998) [repositories, we will remove the duplicate](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=23.77633333333333) [code. Our interface makes this easier. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=26.247333333333334) [let's head to the code. Here is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=30.086625000000005) [Extensibility solution in Visual Studio.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=34.401999999999994) [Let's run the application to see what we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=36.151999999999994) [have. Here, we have four buttons and a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=40.057999999999986) [ListBox, and right now, these are not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=42.825750000000006) [hooked up to anything because we haven't](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=44.14766666666665) [built them yet. So let's take a look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=46.301999999999985) [the projects that are in the solution.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=48.47900000000001) [Down at the bottom, we have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=50.997) [PeopleViewer project. This is our UI](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=52.149) [application, and this is where we will be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=54.93750000000001) [calling the repositories. Above that, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=57.77357142857144) [have the People. Service project. This is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=60.21825) [the web service that will be providing our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=62.55200000000001) [data. And at the top, we have our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=64.36771428571429) [interface project, PersonRespotory.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=67.09319999999998) [Interface. Our People. Service project is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=69.4575) [an ASP. NET Core Web API project. We'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=72.91350000000003) [need to start this web service from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=76.63974999999999) [command line. For this, I'm going to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=78.01275) [right-click on the Service project, choose](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=80.335) [Power Commands, and then Open Command](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=82.96366666666667) [Prompt. That will open up a Command Prompt](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=85.27942857142857) [at that project location. Just as a note,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=87.985) [Power Commands comes from Productivity](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=91.08100000000002) [Power Tools, and you can get this for free](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=92.47871428571429) [from the Visual Studio marketplace. To](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=95.777) [start the service, we'll just type dotnet](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=98.25585714285715) [run, and this now shows us where the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=100.04188888888889) [service is listening. We can take this and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=103.825) [put it into a browser window to look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=106.29350000000001) [how data. So our website is at this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=108.33499999999998) [address and then at api/people, and here](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=110.5563333333333) [we can see the data that's coming back](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=113.51549999999997) [from our service. Back in Visual Studio,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=117.89214285714284) [we'll take a look at the interface itself.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=120.29444444444444) [This is the CRUD repository that we saw](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=123.008) [earlier, but the methods are in a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=125.187) [different order. The read operations,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=127.18433333333329) [GetPeople and GetPerson, have been moved](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=128.944) [to the top, but you can see we also have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=130.39428571428576) [the AddPerson, UpdatePerson, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=132.4162) [DeletePerson as well. This is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=134.96625) [interface that we want to implement. For](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=137.43399999999997) [this, I'm going to create a new project.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=139.50677777777776) [So in my Repositories folder, I'm just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=141.433) [going to say Add, New Project, and this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=143.83025000000004) [will be a. NET Standard class library. And](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=147.36811111111115) [we will call this PersonRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=150.413) [Service. Now that we have our new project,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=154.76800000000006) [I need to add a reference to the Interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=156.785) [project. So we'll just say Add Reference](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=159.1583) [and PersonRepository. Interface. The last](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=161.38571428571433) [thing I'm going to do for setup is change](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=165.18019999999999) [the name of Class1 to ServiceRepository,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=166.981) [and we'll rename both the file and the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=169.45600000000002) [class. I'll do a quick build at this point](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=175.08800000000002) [just to make sure everything is okay, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=176.83700000000005) [it looks like we have a successful build.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=178.82149999999996) [The next thing I'm going to do is specify](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=182.294) [that ServiceRepository implements](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=184.03) [IPersonRepository. Now you'll notice we're](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=187.2505) [not getting any IntelliSense here. Even](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=189.10857142857145) [though I added the assembly reference, I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=190.7032857142857) [still need to add a using statement. I'm](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=192.71925) [going to let Visual Studio do that for me,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=195.0824285714286) [so I'm just going to hit the keyboard](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=197.86200000000005) [shortcut Ctrl+dot, and I'll get a pop-up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=200.98580000000004) [to add the using statement at the top of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=203.21200000000002) [this class. Now if I build at this point,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=206.71657142857148) [I will get a build failure, and that's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=208.9577272727272) [because I'm not implementing any of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=211.03071428571434) [members that are part of that interface. I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=213.1167142857143) [could go over to my IPersonRespository and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=216.37300000000002) [copy and paste these methods into my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=218.594375) [ServiceRepository class, but that's quite](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=220.284) [a bit of effort since I would need to make](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=222.38899999999995) [some changes. An easier thing to do is let](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=224.218) [Visual Studio implement the interface for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=226.843) [us. For this, I'm going to have my cursor](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=229.33557142857146) [on the IPersonRepository and hit the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=231.52877777777783) [keyboard shortcut Ctrl+dot, and we can see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=234.76266666666663) [we have an option for Implement interface.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=237.44850000000002) [There's an option to Implement interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=240.988) [explicitly, and we'll see how to do that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=243.111) [later in the course. When we implement the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=245.117) [interface, it puts in all of the interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=248.4575) [members for us. So we can see we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=250.94899999999996) [AddPerson, DeletePerson, GetPeople,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=253.47285714285715) [GetPerson, and UpdatePerson. I'm going to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=255.4546666666667) [move the Get operations to the top since](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=258.22757142857154) [that's what we'll be working with here. If](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=260.4125000000001) [we build at this point, we will get a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=265.5475) [successful build, and that's because we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=267.109) [are implementing all of the interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=269.4250000000001) [members. Now they are throwing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=272.10350000000005) [NotImplementedExceptions so they're not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=273.369) [very useful, but there's nothing that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=274.989) [requires that our implementations are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=277.208) [useful. To access the service, we'll use a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=280.3655000000001) [WebClient. So at the top of the class,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=283.35512500000016) [I'll create a WebClient object that we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=284.64260000000013) [use, and again, I'll need to use Ctrl+dot](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=286.7458333333332) [to bring in a using statement for that.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=288.70637500000004) [Another thing that I'll add is a string to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=295.616) [represent the URI that we'll be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=297.216) [referencing. And I can just copy this in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=299.97685714285706) [as the URI that we used in our browser to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=301.8058181818184) [navigate to the service. Now in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=304.61539999999997) [GetPeople method, I just need to make that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=306.52933333333334) [service call. For this, we'll get the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=309.04099999999994) [result back from the WebClient's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=311.6730000000001) [DownloadString operation, and we'll pass](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=314.9155) [in the baseUri that we had before. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=318.61159999999995) [result that comes back from this is JSON,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=321.62737500000003) [so that means that I need to deserialize](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=323.4) [that and turn that into C# objects](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=325.6415714285714) [somehow. The most common way of doing that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=328.01685714285713) [is with Newtonsoft. Json, so I'll just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=330.91700000000003) [bring in that NuGet package. In our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=333.561875) [dependencies, we'll just go to Manage](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=335.6965714285714) [NuGet Packages, and we don't even need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=337.14757142857144) [browse because Newtonsoft. Json is one of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=340.5152857142857) [the most commonly downloaded packages. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=342.8955714285714) [we'll just add that to our Repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=345.4625555555555) [project. So now we can get an IEnumerable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=348.4764444444443) [of Person objects out of this JSON result](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=350.72311111111117) [that we have. So we'll say IEnumerable; a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=354.02000000000015) [Person; people = JsonConvert, which again,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=358.94983333333334) [is that Newtonsoft. Json object; we'll do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=362.82) [Ctrl+dot to bring in the using statement;](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=365.44325) [and then we'll say DeserializeObject and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=367.017) [give this a strong type. Now since I want](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=370.6675714285714) [an IEnumerable of Person, I can just go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=376.88649999999996) [ahead and add that as my strong type,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=378.85779999999994) [IEnumerable of Person, and then we just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=381.0832) [have to pass in that result string that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=383.63066666666674) [got back; and this gives us an IEnumerable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=386.4096666666666) [of Person objects that we can return. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=388.76525000000015) [won't spend time now to implement all of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=391.68611111111113) [the members, but it would be very similar](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=393.367) [all the way down. Now that we have our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=395.064) [ServiceRepository, let's use it in our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=397.735) [application. Since we want to use this in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=400.95357142857154) [the PeopleViewer project, the first thing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=402.4612500000001) [we'll need to do is add a reference to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=404.03666666666663) [PersonRepository. Service project that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=406.257) [just created. Now let's go to the code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=408.42) [behind of our form to see what we have.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=411.497) [Right now, we have empty event handlers](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=415.588) [for our FetchButtons. Let's go ahead and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=417.2242499999999) [fill in the ServiceFetchButton. The first](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=419.6797142857144) [thing we'll do is clear the ListBox, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=422.62) [we have a separate method that will take](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=424.112) [care of that for us. Then I want to create](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=426.54200000000003) [a repository, so we'll use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=429.5855714285715) [IPersonRepository, and we'll new up a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=432.91739999999993) [ServiceRepository that we just created,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=435.23400000000004) [and again, we'll do Ctrl+dot to bring in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=437.4786) [the using statement for that. From here,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=439.69949999999994) [we can say var people = repository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=441.8968749999999) [GetPeople, and that will get us our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=447.12639999999993) [collection of Person objects, and then we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=448.9502499999999) [can foreach through them and put them into](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=450.81085714285706) [the ListBox. So foreach person in people,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=453.20049999999986) [PersonListBox. Items. Add person. Finally,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=456.535) [we have one more member to show the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=462.345625) [RepositoryType, and what this will do is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=464.312) [it will print out the concrete type for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=467.11255555555556) [our repository on the screen. If we go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=468.925) [down to that method, we can see it does a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=472.32000000000005) [repository. GetType and then does a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=475.91225) [ToString on that that we can display in a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=477.881) [text box. So now with this code in place,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=479.809) [let's go ahead and run our application.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=483.564) [Let's click our Service Repository button](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=488.175) [to see what happens. Well, an interesting](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=489.782) [thing happened here. We got a mismatch](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=492.91299999999995) [between the versions of Newtonsoft. Json](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=494.99249999999995) [that are used by the repository and are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=496.336) [used by the application itself. We can fix](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=499.29125) [this by updating the references inside our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=502.971875) [application. So let's go to the References](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=505.6933333333333) [of our PeopleViewer project and manage the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=507.8555000000001) [NuGet packages. And if we see here,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=510.819) [Newtonsoft. Json is a different version,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=513.0767777777777) [so let's go ahead and update it to the one](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=514.6775714285715) [that we used in our ServiceRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=517.0054999999998) [package. And now when we run our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=519.9045) [application, we should see that when we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=523.436857142857) [click the button we get data from our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=526.6193333333337) [service. And then down at the bottom of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=529.8601666666666) [the screen, we can see the concrete type](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=531.2502222222225) [is PersonRepository. Service.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=532.9474285714284) [ServiceRepository. So here, we implemented](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=536.2643333333333) [an interface to connect to a web service.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=538.8574285714285) [Next, we will look at a CSV repository and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=541.708) [a SQL repository to connect to different data sources.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=2&mode=live&start=544.431)

[Demo: Other Repositories](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live)

[In addition to the ServiceRepository, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=0) [want to have a repository that can read a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=2.573) [CSV file and one that can talk to a SQL](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=5.454999999999999) [database. I have already created these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=8.86557142857143) [repositories, so we can add them to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=10.803) [application and see how we can use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=12.520777777777777) [interface to consolidate the code. First,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=14.107499999999995) [let's add the CSV repository. For this,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=17.596666666666668) [I'll right-click on the Repositories](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=20.505000000000003) [folder and add an existing project. Then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=21.721857142857143) [I'll navigate to the Solution folder.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=25.949857142857145) [Here, I have a project called](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=28.751) [PersonRepository. CSV, so we'll just go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=29.905) [ahead and add this to our solution. Let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=32.555) [look at the repository that we have here.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=35.760222222222225) [First, we'll come up and we'll just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=38.33) [collapse this to Definitions. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=39.406) [important thing to note is that our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=42.890625) [CSVRepository does implement](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=44.113) [IPersonRepository. That means it has the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=47.261500000000005) [five methods that the interface requires,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=49.531) [GetPeople, GetPerson, AddPerson,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=51.9835) [UpdatePerson, and DeletePerson. If we look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=54.48325) [at the GetPeople method, we'll see that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=58.20014285714285) [this is completely different from what we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=59.82371428571428) [had in the ServiceRepository. Instead of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=62.16314285714285) [making a service call, this is opening a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=64.48166666666667) [file on the file system and then parsing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=66.58900000000001) [it based on comma-separated values. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=68.51549999999999) [let's use this in our application. Back in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=72.32542857142857) [our PeopleViewer project, we'll add a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=74.9812) [reference to the project we just added,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=76.476625) [PersonRespository. CSV. Then in our form,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=80.23849999999999) [we can go ahead and fill in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=83.6448) [CSVFetchButton event handler. Now the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=86.59040000000002) [thing about this is the code is almost](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=89.46600000000001) [exactly the same as what we have for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=90.83911111111111) [ServiceFetchButton, so I'm going to copy](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=93.20033333333333) [and paste this in here and then change our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=95.53811111111112) [value from ServiceRepository to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=99.1208) [CSVRepository, and again, we'll bring in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=101.416) [the using statement as well. Now I'm not a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=103.87) [big fan of copy and paste. Generally, that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=107.46360000000003) [means that I need to consolidate my code,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=109.19357142857142) [and we'll do that in just a bit. But for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=111.09450000000001) [now, let's get our code working. A big](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=113.57644444444448) [thing to notice about the code that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=115.76) [have here is that we only had to change](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=118.2528) [the concrete type that we were newing up,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=120.30899999999998) [the CSVRepository. We did not need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=123.1788) [change any of the other code because](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=125.24999999999999) [that's referring to the interface rather](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=126.63933333333333) [than any particular concrete type. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=128.418) [let's build and run our application and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=130.634625) [make sure this is working. If we click on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=133.75214285714284) [the CSV Repository button, we'll see that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=137.36900000000003) [we do get data, and down at the bottom,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=139.04590000000002) [our PersonRepository. CSV. CSVRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=141.129) [tells us the concrete type that we're](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=145.172) [using. In addition, I can tell just by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=147.334125) [looking at the data that we're using](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=149.35177777777787) [something different because the text file](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=150.8991666666667) [has an extra record, Jeremy Awesome. And](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=152.66671428571433) [we can also see that our ServiceRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=156.79457142857143) [still works as well. Now let's do the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=158.2958) [thing for SQLRepository. Again, we'll go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=162.79862499999996) [ahead and add an existing project, pick](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=164.54687499999997) [out our SQLRepository, and let's take a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=167.5874) [look at that code. And again, we'll go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=172.27599999999998) [ahead and Collapse to Definitions here.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=174.74049999999997) [Just like with our other repositories, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=176.6717142857143) [SQLRepository implements IPersonRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=180.77100000000002) [so it has our five methods, GetPeople,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=182.49666666666667) [GetPerson, AddPerson, UpdatePerson, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=186.0155) [DeletePerson. And the code for this is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=189.25300000000001) [quite a bit different from our other](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=191.01433333333338) [repositories. In this case, it's using](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=193.35099999999997) [Entity Framework to talk to a SQLite](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=195.3255714285714) [database on our file system. To use this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=198.13300000000004) [in our application, we'll do the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=201.037) [thing as we did with the CSVRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=203.0986363636364) [First, we'll add a reference to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=205.492) [PersonRepository. SQL project that we just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=206.693) [added, and then we'll copy and paste some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=209.291) [code. So we can copy and paste what we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=214.435888888889) [have in our CSV button into our SQL button](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=216.60459999999995) [and then just change the type from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=220.0496666666667) [CSVRepository to SQLRepository and bring](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=222.84571428571425) [in the using statement. So let's build and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=225.4024285714286) [run our application and see what we have.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=228.62149999999997) [If we click on the SQL Repository button,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=230.87359999999998) [we see that we do get data out of our SQL](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=233.61225000000002) [database, and we can see our concrete type](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=236.82788888888896) [is PersonRepository. SQL. SQLRepository,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=239.13179999999997) [and we can also get data from our CSV text](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=243.653) [file and from our web service. So we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=245.73) [three different implementations of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=250.07800000000003) [repository interface that can access](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=251.38328571428573) [different data sources. But we do have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=252.904) [some code duplication. If we look at our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=256.6192857142857) [buttons, what we see is the only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=259.1579999999999) [difference is the concrete type that's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=261) [getting newed up, either the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=263.101) [ServiceRepository, the CSVRepository, or](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=265.6733333333333) [the SQLRepository. Since we only have one](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=270.30779999999993) [line of code that's different, I want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=273.78488888888876) [refactor and consolidate some of this. On](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=275.5726666666666) [the SQLRepository code, I'm going to move](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=279.0022857142857) [the different line of code up to the top](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=280.99555555555554) [of the method and then highlight the rest](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=283.0185) [of it. From here, I'll use the keyboard](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=286.42475) [shortcut Ctrl+dot to bring up our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=288.92900000000003) [refactoring, and there's an option for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=290.987) [extract method. It will take that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=293.694) [highlighted text and put it into a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=296.205) [separate method that we'll call](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=298.0101250000001) [PopulateListBox. I'm using the built-in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=301.7935999999999) [Visual Studio refactoring here. I don't](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=303.7603333333334) [have any third-party tools installed for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=305.571) [this. The great thing about this is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=308.5721999999999) [refactoring tool saw that I needed an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=310.604) [IPersonRepository in the code, so it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=312.388) [actually included that as a parameter for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=315.45824999999996) [the PopulateListBox method. So now that I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=317.70799999999997) [have this consolidated code, I can call it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=321.1140000000001) [in our other two methods as well. So in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=323.3468181818181) [our CSVFetchButton, I can delete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=326.17314285714286) [everything that's not unique and paste in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=327.911) [the call to PopulateListbox, and I can do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=330.655) [the same thing for our ServiceRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=333.088) [Now I'm going to do one more piece of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=338.779) [refactoring, and that's get rid of this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=340.198) [temporary repository variable. And again,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=342.102) [for this, I'll use the Visual Studio](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=345.5125) [refactoring tools. So I'll hit Ctrl+dot,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=347.1273333333333) [and you'll see there's an option for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=349.52857142857147) [Inline temporary variable, and it will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=351.65266666666673) [just move the new ServiceRepository call](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=353.5055) [into the parameter of the PopulateListBox](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=355.80319999999995) [method. And we can do this with our other](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=359.97725) [two methods as well. We've removed the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=361.86922222222245) [duplicated code, but one of the great](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=368.564) [things is how this PopulateListBox is set](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=370.66) [up. It only cares about our interface,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=373.75487499999986) [IPersonRepository. All it needs is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=377.82528571428577) [object that has the GetPeople method on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=379.39000000000004) [it. It doesn't care about any specific](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=381.4464999999999) [repository types. Now one thing I do not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=383.658) [like about the code as it is now is that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=387.074) [our UI is newing up the repositories. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=389.413) [is outside the responsibility of our UI](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=393.0385714285714) [code. We really should move this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=394.9402857142857) [responsibility to another object. For](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=396.754) [that, we will use a factory method to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=399.791) [create the appropriate repository. Let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=401.439) [take a quick look at what a factory method is, and then we will update the code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=3&mode=live&start=403.85533333333336)

[The Factory Method Pattern](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live)

[A factory method is responsible for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=1.199) [getting us an instance of an object. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=2.7752857142857144) [our case, the factory will return an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=5.536125) [object that implements our repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=7.035) [interface. So let's look at the code. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=10.237499999999999) [GetRepository method returns an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=13.3215) [IPersonRespository. The UI Code can call](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=16.115499999999997) [this method instead of taking](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=17.95122222222222) [responsibility for creating objects](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=19.418833333333332) [itself. This factory method takes a string](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=21.65016666666667) [as a parameter. The string will indicate](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=24.247999999999998) [what type of repository we want. Based on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=26.03885714285714) [the value of the parameter, we new up a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=28.738875000000007) [ServiceRepository, a CSVRepository, or a SQLRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=4&mode=live&start=31.251)

[Demo: Repository Factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live)

[Now we'll put this into action. We will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=1.136) [add the factory method to create the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=3.7347500000000005) [repositories and then use it in the UI](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=5.3882) [code. This means that we can remove](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=8.493800000000002) [references to the specific repositories](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=10.403000000000004) [from our UI code. The core application](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=12.20942857142857) [will only know about the interface. The UI](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=14.888714285714288) [code is insulated from details that it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=17.55785714285715) [should not be concerned with. Now we're](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=19.43471428571428) [back in the Extensibility project, and we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=23.418666666666667) [want to add the factory method. We will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=25.476) [put this into a separate project. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=27.8825) [way, our PeopleViewer project can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=30.069333333333333) [reference only the factory and does not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=31.606) [need to know about any of the specific](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=33.584) [repositories or their projects. So under](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=35.518) [the Repositories folder, we'll right-click](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=39.3582) [and say Add New Project. We'll choose the.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=41.528571428571425) [NET Standard class library and call it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=44.772499999999994) [PersonRepository. Factory. Then we'll add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=49.962) [references to our Repository projects. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=54.130375) [we'll add the CSV Repository, the Service](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=57.82666666666667) [Repository, the SQL Repository, as well as](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=60.870000000000005) [the Interface. Then we'll just rename our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=64.7616) [class, so instead of Class1, we'll call it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=67.81349999999998) [RepositoryFactory. And for this factory,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=75.09737500000003) [we'll create a public static class that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=76.91799999999998) [has a public static member, and our method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=78.73471428571428) [will return an IPersonRepository, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=81.86442857142856) [we'll call this GetRepository, and as](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=84.8978) [mentioned, we'll add a string that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=89.69525000000002) [represents the repositoryType that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=91.79414285714283) [want. Now I usually start out by creating](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=95.509) [a variable that I can return to get rid of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=98.32250000000002) [the red squigglies. So we'll just create](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=100.243) [an IPersonRepository variable, set it to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=102.198) [null, and then return that value. Now we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=104.495) [can add the assignments for this variable.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=110.62622222222222) [For this, I'll use a switch statement, so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=112.776) [I'll just type in switch and hit Tab twice](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=114.24677777777778) [to invoke the code snippet. We're going to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=116.7825) [switch on the repository type that we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=119.47657142857143) [as a parameter and then fill in different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=121.40577777777779) [case statements. I won't make you watch me](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=124.4666) [do this step by step, so I'll be back in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=126.43979999999996) [just a minute. So here's our completed](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=130.39966666666666) [method. Inside the switch statement, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=133.70879999999997) [look for a string. So if the string is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=135.46811111111114) [Service, we return a ServiceRepository; if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=137.56066666666672) [it's CSV, we return a CSVRepository; and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=139.17971428571428) [if it's SQL, we return a SQLRepository;](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=142.1155) [and it it's anything else, we'll return an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=145.38916666666665) [ArgumentException because we don't](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=149.084) [understand what we need to return. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=150.54399999999998) [let's go back to the PeopleViewer project](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=153.106) [and use this factory method. The first](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=154.63716666666667) [thing we'll need to do is add a reference](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=157.258) [to the PersonRepository. Factory project](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=159.3118) [that we just created. Then we just have to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=162.4362) [go and update the code that we have in our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=166.38450000000003) [PopulateListBox method. Instead of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=169.41457142857138) [bringing in the repository as a parameter,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=170.752) [we'll call the factory method. SO let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=172.71800000000002) [ahead and add a line of code where we take](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=175.47099999999998) [our IPersonRepository and assign it to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=178.27249999999998) [RepositoryFactory, and again, bring in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=183.50579999999997) [using statement,. GetRepository, and this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=185.70871428571425) [wants a repositoryType parameter, so let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=188.86939999999996) [add that to our PopulateListBox. So that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=192.30533333333338) [makes our PopulateListBox method happy,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=199.0473333333333) [but now all of our calling methods are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=200.63225) [broken. Instead of newing up a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=203.03585714285714) [ServiceRepository, we'll just pass in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=205.351) [string we want, which is service, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=207.419) [we'll do the same thing for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=209.901875) [CSVRepository and our SQLRepository. Now](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=210.895) [it is easy to mistype these strings, so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=217.22125) [you might want to use an enum instead.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=219.41977777777777) [I've actually explored both options for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=221.874) [this particular scenario. Personally, I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=223.532) [don't really like either one, but I'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=226.03042857142856) [stick with the string for this example. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=227.91388888888886) [let's build and run our application to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=230.41) [make sure that it still works. So we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=231.838) [click on the Service Repository button and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=235.554875) [get data from our service. The CSV](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=237.115) [Repository gives us data from our text](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=239.338) [file, and our SQL Repository gets it from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=241.57975000000002) [our SQL database. So everything still](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=244.87425000000002) [works, but look what we can do to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=247.58925) [project. Because if we scroll up to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=251.23939999999996) [top of our MainWindow class, we see we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=253.19850000000008) [have several unused using statements.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=255.35742857142856) [We're no longer referencing the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=258.238) [CSVRepository directly, or the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=259.385) [ServiceRepository, or the SQLRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=262.72566666666665) [And in fact, we can take this a step](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=265.357) [further. If we look at our references, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=267.57099999999986) [can remove references to the CSV](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=269.4705555555557) [Repository project, as well as the Service](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=272.2063333333333) [and SQL Repository projects as well. And](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=274.94612499999994) [if we run our application, it will still](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=277.56300000000005) [work the same way. We can get data from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=281.5365) [the Service, our text file, and from our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=285.37014285714275) [SQL Server. And here is the really](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=289.15425000000005) [interesting thing. In the PeopleViewer](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=292.10542857142855) [project, which is the UI of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=293.55242857142866) [application, we only care about the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=295.66474999999997) [Interface. The Interface gives us the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=298.10457142857143) [piece of functionality that we need, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=300.826) [that's calling the GetPeople method. We do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=303.1988333333333) [not care what object we have as long as it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=306.03459999999995) [has a GetPeople method on it. This gives](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=308.71924999999993) [us a better separation of concerns and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=311.5494285714285) [puts responsibilities where they belong.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=313.5932) [It does not make a whole lot of sense for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=315.5158888888889) [one application to reference three](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=319.11128571428566) [different data sources. Most likely, our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=320.992) [application will need to access one data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=323.0517142857143) [source based on a particular client's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=324.88942857142865) [needs. That's something that we'll look at in a future demo.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=5&mode=live&start=327.1453333333333)

[Summary](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live)

[By using our repository interface, we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=1.19) [been able to remove references to any](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=3.68375) [specific repository in our calling code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=5.644) [The PopulateListBox method references](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=8.5) [IPersonRepository, and it asks the factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=10.495) [method to provide an object that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=13.354) [implements that. When we call the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=16.0015) [GetPeople method, we know that we will get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=17.941999999999993) [an IEnumerable of Person back. We do not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=19.973000000000003) [care about the details of how that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=22.063375) [happens. We just care that it does happen.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=24.3494) [The details can be someone else's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=26.949) [responsibility. This also means that if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=30.230142857142855) [need to switch to a different SQL](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=31.70833333333333) [Repository, for example, one that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=33.696285714285715) [references an Oracle or MySQL database, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=35.52457142857143) [just need to update the factory method to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=37.826142857142855) [create the right repository. Our calling](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=40.437571428571424) [code does not need to care about that. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=42.40625000000001) [this module, we focused on the how of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=46.7407) [interfaces. Specifically, we saw how to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=50.002299999999984) [create a repository interface. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=51.62142857142857) [interface represents how we interact with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=54.483000000000004) [data using CRUD operations. We saw how to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=56.4814) [implement the interface. We created a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=60.31842857142857) [service repository and saw how Visual](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=62.29687500000001) [Studio gives us an easy way to stub out](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=64.04388888888889) [the members. In addition to the service](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=66.4707142857143) [repository, we used repositories that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=69.3034) [access a text file and a SQL Server. With](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=71.60466666666667) [the interface in place, it was easy to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=75.54133333333334) [eliminate code duplication. The interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=77.104) [became a parameter that we could use to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=79.79557142857144) [create a consolidated method. Then we took](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=82.47942857142858) [that one step further to create a factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=85.16287500000001) [method. This moved the details out of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=87.57374999999999) [main application so that we could focus on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=89.78549999999998) [the important functionality, getting a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=91.48525) [collection of Person objects that we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=93.95485714285714) [display for our users. As mentioned, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=96.12) [probably only want to access a single data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=98.86885714285714) [source from our application, but we also](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=100.95685714285712) [want it to be easy to swap this out so we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=102.84866666666669) [can support multiple clients. In the next](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=106.7058) [module, we will look at how interfaces can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=108.82066666666665) [help us load up a repository at runtime and accomplish those goals.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=92cdbe70-7470-42d0-b0e9-095e9e7d3a72&clip=6&mode=live&start=110.51125)

[Interfaces and Dynamic Loading](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live)

[Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live)

[We have created several different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=0) [repositories to implement our interface,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=2.694) [but whenever we use them, we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=5.746) [compile-time references to the concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=7.539666666666666) [class. We can take our application a step](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=9.168166666666668) [further. We can update it so that it does](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=12.802000000000003) [not know anything about the concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=15.082000000000004) [repository classes at compile time.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=17.0618) [Instead, we dynamically load a specific](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=20.094) [repository when the application executes.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=22.102) [This removes the connection between our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=25.476) [application and any specific repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=27.081) [implementation, and that meets our current](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=29.647) [scenario very well. This time, we'll look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=31.877) [at bit more at the how and why of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=36.33566666666666) [interfaces. by using the interface only,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=39.61659999999999) [we can focus on the important](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=41.680374999999984) [functionality and not worry about the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=43.947) [details. We will do this by updating our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=47.34725) [code to make a decision when our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=49.36799999999999) [application actually runs rather than when](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=51.161500000000004) [it is compiled. This means that we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=53.79924999999999) [change the behavior of our application](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=56.207375000000006) [without recompiling, and that works great](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=58.39220000000001) [for our multiple client scenario. Since we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=60.34642857142857) [do not have to recompile to make these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=62.62649999999999) [changes, our application is easier to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=65.8686) [maintain and deploy, and it also makes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=67.67057142857144) [unit testing easier as well. Unit testing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=70.53442857142853) [has been a huge benefit in my development](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=73.03762499999999) [at work. We will see how interfaces can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=75.94457142857144) [make our unit tests easy to read, write,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=77.92274999999997) [and understand. So let's keep going to see how we can get all of these benefits.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=0&mode=live&start=81.00449999999998)

[Compile-time Factory vs. Dynamic Factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live)

[We have already seen our advice to program](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=1.377) [to an abstraction rather than a concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=2.996) [type. In our world, this means to program](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=5.768) [to an interface rather than a concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=7.836999999999999) [class. We've done this to a certain extent](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=10.46) [already. In our application code, we use a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=14.133499999999998) [factory method to get an object that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=16.488750000000003) [implements our interface,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=18.191499999999998) [IPersonRepository. Then we call the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=20.3855) [GetPeople method that is included on that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=22.962) [interface. Our application code has no](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=25.718749999999996) [references to any of the concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=28.062428571428576) [repositories, whether the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=30.384600000000006) [ServiceRepository, CSVRepository, or](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=32.06133333333334) [SQLRepository. Our factory method has the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=35.51433333333333) [responsibility to give us an instance of a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=38.78816666666666) [repository, and it has compile-time](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=41.744) [references to each of our repositories. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=43.345) [can remove these compile-time references,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=46.321) [but do we really need to do this? There](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=48.028999999999996) [are a few drawbacks to the way our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=51.65788888888889) [compile-time factory works. Our factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=53.297) [method has a parameter, a string](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=56.617666666666665) [specifying the repository type. In itself,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=59.00233333333333) [this is not too bad, but the result is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=61.604142857142854) [that the calling code is selecting which](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=63.93133333333332) [repository type to use. Depending on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=65.891) [situation, this may be okay. But for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=68.82525000000001) [example, we would be better off if that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=71.384) [responsibility was somewhere else. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=73.84299999999999) [biggest drawback is that we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=75.99642857142858) [compile-time references to all of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=77.289) [repositories. This means that if we need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=80.38414285714286) [to add a new repository, we need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=82.00460000000001) [recompile our entire application. This may](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=84.78749999999998) [not be a problem for an internal](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=87.42420000000001) [application. But if we ship our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=89.48990000000005) [application out to multiple clients, then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=90.78687500000004) [each client could potentially have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=92.3935) [different build, and that is a support](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=94.67639999999999) [nightmare. We will replace our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=97.53383333333335) [compile-time factory with a dynamic](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=99.46033333333332) [factory. This factory has no parameter.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=101.76875000000001) [Instead, it uses configuration information](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=105.056) [to pick which repository to use. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=107.681) [calling code no longer has that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=110.56925) [responsibility. More importantly, our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=113.43274999999998) [dynamic factory has no compile-time](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=114.96149999999999) [references to the repositories. Instead,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=117.12200000000001) [it loads up the appropriate assemblies at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=119.6235) [runtime. Since we have no compile-time](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=122.38900000000001) [references, we do not need to rebuild the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=125.07383333333331) [application to add a new repository. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=127.05712500000001) [means that each of our clients can have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=130.18687500000001) [the same build of the core application,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=131.66342857142857) [and that is much easier to support. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=133.57037499999998) [dynamic factory method uses a little bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=138.09028571428573) [of reflection to load up the appropriate](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=140.11642857142857) [assembly at runtime. We will walk through](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=142.069) [the details when we look at the code. For](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=145.01350000000002) [now, the basic steps will do. First, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=146.99655555555557) [get the type and assembly information from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=149.44749999999996) [our configuration file. Then we load that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=152.80199999999996) [assembly using reflection. Then we create](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=156.698) [an instance of the repository using the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=158.78900000000002) [activator class. It is okay if this code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=161.566) [looks unfamiliar. Reflection can be a bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=164.71725000000006) [daunting. This will make more sense once we get into the code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=1&mode=live&start=167.58999999999992)

[Demo: Making Choices at Run-time](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live)

[Now let's go to the code. In this sample,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=1.358) [we will add the dynamic loading code that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=3.736) [we just saw. With this in place, our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=5.825499999999999) [application will have no compile-time](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=7.899285714285717) [references to a specific repository. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=9.400500000000001) [means that we can change the repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=12.520571428571428) [that the application uses without](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=14.1906) [recompiling the application. This will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=16.77425) [allow us to easily support multiple](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=19.38142857142857) [clients with different data sources](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=21.0216) [without having a deployment and support](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=22.686666666666667) [nightmare. Here we are in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=25.976) [DynamicLoading solution. This application](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=29.35985714285714) [is a little different from the one that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=30.64442857142857) [we've been working with. Let's run it and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=32.85328571428572) [then look through the code. Just like our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=35.40922222222221) [other solutions, we do need to start the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=37.48174999999999) [service manually, and I've already done](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=39.3632) [this. This application just has one button](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=41.915200000000006) [for our Dynamic Repository. I won't click](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=44.49942857142858) [it now because the code hasn't been](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=47.0295) [implemented yet. So now let's look at the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=49.309) [projects that we have here. A big thing to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=51.417999999999985) [note is that under our Repositories](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=53.997666666666674) [folder, we have no concrete repositories,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=56.31771428571429) [only the Interface and the Factory. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=58.921600000000005) [is important because we do not want any](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=62.10485714285715) [compile-time references to those](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=65.0047142857143) [repositories. In addition, we have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=66.935) [PeopleViewer project, and this is similar](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=69.12399999999997) [to the one that we saw earlier. We won't](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=70.51575000000003) [worry about the PeopleViewer. Test or the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=73.77128571428572) [PeopleViewer. Layered projects. Those will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=76.15920000000001) [be used in the next demo. For now, let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=78.01075) [look at the PeopleViewer project and go to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=80.26985714285716) [the code behind for our form. Here, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=82.60700000000003) [have an event handler for our FetchButton,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=85.311) [and it looks similar to the code that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=86.60628571428572) [we've seen before. The difference is in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=89.44919999999999) [the factory method. Our GetRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=91.92885714285717) [method does not take any parameters, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=93.47814285714286) [other than that, the rest of the code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=95.9558) [looks the same. So now let's go to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=98.61862500000004) [Factory method and implement it. The first](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=100.93766666666667) [thing we'll do is get some information out](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=103.62749999999998) [of our configuration file. So we'll say](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=106.45866666666669) [string repositryTypeName =](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=109.61800000000001) [ConfigurationManager. appSettings, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=113.757) [this has a value of RepositoryType. What](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=119.64414285714285) [this will do is get some information out](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=124.971625) [of our configuration file. Let's take a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=126.5416) [quick look at that file. In the App.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=128.94987500000002) [config for our PeopleViewer project, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=131.31457142857147) [see that we have a setting for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=132.91044444444444) [RepositoryType, and the value for this is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=134.942) [an assembly qualified name for a specific](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=138.579) [type that we want. Our assembly qualified](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=141.039) [name consists of four parts. The first](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=143.838) [part is the fully qualified type](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=146.7735) [PersonRepository. Service.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=148.662) [ServiceRepository. The second item is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=151.49533333333332) [assembly name, PersonRepository. Service,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=154.30271428571427) [and that references the PersonRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=157.039) [Service. dll file. The Version and Culture](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=158.98825) [provide additional assembly information so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=162.56900000000002) [we make sure we load up the right objects.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=163.92614285714285) [And with this information, we can find a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=167.171) [DLL on the file system and load a type](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=168.602) [from it. So let's go back to our Factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=171.68000000000012) [method. After we get the RepositoryType](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=174.99775) [name, we need to create a Type object, so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=177.52649999999997) [we'll call this Type repositoryType, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=181.011) [we'll use the Type object's GetType method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=184.42742857142855) [and then pass in the repositoryTypeName](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=187.05483333333333) [that we got from configuration. So this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=189.47616666666667) [will take that string and turn it into a.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=192.7686666666667) [NET type. Now that we have that type, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=194.89) [can create an instance using the Activator](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=197.7995) [class. So we'll say object repository =](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=199.81816666666668) [Activator. createInstance, and then we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=205.37349999999998) [pass in our repositoryType. Now you'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=209.603) [notice that I'm not using var on any of my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=212.42100000000002) [intermediate variable names, and that's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=215.22999999999996) [because this code is difficult enough to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=216.91142857142856) [understand as it is, but it is good to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=218.60511111111109) [know that CreateInstance returns an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=221.29775) [object. Now that object will be our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=223.60962500000005) [repository, so we can safely cast this to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=225.8454285714286) [our interface. So now we'll create an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=228.63611111111103) [IPersonRepository variable called](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=231.48066666666665) [personRepository, and we'll take this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=233.931) [repository object and cast it as](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=236.1435714285714) [IPersonRepository. Now we did see as in a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=239.66075) [previous sample. As will try to do a cast](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=242.75900000000007) [to the appropriate type. If it's not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=245.20163636363628) [successful, it will return null rather](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=246.98325000000003) [than throwing an exception. Finally, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=248.8482) [can return this value. These five lines](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=252.779) [will create an instance of the concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=256.4865) [repository, the surface repository in this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=258.98299999999995) [case. For more information on using](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=261.8483333333334) [reflection, you can take a look at my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=263.7734999999999) [course, Practical Reflection, here on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=265.09524999999996) [Pluralsight. So now let's go ahead and run](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=267.2988000000001) [the application. When we click on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=270.571) [Dynamic Repository button, we see we do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=272.45257142857133) [get data from our web service, and we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=274.1950000000001) [see the type is PersonRepository. Service.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=276.5954999999999) [ServiceRepository. But there is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=280.3476666666666) [question. If we don't have any](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=282.99280000000005) [compile-time references to the repository,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=284.6645000000001) [how does the application find it? Now by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=286.27242857142846) [default, when we use this type of code, it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=290.0116666666667) [will look for DLLs in the same folder as](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=292.0652222222222) [the executable, but we do have to get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=294.4311111111111) [those DLLs into the executable folder](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=297.010625) [somehow. In this case, I have a set of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=299.8643749999999) [DLLs that we can copy in. Let me go ahead](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=301.6898181818181) [and open up the solution folder in File](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=304.065) [Explorer. In here, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=307.5401666666666) [RepositoriesForBin folder, and this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=309.74416666666673) [contains the assemblies for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=311.2755000000001) [repositories, as well as all of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=312.95700000000005) [supporting assemblies that those need. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=314.651) [we can see here we have PersonRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=317.45271428571425) [CSV. dll, PersonRepostory. Service. dll,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=319.6753333333333) [and PersonRepository. SQL. dll. All of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=324.328) [other files in this folder support these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=328.07462499999997) [repositories. So for example, they have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=330.3193333333333) [Entity Framework DLLs, as well as some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=332.43842857142846) [parsing DLLs for the web service. Now when](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=334.41244444444453) [we build our application, the files from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=336.91542857142866) [this folder are copied into the executable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=339.3155714285715) [folder, and this is done with a Visual](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=342.1112) [Studio build event. If we look at the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=345.01359999999994) [properties on our PeopleViewer project,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=346.83225000000004) [we'll see that we have a post-build event](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=348.50399999999996) [setup. I won't go into the details of how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=353.42719999999997) [post-build events work, but whenever we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=355.432) [build our application, these commands will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=357.717) [run. And in this case, we're copying all](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=360.4255714285713) [the files from the RepositoriesForBin](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=362.06612499999994) [folder and putting them into the output](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=364.12) [folder where our executable is. If we look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=366.1809999999999) [at the application config file for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=369.7665) [application, we see that in addition to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=371.7384285714286) [the settings for the ServiceRepository, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=374.235) [also have settings for the CSVRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=376.0286) [and SQLRepository. These are currently](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=379.8571999999999) [commented out because we only have one](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=382.2484999999999) [active repository at a time. To see how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=384.6945555555555) [impressive this functionality is, we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=387.5315) [run this from the file system. So let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=389.116) [to the folder for our PeopleViewer project](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=392.34174999999993) [and navigate to the bin Debug folder. If](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=394.4106666666667) [we scroll down, we'll find our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=397.9337142857143) [PeopleViewer. exe, as well as the config](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=400.25812499999995) [file that goes along with it. We can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=402.5105) [double-click from here to run our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=405.16225) [application, and when we click the button,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=406.138) [we'll see that we're getting data from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=407.991) [ServiceRepository. So now let's edit our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=411.1723333333334) [configuration file. I'm going to do this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=413.7628571428572) [with Visual Studio Code. And to edit the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=416.5438888888889) [file, I'm going to come to this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=418.9194) [appSettings section for the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=420.4832) [ServiceRepository and comment it out. Then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=421.624) [I'll come to the section for the CSVFile](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=425.154375) [and uncomment it. So we can see this is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=426.84025) [referencing PersonRepository. CSV.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=430.1538571428571) [CSVRepository. Now I can save this file](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=433.4043333333333) [and go back to File Explorer. Now when we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=436.4270000000001) [double-click on the application and click](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=439.495) [the button, we get data from the CSV](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=442.3443333333332) [Repository. We just changed the repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=446.2818571428572) [that's being using by this application](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=448.0750000000001) [without having to recompile it, and we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=449.9924285714285) [do the same thing for the SQLRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=452.53455555555564) [Just comment the section for the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=455.778) [CSVRepository and uncomment the section](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=457.284) [for the SQLRepository. Again, we'll save](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=460.5306666666667) [the file and double-click the executable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=463.3599999999999) [on our file system, and now we're hitting](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=466.1174285714286) [a SQL database. So let's think about what](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=470.23066666666654) [this means for our clients. When we deploy](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=472.6611249999999) [the application to a client, they get the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=475.1215) [core application assemblies along with a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=477.57625000000013) [configuration and assemblies for their](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=480.026) [particular repository. If a client wants](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=482.399) [to change to a different data source, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=485.44977777777785) [just need to give them the new repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=487.10499999999996) [DLLs and update the configuration. There](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=489.5655714285715) [is no need to rebuild or redeploy the core](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=492.3403333333334) [application. This also means that our core](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=495.0652857142857) [application does not need to go through](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=497.8444285714286) [our build, test, package, and deploy](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=499.8696) [system. Just the repository needs to go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=502.31100000000004) [through this process. This simplifies](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=505.23850000000004) [support as well since all of our clients](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=507.0705714285715) [can easily be on the same version of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=509.08233333333334) [core application. There are drawbacks to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=511.81739999999996) [this approach. Debugging is much more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=514.0863333333333) [complicated, so we only want to use this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=516.6251999999998) [where we will get the benefits like we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=518.4227000000001) [have here in our multi-client scenario. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=519.9315555555555) [will take a closer look at the drawbacks in a later module.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=2&mode=live&start=522.7684444444444)

[Unit Testing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live)

[Unit testing is a big part of my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=1.031) [development process. I have seen a number](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=2.567) [of benefits, and the result is that I'm a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=5.239) [faster developer. There are different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=8.142333333333335) [kinds of tests. Today, we are specifically](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=9.742999999999999) [dealing with unit tests where we test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=11.851000000000003) [pieces of functionality in isolation. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=13.945857142857147) [isolation is a big part of that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=17.702111111111112) [definition. When we are testing a small](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=19.8938888888889) [piece of functionality, we want to fake up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=21.292250000000003) [anything that is not directly relevant to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=23.819142857142854) [the test. In our case, it means creating a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=26.419499999999992) [fake repository that can give us some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=28.46537500000001) [records for testing. The good news is that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=30.151) [interfaces can help us isolate our code to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=34.14150000000001) [make it easier to test. An interface is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=36.502500000000005) [plug-in point to our code. We can unplug](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=39.25688888888888) [our real functionality and plug in a test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=41.50442857142856) [object. Here is the code that we would](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=45.20900000000001) [like to test, the FetchButton](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=46.82700000000002) [functionality of our application. We want](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=48.813714285714276) [to make sure that it gets data from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=51.406800000000004) [repository and provides it to the ListBox](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=52.96057142857143) [as expected, but we do have some problems](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=54.910875000000004) [with trying to test this code. There are a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=57.83828571428571) [lot of dependencies on UI elements. If we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=60.979000000000006) [want to test this method, we need to new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=64.0804) [up an instance of the MainWindow class.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=66.227125) [This is a Window, a UI element. Next, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=68.391) [method we want to call is a Button\_Click](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=72.30333333333334) [event handler. This has parameters for the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=74.42233333333333) [sender and RoutedEventArgs. We need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=77.97075000000002) [supply these values even though they are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=80.24249999999998) [not used in the method itself. And inside](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=82.47025) [the method, we access the PersonListBox,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=85.23800000000001) [another UI element. This is a pretty](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=87.65050000000001) [common problem in the UI world. We are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=91.34739999999998) [going to separate the UI elements from our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=93.58800000000001) [UI logic by creating something known as a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=95.982) [view model. Right now, we have our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=99.81720000000001) [application's MainWindow hooked up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=102.87733333333334) [directly to our repository. What we will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=105.55085714285715) [do instead is break apart the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=109.31299999999999) [application's code into separate classes.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=110.627) [The first is the view. This contains the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=113.514) [MainWindow and all of the UI elements,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=116.06087500000001) [including the buttons and the ListBox.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=118.59) [Then we have the view model that sits](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=121.698) [between the view and the repository. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=123.357) [view model is the UI logic of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=126.6013) [application. It has methods that interact](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=128.9637) [with the repository and properties to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=130.66971428571435) [expose that data to the view. The view](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=132.56266666666667) [model does not contain any UI elements so it is much easier to test.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=3&mode=live&start=134.99500000000003)

[Demo: Isolating Code for Testing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live)

[We will look at some code to see how this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=1.093) [works. First, we will move functionality](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=4.4893636363636364) [out of the MainWindow and into the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=5.96042857142857) [viewModel. With that in place, we can test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=8.907166666666669) [the view model functionality very easily.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=10.548555555555556) [To do this, we add a fake repository to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=13.88) [provide us with some test data. This means](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=16.085) [that we do not have to depend on any of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=18.464999999999996) [our real repositories. When we have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=21.380999999999997) [fake repository, we can unit test the view](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=24.399666666666672) [model with just a few lines of code. And I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=25.833399999999994) [like having unit tests that are very easy](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=28.516333333333343) [to write. Here we are back in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=31.99857142857142) [DynamicLoading solution. To unit test our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=35.649000000000015) [view model functionality, we first need a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=37.757142857142846) [view model. In our solution, we already](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=39.971999999999994) [have a project with a view model in place.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=41.89050000000001) [This is the PeopleViewer. Layered project.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=44.16) [Let's start by looking at the ViewModel.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=47.588) [At the top of our class, we have a private](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=51.462) [field that's an IPersonRepository. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=53.177) [will hold our concrete repository so that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=56.629999999999995) [we can use it later. Our constructor calls](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=58.754) [the Factory method and sets the field.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=61.2905) [Then we have some properties and methods](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=63.4355) [for our UI. We have a People property,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=66.29800000000002) [which is an IEnumerable of Person. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=68.90949999999998) [property will hold our data and can be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=72.249) [data bound to the ListBox in our UI. To](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=74.561) [support our buttons, we have a FetchData](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=77.78649999999999) [and a ClearData method. The FetchData](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=79.82) [method calls the GetPeople method on our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=82.819) [repository and uses it to populate the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=84.85387499999999) [People property that we have. Since the UI](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=87.25228571428572) [is data bound to the People property, that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=89.92833333333334) [will populate the ListBox automatically.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=92.15299999999999) [The ClearData method takes the People](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=94.963) [property and assigns a new empty List to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=96.973) [it. This has the effect of clearing out](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=100.29655555555557) [the property, which will also clear out](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=102.03412499999997) [the ListBox on our UI. Finally, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=103.76414285714286) [RepositoryType property. This gets a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=107.79) [string to represent the concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=111.03800000000001) [RepositoryType so that we can display that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=112.40716666666667) [in our UI. Now let's go to the code behind](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=115.02340000000001) [of our form to see how this view model is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=118.12190000000002) [used. At the top of our class, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=121.64174999999996) [PeopleViewModel field that we can use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=123.247) [throughout the code. In the constructor,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=125.04) [we set that viewModel field by newing up a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=127.88342857142857) [PeopleViewModel object. In the last line](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=131.448) [of the constructor, we set the DataContext](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=133.4605714285714) [of the Window. This is used to support](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=136.08085714285716) [data binding of our UI elements. In our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=138.37688888888886) [Button\_Click event handlers, we see that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=141.1226666666667) [the FetchButton calls the FetchData method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=143.34828571428568) [on the viewModel. Our ClearButton calls](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=145.847) [the ClearData method on the viewModel, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=148.437) [through data binding, our ListBox will get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=150.6174285714286) [automatically updated. In addition, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=154.18433333333334) [have a ShowRepositoryType method. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=157.02742857142857) [will take the RepositoryType property off](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=159.37933333333334) [of our viewModel and put it into a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=161.373) [TextBlock on our screen. The data binding](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=163.269) [to the People property is in the markup of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=166.60399999999996) [our form. If we go to the ListBox and look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=170.1153333333333) [at the ItemSource property, we can see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=173.733) [that there's a Binding to the People](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=176.39099999999996) [property. This is the People property](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=179.12714285714287) [that's on our viewModel. With this code in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=181.3961111111111) [place, we can run the application. And](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=184.17379999999997) [when we click on the button, we see we get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=186.254) [the same functionality that we had before.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=188.08) [In this case, it's getting data from our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=190.089) [CSVRepository. So that's the layout of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=194.64366666666666) [this particular application. The important](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=197.00487499999997) [part is our viewModel. This has our UI](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=199.00233333333333) [functionality, and this is what we want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=201.9005) [test. And since this is separated from our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=204.4572) [UI elements, it's very easy to test, and that's what we'll do next.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=4&mode=live&start=206.47624999999994)

[Demo: Unit Testing with a Fake Repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live)

[So we're still in our DynamicLoading](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=0.777) [solution, and it's time to test our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=2.129) [ViewModel. This ViewModel does not have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=4.55625) [much functionality, but there are a few](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=6.501333333333332) [things we can test. When the FetchData](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=8.364714285714287) [method is called, we expect that it will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=10.842749999999999) [call GetPeople on the repository and then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=13.242428571428567) [populate the People property. This is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=15.304) [something that we can test. When the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=17.962714285714288) [ClearData method is called, we expect that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=20.209) [it will clear out the People property.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=22.320899999999995) [This is another thing that we can test.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=24.416) [Finally, we can make sure that the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=27.89) [RepositoryType property is returning the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=29.645) [expected string based on the repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=31.837) [that we are using. We already have a test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=34.017) [project set up, PeopleViewer. Test. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=37.294) [project has the NUnit testing framework](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=40.870999999999995) [already installed from NuGet. So let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=42.68) [look at the Test class that we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=45.52822222222222) [stubbed out. The PeopleViewModelTest class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=47.691399999999994) [is waiting for us to add unit tests, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=50.343666666666664) [before we can add the tests, we need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=53.204499999999996) [create a fake repository that we can use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=55.144) [for testing. This will be similar to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=57.129) [way we created our other repositories. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=59.522) [we'll right-click on our Repositories](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=62.21333333333333) [folder and add a new project. This will be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=63.41) [a. NET Standard class library called](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=66.453375) [PersonRepository. Fake, and we'll add a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=68.84666666666666) [reference to our interface,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=74.7606) [PersonRepository. Interface, and we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=77.063) [rename our Class1 to FakeRepository. And](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=81.9617142857143) [now we just need to implement our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=86.601) [interface. So we'll say this is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=88.70099999999998) [IPersonRepository, we'll bring in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=92.19642857142858) [using statement, and then we'll implement](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=94.00633333333333) [the interface. Since we're dealing with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=96.72299999999998) [the GetPeople method, I'll go ahead and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=98.6326666666667) [move that to the top of this class. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=99.82188888888888) [first thing that I need to implement this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=103.22166666666664) [GetPeople method is some test data. So we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=106.80700000000002) [can say var people = new List of Person,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=109.85250000000002) [and then now I just want to add some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=114.2452222222222) [records. Let me go ahead and paste those](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=118.61379999999998) [in, and there's our test records. Then we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=120.90537499999996) [just need to return them. Since the unit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=124.19928571428571) [tests we're writing are only using the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=127.224375) [GetPeople method, we don't need to worry](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=129.1672857142857) [about implementing any of the other](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=131.16414285714285) [members of the interface. So now that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=132.928) [have this, let's go back to the test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=135.7708) [project where we can use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=137.73655555555555) [FakeRepository. We will need to add an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=140.48922222222225) [assembly reference to the new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=142.74499999999998) [PersonRepository. Fake project that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=144.45049999999998) [created. The primary reason I'm doing that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=146.36871428571428) [is so that the DLLs get copied into the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=148.95266666666666) [output folder for our tests. This project](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=151.80599999999998) [is using DynamicLoading so the DLLs do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=154.77285714285716) [need to be in the same folder as the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=157.0426) [executable. And in this case, it's the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=159.6345) [test project. Now I do have an App. config](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=162.844) [in my test project, and this has a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=165.84490000000008) [RepositoryType configuration to reference](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=168.91799999999998) [the FakeRepository. This means when our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=171.22660000000002) [tests run, the FakeRepository will be used](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=174.02166666666668) [when the Factory method creates the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=176.03671428571423) [repository. So now we can create some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=179.245) [tests. The first thing we'll do is test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=182.40200000000007) [our Fetch method. So we'll flag this as a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=184.8884) [Test method, and then we'll create a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=188.25799999999998) [public void method, and we'll call this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=191.35375000000005) [People\_OnFetchData\_IsPopulated. I like my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=199.38060000000004) [unit test names to tell what they're](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=201.64833333333337) [doing. So that way, when I'm looking in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=203.0758) [the test explorer, when something goes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=205.0875714285714) [wrong, I have a good idea of what it was](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=206.502125) [trying to do in the first place. Now for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=208.05349999999993) [my tests, I also like to use the Arrange,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=210.02600000000004) [Act, Assert methodology. This is a way of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=214.30728571428577) [organizing our tests. In the Arrange](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=217.79949999999997) [section, we put any setup code that our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=219.466375) [test would need. In this case, we need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=221.57150000000001) [create a view model. So we'll say var](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=223.6732) [viewModel = new PeopleViewModel. Our Act](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=226.61349999999996) [section is where we perform the action](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=229.3105) [we're trying to test. So we can say](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=231.27360000000002) [viewModel. FetchData since that's the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=233.83771428571433) [method we're testing. And then the Assert](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=235.6974) [section is where we test the results. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=237.74500000000003) [we can say Assert. IsNotNull on our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=239.6001428571428) [viewModel. People property, make sure that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=244.30666666666667) [our property is not null, and then we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=247.47499999999997) [also Assert that there's two items in it.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=249.97662499999998) [So we'll say AreEqual 2, our expected](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=252.084) [value, and then the actual value,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=255.0964285714286) [viewModel. People. count. And now we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=258.07625) [check this by running our tests. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=263.4559999999999) [addition to the NUnit. Framework, I also](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=265.5188333333333) [have the NUnit test adapter installed, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=267.43257142857146) [that plugs into the Test Explorer in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=269.6677142857143) [Visual Studio so we can run our test right](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=271.72849999999994) [from here. If we click Run All, we'll see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=274.54099999999994) [that this test does pass. Now let's test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=276.7274444444446) [our type repository string. Again, we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=280.2755) [create another it another Test method, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=284.12033333333335) [we'll call it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=286.86379999999997) [RepositoryType\_OnCreation\_ReturnsFakeRepositoryString.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=289.529) [We do need to create an instance of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=300.113) [view model, so we'll say var viewModel =](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=301.468) [new PeopleViewModel. And then I want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=303.734) [create a string for our expected result,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=308.4044999999999) [so I'll say expectedString =](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=309.9584285714285) [PersonRepository. Fake. FakeRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=311.847) [This is the fully qualified type name for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=317.889) [the repository. Now we don't need to do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=319.634) [any method calls, so we can just check to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=322.507) [see if our values are correct. So we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=324.364) [say Assert. AreEqual, our expectedString,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=327.10600000000005) [and then we'll compare that to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=329.37033333333335) [viewModel. RepositoryType property, and we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=333.5127999999999) [can run our unit tests, and we'll see that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=336.09150000000005) [that comes up green as well. Now there's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=339.24440000000004) [one more test that I'm going to write, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=341.2544444444444) [that's for our Clear method, so we'll say](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=343.41299999999995) [public void People\_OnClearData\_IsEmpty.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=346.77979999999997) [Now the setup for this method is going to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=355.496) [be a little bit more complex. In addition](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=357.3) [to creating the viewModel, I'm also going](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=361.05400000000003) [to call the FetchData method. The reason](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=366.07574999999997) [I'm calling the FetchData method first is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=368.5197142857143) [to make sure the People property is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=370.5455) [populated before I clear it. If I were to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=372.3718333333333) [simply create the object and call Clear](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=375.75944444444445) [immediately, it may be empty just because](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=377.3957142857143) [that's the it was at creation. Now I am](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=380.02325) [going to do a little bit of a sanity check](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=382.81590909090903) [here just to make sure that our People](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=384.46774999999997) [property is in fact populated before we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=387.21371428571433) [test this. And since this is a sanity](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=390.28000000000003) [check, I'll go ahead and add a little](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=393.05485714285714) [string that says Invalid Arrangement. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=394.78177777777796) [if this step fails, I know why. Under the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=400.035625) [Act section, we'll call our ClearData](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=402.942) [method. So we'll say viewModel. ClearData,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=404.4818) [and then in our assertion, we'll just say](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=406.7933333333333) [Assert. AreEqual 0 and viewModel. People.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=412.5900000000001) [Count. And now we can rerun our tests, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=419.46525) [we'll see that all of them come up green.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=422.79879999999997) [And what we see is these tests are very](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=426.739) [small and easy to write. The interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=428.694) [that we have in our code lets us use a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=431.57044444444443) [FakeRepository, and that provides us with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=433.96028571428565) [consistent data that we can use for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=436.1596) [testing. The repository itself is hidden](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=438.9512) [from these tests. This is a bit of a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=441.1406249999999) [complication because of the dynamic](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=443.5256666666667) [loading that we're doing in this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=444.77757142857143) [application. Another approach is to use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=446.7025) [dependency injection to handle these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=449.3435714285714) [dependencies. Interfaces play a key role](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=451.7114285714284) [in dependency injection, and we will take a look at that in a later module.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=5&mode=live&start=453.60357142857134)

[Summary](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live)

[We've looked at quite a bit. We are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=0.812) [relying on interfaces to supply the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=3.7670000000000003) [important functionality. In our case, it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=5.639) [is getting people from our data source.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=8.243888888888888) [But in this process, we removed the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=10.131333333333334) [details of interacting with any particular](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=12.888857142857145) [data source. Our application can work with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=15.271) [any repository as long as it implements](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=17.804166666666664) [our interface. We also saw how we can move](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=21.074999999999992) [compile-time decisions to runtime](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=23.943750000000005) [decisions. Based on configuration, we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=26.303500000000003) [pull a repository out of a DLL on the file](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=28.35671428571428) [system. This works great for our scenario](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=32.263444444444445) [of having multiple clients because we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=34.491500000000016) [change the repository without recompiling](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=36.58257142857143) [the application. This gives us easier](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=39.744200000000006) [maintenance because the bulk of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=42.687) [application stays unchanged. If a client](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=45.04642857142858) [switches to a different data source, we do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=47.052625) [not have to redeploy the entire](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=49.01499999999999) [application, just the parts that are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=50.73242857142857) [relevant to the new data source. And we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=53.057) [saw how interfaces can make unit testing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=56.432249999999996) [easier. They allow us to isolate our code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=58.22742857142857) [from any real repository. Instead, we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=61.373000000000005) [supply our own fake repository, and that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=64.15100000000001) [provides us with consistent test data.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=66.38871428571427) [Another key feature that can help us with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=70.022) [unit testing is to use mock objects](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=71.671) [instead of a real class like we did here.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=73.85325000000003) [We will explore mocking in a later module.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=76.822) [For now, we will take a short detour to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=79.79) [look at what it means to explicitly implement an interface.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=5b682057-06c2-4210-af74-5483c63cc47c&clip=6&mode=live&start=81.521)

[Explicit Interface Implementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live)

[Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live)

[Explicit interface implementation is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=0) [topic that I get asked about quite a bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=2.837) [usually because I show how to implement an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=5.537) [interface using the Visual Studio](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=7.344) [shortcuts and the Implement Interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=9.456499999999998) [Explicitly option pops up. We will take a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=11.775) [look at what explicit implementation is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=16.511) [and why we might need to use it. We will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=17.849) [see how explicit implementation can give](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=20.855428571428575) [us more control over how the methods of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=23.0635) [our class are used. We will also see how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=26.109555555555556) [explicit implementation allows us to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=29.055499999999995) [implement interfaces that have conflicting](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=30.966199999999994) [methods, such as two methods with the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=33.793) [name, but different return types. And we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=36.126874999999984) [will take a closer look at the IEnumerable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=38.663444444444444) [of T and IEnumerable interfaces. We will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=40.83583333333333) [build our own implementation of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=45.37685714285714) [IEnumerable of T and see how explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=46.569) [implementation is needed to resolve conflicting methods.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=0&mode=live&start=49.064)

[Explicit Implementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live)

[Before looking at explicit implementation,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=0.569) [let's review Standard interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=3.404) [implementation. In this case, we have an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=6.0992) [ISaveable interface with one method, Save,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=8.096428571428572) [and we have a Catalog class that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=10.936) [implements the ISaveable interface. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=13.111250000000004) [we create a variable of type Catalog and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=16.742624999999997) [call Save, we get the expected output. If](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=18.92) [we create a variable of type ISaveable and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=21.873874999999998) [call Save, we get the same output.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=23.945875) [Regardless of the type of the variable, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=26.794) [get the same results. Explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=29.3288) [implementation is a little bit different.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=32.33971428571429) [Here, we have the same ISaveable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=34.594) [interface, but our Catalog has implemented](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=36.96485714285715) [it explicitly. Notice that the Save method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=40.24) [is marked as ISaveable. Save. This is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=43.35749999999999) [explicit implementation, meaning that the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=46.8404) [Save method is explicitly associated with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=48.79871428571429) [the interface. Another thing to notice is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=51.579) [that the method does not have an Access](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=54.24387499999999) [modifier. Just like our interface members,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=57.17699999999999) [explicit implementations of interfaces are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=59.258) [automatically public. Here is how our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=61.583) [class behaves when we have an explicitly](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=65.66688888888889) [implemented interface. If we create a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=68.30099999999999) [variable of type Catalog and try to call](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=70.95522222222222) [the Save method, we get a COMPILER ERROR.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=73.00500000000001) [This is because the Save method is only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=75.26871428571428) [accessible when we use the interface type.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=78.175875) [If we create a variable of type ISaveable,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=80.38475) [then we can call the Save method and it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=83.49225) [will work. In addition, if we take our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=86.79120000000002) [variable that is a Catalog type and cast](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=89.22400000000003) [it to an ISaveable, then Save will work.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=91.25466666666671) [The key here is that if we have an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=94.878) [explicit implementation, we must reference](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=96.60960000000006) [the interface when we run those methods.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=98.6684) [In effect, the explicitly implemented](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=101.746) [method is hidden from the class. If we use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=104.009) [IntelliSense in Visual Studio to inspect](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=107.64725) [the members of a class variable, we will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=109.60042857142857) [not see the explicit implementations. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=112.16271428571427) [forces someone to use the interface if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=114.6595) [they want to access that functionality.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=116.637) [Let's take a closer look at these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=121.013) [scenarios. If we create a variable with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=123.80950000000003) [the interface type, we can call the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=125.44800000000004) [explicitly implemented Save. If we create](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=127.71100000000001) [a variable with a different type, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=130.54242857142856) [cannot call the Save method. If we use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=133.14449999999997) [var keyword, the compiler automatically](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=136.85699999999997) [picks the type based on what is assigned](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=138.932) [to the variable. Since it is a catalog,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=141.83112499999996) [that's the type that's used for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=144.17337499999996) [variable. So calling Save will not work](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=146.4698) [here for the same reason it does not work](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=148.36766666666665) [for the previous example. But we can take](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=150.25050000000005) [our Catalog variable and cast it to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=153.50842857142862) [interface. The cast will work since](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=157.01562500000006) [Catalog implements ISaveable. After we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=159.89362500000001) [cast the variable, we can call the Save](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=161.75811111111108) [method successfully. It is also possible](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=164.31866666666667) [to mix methods, although this can be a bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=167.9377142857143) [confusing. Here, we have the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=171.26942857142856) [interface, ISaveable, but our catalog has](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=172.96000000000004) [two different Save methods. One of them is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=175.78483333333338) [a standard method, and the other is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=179.1444285714286) [explicit implementation of the ISaveable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=181.48071428571424) [interface. If we do this, then we get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=184.46425) [different behavior depending on the type](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=186.68387499999994) [of our variable. If our variable is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=188.72599999999994) [specified as a Catalog, then we get the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=191.14) [standard Save method. If our variable is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=194.09128571428576) [specified as ISaveable, then we get the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=196.85200000000003) [interface Save method. And if we take our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=199.7004285714286) [Catalog variable and cast it as an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=202.08187499999997) [ISaveable, we get the interface Save](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=203.95700000000002) [method. Sometimes explicit implementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=207.464) [must be used. Here is an example of two](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=210.21899999999997) [interfaces that have different return](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=213.28399999999996) [types in the same method name. In C#, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=214.68500000000003) [can overload methods by specifying](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=218.0221428571428) [different parameters, but we are not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=220.384) [allowed to overload by specifying](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=222.2695) [different return types. This means that if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=223.77075000000002) [we want to implement both of these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=226.48649999999995) [interfaces, we need to explicitly](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=228.28199999999995) [implement one of the methods so that the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=229.89499999999998) [complier will know which method we want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=232.4787142857143) [use. Here is a Catalog class that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=235.07000000000002) [explicitly implements one of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=237.93171428571426) [interfaces. In this case, the Save method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=240.37028571428564) [is available to both Catalog and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=242.37225) [ISaveable. The IDbSaver Save method is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=245.60179999999997) [only available to IDbSaver. We could also](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=248.19442857142863) [implement it the other way where ISaveable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=252.0904285714285) [is explicit and a standard Save method is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=255.28728571428573) [available to Catalog and IDbSaver, or we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=257.7269999999999) [could implement both interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=261.76171428571416) [explicitly. In this case, each interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=264.75266666666664) [would get its specified method, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=266.8669999999999) [neither one would be directly available to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=268.6691428571429) [the Catalog class. It can get a bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=271.67299999999994) [confusing, but if we have conflicting](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=274.3765000000001) [methods, we need to implement at least one of the interfaces explicitly.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=1&mode=live&start=275.74333333333334)

[IEnumerable<T> and Explicit Implementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live)

[Earlier, we saw code where we assigned a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=0.932) [People variable to the ItemSource property](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=3.047) [of a ListBox. The ItemSource property is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=5.409) [an IEnumerable, and the people variable is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=8.659) [an IEnumerable of Person. At first glance,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=11.768) [this looks like we have a type mismatch.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=15.041999999999998) [IEnumerable is different from IEnumerable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=17.470799999999997) [of T, but let's take a closer look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=19.98125) [IEnumerable of T. If we look at the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=24.157500000000002) [interface definition for IEnumerable of T,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=27.298125000000006) [we see that it inherits from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=29.1195) [IEnumerable interface. This is a bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=32.435) [confusing since we normally think of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=34.8505) [implementation with interfaces, not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=36.7236) [inheritance. But what this means is that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=38.511714285714284) [IEnumerable of T includes all of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=41.81575) [members of IEnumerable in addition to any](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=44.376) [members it specifies itself. So that means](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=46.923) [if we look at our ItemSource assignment,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=51.67066666666667) [we have no type mismatch. Our People](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=53.2005) [variable is both an IEnumerable of Person,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=56.32242857142857) [as well as an IEnumerable so this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=58.690000000000005) [assignment works fine. But why are we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=61.4065) [mentioning IEnumerable in interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=64.52485714285716) [inheritance when we are supposed to be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=65.75366666666667) [talking about explicit implementation? It](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=68.33266666666667) [is because of the signatures of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=70.55387499999999) [methods included in IEnumerable. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=72.233) [IEnumerable interface has a single method,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=76.50116666666666) [GetEnumerator. This returns an IEnumerator](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=79.24600000000001) [object. The IEnumerable of T interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=83.01140000000001) [also has a single method, GetEnumerator,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=85.04299999999998) [but this returns an IEnumerator of T](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=87.843) [object. These are conflicting methods just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=91.67462500000002) [like we saw earlier. And because of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=93.64699999999998) [interface inheritance, anyone who want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=96.17783333333334) [implement IEnumerable of T must implement](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=98.57749999999999) [both of these methods. That means that we need to use explicit implementation.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=2&mode=live&start=101.004)

[Demo: Building an IEnumerable<T>](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live)

[We are going to do a quick demo to show](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=1.389) [this in action. We will use explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=3.114) [interface implementation to create a class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=6.196) [that implements IEnumerable of T. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=8.337) [class will generate odd numbers. It is not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=12.397833333333333) [very complex, but it will show us how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=15.1078) [explicit interface implementation works.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=17.503800000000002) [Here we are in the ExplicitImplementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=21.107) [solution. This has a console application](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=23.945857142857143) [that will output odd numbers. For this, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=25.681142857142852) [will create a class that implements](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=28.405285714285714) [IEnumerable of int. Then in our program,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=29.949) [we can use a foreach loop to output the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=33.108) [numbers. If we look at our Program class,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=36.332699999999996) [we can see that it's currently mostly](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=38.24080000000002) [empty. What we want to do is foreach over](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=41.1138) [an OddGenerator object. Let's start by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=43.353111111111104) [specifying that OddGenerator implements](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=47.202) [IEnumerable of int. Let's let Visual](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=49.1995) [Studio implement the interface for us.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=52.468999999999994) [Notice that Visual Studio created two](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=55.0555) [methods for us. We have GetEnumerator,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=58.02000000000001) [which returns a strongly typed IEnumerator](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=60.1535) [of int, and we also have an explicitly](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=62.86500000000001) [implemented IEnumerable, GetEnumerator.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=66.12700000000002) [Visual Studio recognizes the conflicting](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=69.724) [methods, and so it created the explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=71.656) [implementation for us automatically. Let's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=73.752) [implement our first method. We'll start by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=77.1084) [creating a variable that we can use to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=79.89675000000001) [keep track of our number, and we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=81.562375) [initialize it to 1. Then we'll use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=83.98299999999999) [yield keyword to return that value. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=87.12650000000002) [yield keyword will automatically create an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=89.565) [IEnumerator for us so we don't have to go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=92.46900000000002) [through all of that work. After returning](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=95.12054545454548) [the first value, we can set up a while](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=96.74075) [loop and just say while true, add 2 to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=99.515) [number, and then yield return that number.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=103.92877777777777) [So it will start with 1 and then go 3, 5,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=107.31677777777777) [7, 9, etc., generating an iteration of odd](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=112.12657142857145) [numbers. We mentioned earlier that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=116.53916666666667) [IEnumerable does not need to be associated](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=118.32533333333333) [with the collection, and we can see that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=120.02328571428573) [example right here. This will generate](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=122.3252857142857) [numbers as they're asked for it. They are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=124.6045714285714) [not generated in advance. But we also need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=127.69133333333333) [to implement our explicit IEnumerable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=130.89549999999997) [GetEnumerator method. For this, we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=133.34933333333333) [return the value of our non-explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=136.73577777777783) [implementation. And in this code, this is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=139.5575) [not strictly required, but I like to use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=142.62774999999993) [it here because it can be confusing as to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=144.89699999999996) [what is getting called. Now that we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=147.81319999999997) [our odd number generator, we can complete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=150.14999999999998) [our Console application. For this, we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=152.56400000000002) [just create an instance of our generator,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=154.66299999999998) [and then we'll foreach through it. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=157.64500000000004) [we'll say for each var odd in generator,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=162.20700000000005) [if odd is greater than 50, we'll break out](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=165.27325000000002) [of the loop; otherwise, we'll do a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=171.4094285714286) [Console. WriteLine and send that odd](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=175.17387499999998) [number to the Console, and now we can run](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=178.837) [our application and see the values of 1 to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=181.44866666666667) [49 listed out in our console. This is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=184.375) [small example, but it shows how explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=188.7026666666667) [implementation works when we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=190.61583333333334) [conflicting members, and Visual Studio is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=192.485) [helpful enough that it knows that one of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=195.113) [the methods needs to be implemented](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=196.619) [explicitly. This pattern where we call the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=199.89071428571427) [non-explicit method from the explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=202.06371428571427) [method is pretty common when it comes to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=203.5532857142857) [IEnumerable of T. So this might come in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=206.38950000000003) [handy if you ever want to create your own IEnumerable.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=3&mode=live&start=208.32800000000006)

[Summary](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live)

[We have seen a bit more about the what and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=1.062) [why of interfaces by looking at explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=3.147) [implementation. When we explicitly](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=6.996125000000001) [implement an interface member, we get more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=8.590499999999999) [control over that method. It is hidden](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=11.0295) [from the class itself and can only be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=13.112666666666664) [accessed by casting to the interface. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=15.3835) [addition, we saw how explicit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=18.359166666666667) [implementation can help us resolve](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=19.835) [conflicting methods, so just when methods](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=21.377) [differ only in their return types, and we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=23.697) [saw this specifically with IEnumerable of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=27.410999999999998) [T. Since it inherits from IEnumerable, it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=29.255) [must supply both a strongly typed and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=32.05771428571428) [non-strongly typed version of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=34.703714285714284) [GetEnumerator method. This means that the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=36.583) [IEnumerable version needs to be explicitly](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=40.01700000000001) [implemented. You may not run across](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=43.186400000000006) [explicit implementation much in your own](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=45.017833333333336) [code, but it is good to know what it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=47.11666666666665) [means, particularly, if you want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=49.08900000000002) [implement your own IEnumerable of T, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=50.64328571428573) [that's something I've done several times.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=53.055000000000014) [Next up, we will look at how we can design good interfaces and use them effectively.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=db7febca-6b5d-4579-ad46-34621b0fe430&clip=4&mode=live&start=56.367)

[Designing Effective Interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live)

[Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live)

[We have spent a lot of time looking at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=0) [interfaces and the benefits we can get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=3.181) [from using them, but it is important to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=5.159375000000002) [understand how we can use them](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=7.657) [effectively. We will focus on how we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=11.980428571428572) [use interfaces effectively by looking at a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=14.247222222222218) [variety of topics. Interfaces are great,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=16.98775) [but there are also some drawbacks. If we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=19.392142857142858) [use them indiscriminately, then we may end](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=22.02433333333333) [up having too many interfaces. We will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=24.522000000000006) [take a look at the dangers when that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=28.303333333333335) [happens. Next, we will look at the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=29.72025) [interface-segregation principle, one of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=32.354) [the SOLID principles. We will find that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=34.3644) [our interface violates this principle, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=37.1907142857143) [we will look at what we can do to correct](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=40.2382) [that. If we add or remove members from an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=41.862625) [interface, we end up breaking code. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=45.202000000000005) [will look at what we can do when we need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=47.7550909090909) [to update an interface. As part of that,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=49.256) [we can consider default implementation, a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=52.6225) [feature of C# 8. Another approach is to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=54.81066666666667) [use interface inheritance. We will see how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=59.01114285714286) [this is a good option when we want to add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=61.0528) [more members. Finally, we will loop back](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=64.423) [around to see how interfaces compare to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=66.710875) [abstract classes. Based on the examples we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=69.63233333333332) [have seen so far, we can use this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=71.86155555555554) [comparison to pick the right tool for the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=73.64550000000001) [job. These are quite a few topics to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=76.49300000000002) [consider, and they can help us use interfaces effectively.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=0&mode=live&start=78.774)

[Dangers of Interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live)

[We have seen the advice to program to an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=0.809) [abstraction rather than a concrete type](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=2.629) [and our translation programmed to an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=5.481571428571428) [interface rather than a concrete class.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=8.296166666666666) [This sounds like good advice, but we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=11.047) [should not follow it blindly. Each of our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=12.534500000000003) [tools have both pros and cons. We have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=16.174333333333333) [seen a lot of benefits to using](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=19.302555555555557) [interfaces, and it is tempting to start](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=20.715) [using interfaces everywhere. I have run](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=22.879) [into problems with an application that had](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=26.055428571428568) [too much abstraction. It was difficult to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=28.415499999999998) [find things in the code. I was confused](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=31.084333333333333) [about what classes were causing a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=33.326571428571434) [particular behavior. There was code that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=35.592) [was easy to break because a change in one](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=37.73100000000001) [place would have a ripple effect](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=39.65533333333334) [throughout the application. The best](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=41.405199999999994) [outcome is to find the right balance, just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=43.405) [enough abstraction to get the benefits,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=45.45514285714286) [but not too much to cause confusion.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=47.751625) [Unfortunately, a lot of my ability to find](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=52.047) [the balance has come from my own](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=54.302) [experience in doing things badly. I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=56.45975000000001) [eventually landed with the idea to add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=59.131375) [interfaces as you need them and not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=60.947) [before. I may want to add an interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=64.379625) [because I know that I will need multiple](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=66.27388888888888) [implementations in the future, or I want a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=68.156) [seam that I can use when the users change](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=70.489) [their business processes, but I have found](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=72.693) [that I am really bad at second guessing my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=75.402) [users. So if I suspect that I will need an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=78.43679999999996) [interface in the future, I just leave a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=80.293) [placeholder for it and code against a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=82.675) [concrete type. Then if I need an interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=84.439) [later, I have a spot to put it in. But if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=87.417) [I do not need it, then I don't have to deal with the added complexity.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=1&mode=live&start=90.15481818181817)

[Demo: Drawbacks to Abstraction](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live)

[To see how interfaces make things a bit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=0.768) [more difficult, we will look at a couple](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=2.441) [of the projects from earlier samples. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=4.591222222222223) [will see how abstraction and interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=7.739285714285714) [affect the ability to navigate code in our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=9.607) [projects, and we will also see how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=11.624) [interfaces and dynamic loading, which is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=14.581) [pretty high form of abstraction, affect](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=17.125) [our debugging. So let's go to the code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=20.023750000000007) [First, we will start with the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=24.6) [Extensibility solution. This is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=27.17324999999999) [application with three buttons and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=28.888571428571428) [compile-time references to all of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=30.4645) [repositories. Let's go into the code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=33.0595) [behind of our form and see how interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=34.57811111111113) [affect navigation. If I was tracing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=37.64033333333333) [through this PopulateListBox method and I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=39.54900000000001) [wanted to know where this GetPeople was](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=41.439571428571426) [coming from, I would have a tendency to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=44.11033333333333) [right-click on it and say Go To](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=45.945000000000014) [Definition. But because this is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=48.445333333333345) [interface member, it takes me to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=50.24214285714287) [interface definition and not actual](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=52.234624999999994) [implementation code. We do have another](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=54.708499999999994) [option, and that is we can right-click and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=57.259444444444455) [say Go To Implementation. And what we see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=59.54014285714286) [is that Visual Studio is not able to help](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=62.06433333333333) [us in this instance. So our next option is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=64.77250000000001) [to trace through the code. So where does](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=67.88450000000002) [this interface come from? Well, it comes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=70.5382857142857) [from this Factory method. So I can Go To](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=72.66571428571427) [Definition on our Factory method, and I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=74.79699999999997) [can see the different classes that are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=76.43499999999999) [instantiated, but then I have to pay](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=78.42500000000001) [attention to the parameter. So I might](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=80.3544) [need to come up and say oh, this is using](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=82.4821) [CSV as a parameter. That means my Factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=85.37985714285715) [method is newing up a CSVRepository, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=88.15255555555558) [if I go into that, then I can find the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=90.30442857142857) [GetPeople method that I'm looking for. It](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=93.9955) [is a bit difficult to trace things down in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=95.99611111111109) [our code, but let's see how this works at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=98.65799999999999) [runtime. We'll set a breakpoint on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=102.14224999999999) [GetPeople method and then run our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=104.04585714285717) [application. We can click on the Service](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=107.14383333333333) [Repository button and hit this breakpoint.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=109.10857142857142) [Then for GetPeople, we can choose the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=111.786) [option to step into the method. This will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=113.553) [take us to the GetPeople method on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=117.65074999999999) [ServiceRepository class so that we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=119.64971428571428) [step through the code and see exactly what](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=121.65912499999999) [it's doing. We could also click on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=123.839625) [CSVRepository and do the same thing. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=129.5225714285714) [can step into the code, and it will take](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=132.5596) [us to the GetPeople method on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=134.482) [CSVRepository. This shows that we can get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=137.56287499999996) [to the code a little more directly if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=138.95819999999998) [use the debugger, but we have to run the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=140.80714285714288) [application to do that. Now let's flip](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=142.925) [over to our DynamicLoading project to see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=146.10671428571425) [how the added abstraction of loading](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=148.42274999999998) [things at runtime affects our ability to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=150.3545) [navigate and debug. So let's look at the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=153.5) [code behind of our PeopleViewer project to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=156.96477777777773) [see how navigation is affected here. If I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=159.04649999999998) [right-click on GetPeople and say Go To](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=162.54157142857144) [Definition, it takes me to the interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=165.21999999999994) [just like in our other example. And if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=166.763) [try Go To Implementation, we get the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=169.4046666666666) [results. It's unable to find the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=172.86916666666664) [implementation code. But if we follow the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=176.3255714285715) [Factory method, we do not have anywhere](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=179.1522857142857) [else to go. This is all doing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=181.478625) [DynamicLoading stuff. So let's see if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=184.66633333333334) [can get there at runtime. So we'll set a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=187.35949999999997) [breakpoint on the GetPeople method and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=189.8255) [then run our application. When we click](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=192.009) [our button, we do hit the breakpoint. But](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=195.6287) [if we try to step into this method, we see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=198.16644444444444) [that it just steps over. That's because](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=200.95514285714285) [the debugger does not know where to find](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=203.57399999999998) [the code of these dynamically loaded](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=205.51187500000003) [assemblies. So what we have seen here is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=207.041) [that navigation and debugging gets more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=209.85042857142858) [difficult when we use interfaces and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=211.828625) [abstraction. We want to make sure that the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=214.496375) [benefits we get outweigh the consequences.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=216.2258888888889) [In this DynamicLoading example, I am](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=218.902) [willing to deal with a more difficult](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=221.1393333333333) [debugging because the overall maintenance](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=222.719) [and deployment of the application to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=224.745) [clients is much better. But if this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=226.694) [application was installed at a single](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=229.96) [site, we would not be getting these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=231.351125) [maintenance and deployment benefits, or at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=233.144) [least not enough of a benefit to justify](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=235.81522222222222) [the extra time and frustration that would](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=237.41257142857143) [be spend in maintaining the code, and this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=239.49314285714286) [extra time and frustration is what has led](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=241.9015) [me to the guideline of only adding](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=243.9928888888889) [abstraction and interfaces when I need them and not before.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=2&mode=live&start=245.753)

[Interface Segregation Principle](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live)

[The SOLID principles are a set of five](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=1.217) [object-oriented design principles. The I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=3.332) [in SOLID is the interface-segregation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=6.7932500000000005) [principle. This says that clients should](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=9.313875000000001) [not be forced to depend upon methods that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=11.0105) [they do not use. Interfaces belong to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=13.284333333333338) [clients, not to hierarchies. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=16.578714285714288) [translates into interfaces should only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=19.847833333333334) [include what the calling code needs. If](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=22.542) [the code calling the interface is only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=25.50625) [using a small fraction of the methods,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=27.216) [then that indicates that the interface may](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=29.5) [need to be broken down into smaller](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=31.665) [pieces, and this is exactly what we see in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=33.94787499999999) [our code. Here is our repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=37.262) [interface. It includes methods for Create,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=39.78580000000001) [Read, Update, and Delete. But if we look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=42.029999999999994) [at our calling code, we see that only the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=45.6765) [GetPeople method is called. This is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=48.43166666666667) [read-only client. It does not need any of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=51.23899999999999) [the methods to modify data. In our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=53.224999999999994) [interface, the Add method is unused, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=56.810249999999996) [Update method is unused, and the Delete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=59.343624999999996) [method is unused. Since the calling code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=61.763) [is not using these methods, we want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=64.395) [rethink our interface design. Here is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=66.55) [example of a better interface for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=70.16162499999999) [needs. The IPersonReader interface only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=72.52166666666668) [has methods to read the data, and that is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=74.88042857142857) [the only functionality that the calling](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=77.937) [code needs. Technically, our code is only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=79.73775) [using GetPeople and not GetPerson, but we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=82.67299999999999) [will keep the Read operations together for simplicity.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=3&mode=live&start=84.7582857142857)

[Demo: A Better Repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live)

[Now we will go back to our code and fix](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=1.117) [our interface-segregation principle](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=2.908818181818181) [violation. We will break up our existing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=5.516000000000001) [interface so that we have separate Read](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=8.274249999999999) [and Update operations. We're back in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=11.663375000000002) [Extensibility project, and we will start](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=15.136000000000003) [by updating our interface. So let's go to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=17.719499999999996) [our IPersonRepository that we currently](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=20.677571428571422) [have. I want to extract the Read](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=22.41625) [operations out of this, so I'll click on](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=25.143375) [IPersonRepository and hit Ctrl+dot to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=27.858) [bring up the Extract Interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=30.218) [functionality. We'll name our new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=33.49883333333333) [interface IPersonReader, and we can select](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=37.42966666666666) [the methods we want to include. In this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=40.02620000000001) [case, we'll just include GetPeople and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=42.03214285714286) [GetPerson. When we click OK, this will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=44.1115) [generate a new interface for us,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=48.0065) [IPersonReader, and now we can go through](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=49.769) [our code to start using this. I'll start](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=52.704) [with the code behind of our form. Instead](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=55.18922222222222) [of using an IPersonRepository, we'll use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=58.1492) [an IPersonReader. Now this causes a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=61.74250000000001) [problem because that's not what our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=64.52014285714286) [Factory method is returning. So let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=66.2477142857143) [to the definition of our Factory method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=68.205625) [and make updates there. So this will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=70.07) [return an IPersonReader, and the types](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=74.033) [that we have here will be IPersonReader as](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=76.80100000000002) [well. Now this causes problems with our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=79.68433333333333) [implementations. So we'll need to go to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=83.01957142857147) [the ServiceRepository and change this to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=84.24328571428572) [an IPersonReader, and because we only need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=86.93533333333333) [these two methods, we can actually remove](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=90.447) [the rest of the functionality from this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=92.837) [class. So now our ServiceRepository is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=97.33537499999997) [IPersonReader and only includes GetPeople](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=99.948) [and GetPerson. We can follow through and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=102.164) [do the same thing with our CSVRepository,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=106.213) [make that an IPersonReader, as well as our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=110.174) [SQLRepository. In this case, I won't go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=114.75266666666667) [ahead and remove the extra methods just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=116.45033333333338) [for time sake. Now let's build our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=118.91928571428573) [application and see what happens. And it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=121.15299999999998) [looks like we have one more place we need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=123.40950000000001) [to change, and that is our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=126.32157142857143) [ShowRepositoryType method. We'll need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=128.92566666666667) [change this parameter to an IPersonReader](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=130.50362499999997) [as well. So let's run our application and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=132.32666666666668) [see what happens. When we click our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=136.39999999999992) [buttons, we see that we still have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=138.19833333333332) [same functionality we had before where we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=139.95171428571433) [can access the Service, the text file, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=142.31314285714285) [our SQL Server. But now we're following](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=145.97314285714285) [the interface-segregation principle. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=148.2446) [MainWindow class is now using an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=152.38685714285714) [IPersonReader, and this is more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=154) [appropriate since it only uses the Read](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=156.15500000000006) [operation GetPeople. The Interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=159.14124999999996) [Segregation principle says that interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=160.76260000000002) [belong to clients. Since this method only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=163.009) [needs Read operations, the smaller, more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=165.75366666666667) [focused interface is the better choice. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=168.25685714285714) [addition, since our application is only](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=171.28757142857143) [reading data, it would be easier to set up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=172.917) [read-only repositories because we no](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=175.597) [longer need to worry about the Write operations.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=4&mode=live&start=177.70616666666663)

[Modifying Interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live)

[Let's talk a bit about what happens if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=1.264) [want to change our existing interfaces by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=2.968) [adding or removing members. The first](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=5.453) [thing to keep in mind is that an interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=8.0988) [is a contract. The terms of that contract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=10.19275) [are clear to both parties, both the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=12.959000000000001) [implementors and the callers. If we start](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=15.685) [to change the terms of the contract, then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=18.283666666666665) [the existing agreements break down. Adding](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=20.235) [members to an interface will break](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=24.287875) [implementors. Let's say that we have an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=26.79512499999999) [ISaveable interface with a single Save](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=28.87071428571428) [method. We also have a Catalog class that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=31.558666666666664) [implements that interface. If we add a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=34.155) [second Save method to the interface, then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=37.58499999999999) [our Catalog class breaks. It does not have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=39.596333333333334) [the second Save and so no longer satisfies](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=42.938199999999995) [the interface. Our code is broken, and we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=45.6435) [get compiler errors. Removing members from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=49.55599999999999) [an interface breaks the callers. Let's say](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=52.1475) [that we have an ISaveable interface with](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=54.44649999999999) [two Save methods. We also have some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=57.31850000000001) [calling code that calls one of those](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=60.0375) [methods through the interface. If we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=62.409857142857135) [remove that method, then the calling code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=64.87525) [is now broken. It is trying to call a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=66.8093) [method that does not exist on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=69.305) [interface. We really need to understand](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=72.44012499999998) [that an interface is a contract. Once it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=73.90657142857143) [is in use by implementors and callers, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=76.92175) [really cannot change the terms of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=78.97657142857142) [contract. With that said, there are a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=81.65866666666668) [couple of ways that we can handle adding](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=83.63733333333334) [members to an interface. A new feature of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=85.99600000000001) [interfaces is part of C# 8. At the time of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=89.75200000000001) [this recording, this has not yet been](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=92.54244444444447) [released. Hers is the example from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=94.17814285714284) [feature description. We start with an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=96.98049999999999) [ILogger interface with one Log method. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=99.27700000000002) [also have a ConsoleLogger class that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=101.6632857142857) [implements the interface. With default](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=104.48939999999999) [implementation, we are able to add a new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=107.02828571428572) [method to our interface that has default](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=109.59133333333332) [behavior. In this case, a new Log method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=111.572375) [is added that takes an exception as a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=114.61337499999999) [parameter. The new method contains](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=116.89733333333334) [implementation code. Here, it calls the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=118.994) [first Log method with specific parameters.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=121.60800000000002) [The existing ConsoleLogger class does not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=124.262) [have this method. So if someone calls the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=126.566) [Log Exception method on the ConsoleLogger,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=128.973) [the default implementation will be used.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=131.592) [We are also free to provide an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=134.291) [implementation for the Log Exception](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=135.703) [method. In that case, our implementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=137.86716666666672) [would be used and the default would be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=139.7228571428572) [ignored. While I have talked to several](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=142.9491428571429) [people who are really excited about](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=144.59199999999993) [default implementations, I am not. In my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=146.2528) [opinion, this breaks the spirit of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=150.053) [interfaces being an agreement between](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=151.532) [callers and implementors. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=153.423) [functionality is very helpful if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=155.85028571428572) [managing a widely-used library, such as a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=157.802) [public NuGet package or classes in the.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=160.235) [NET Framework class library, but it should](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=162.52662499999994) [be really limited usage for other code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=164.8922857142857) [The reason is that if we feel the need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=168.035) [change our contract, then we may need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=169.696) [look at our design in general. Do we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=171.834) [a good design? Is there a different way](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=174.77199999999996) [that we can approach this without breaking](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=176.57975000000005) [implementors? How important is the new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=178.9962) [functionality? If I need to add members to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=182.07033333333337) [an interface, I would prefer to use interface inheritance instead.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=5&mode=live&start=184.26111111111112)

[Interface Inheritance](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live)

[We have already seen interface inheritance](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=1.011) [when we looked at IEnumerable of T. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=3.432) [an interface inherits from another](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=6.904833333333333) [interface, it includes all of the members](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=8.209) [from that other interface. There is quite](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=10.402) [a lot of interface inheritance in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=14.029000000000002) [classes that we use. We saw earlier that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=15.873) [List of T implements seven different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=18.641500000000004) [interfaces, and several of these](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=20.776333333333334) [interfaces inherit from each other. IList](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=23.026166666666665) [of T inherits from ICollection of T, which](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=26.175874999999998) [inherits from IEnumerable of T.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=29.799666666666667) [IEnumerable of T has just one member,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=32.383) [GetEnumerator. This is designed to support](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=36.66437500000002) [the idea of iteration, such as when we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=38.392250000000004) [foreach over a collection. ICollection of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=41.630333333333326) [T has members such as Add, Remove, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=44.301) [Contains. These support the idea of a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=47.44833333333334) [collection of items that can be modified.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=49.46674999999999) [In addition, it also contains the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=52.205) [IEnumerable of T functionality so it also](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=53.682) [supports iteration. IList of T has members](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=56.242) [such as Index, Insert, and RemoveAt. These](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=60.271) [are methods that support the idea of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=63.320375) [position within a group of items. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=65.206) [addition, it includes the ICollection of T](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=68.034) [members that support collection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=70.1592) [operations, and it includes IEnumerable of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=71.412) [T members that support iteration. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=74.346) [creates a hierarchy of functionality that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=77.97583333333334) [lets us program at the appropriate level.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=80.04312499999999) [If we need to iterate over a set of items,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=82.375) [we can use the IEnumerable of T interface.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=84.853) [And we have a number of concrete types](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=88.031) [availability to us including List of T,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=89.643) [Array, SortedList of T key value, Queue of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=92.133) [T, Stack of T, Dictionary of T key value,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=96.18366666666667) [plus any custom types that we might come](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=99.563) [up with. If we need Collection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=102.39342857142854) [functionality, then we can use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=104.55279999999999) [ICollection of T interface. In this case,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=106.69311111111112) [we could use List of T, SortedList,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=108.71366666666665) [Dictionary, or any Custom Types. If we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=110.63116666666667) [need full List functionality that includes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=114.66657142857144) [position, then we can use the IList of T](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=116.37242857142857) [interface. List of T is the only built-in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=119.82950000000001) [type that supports this interface. If we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=121.90422222222219) [really need all the functionality of IList](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=124.61149999999999) [of T, it is often better to use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=126.2434) [concrete List of T class. Using a concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=128.551) [type gives us some performance benefits,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=131.5825714285714) [so we want to consider that as well. If](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=133.24833333333333) [you are worried about performance of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=136.44728571428573) [interfaces, you will want to test your own](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=137.589) [code. Even though there is a small](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=140.60588888888884) [performance penalty to using an interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=142.66642857142853) [over a concrete type, it is not noticeable](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=144.27771428571427) [in typical code. You generally only need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=146.9194285714285) [to worry about this in very](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=149.57242857142856) [high-performance environments. So let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=152.82457142857143) [back to the read-only repository that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=154.60457142857146) [created earlier. In this case, we have the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=156.94860000000003) [IPersonReader interface that has two Get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=159.87585714285717) [operations. But what if we wanted to add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=162.38033333333334) [Write operations to this interface? As](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=164.35525000000004) [mentioned earlier, if we add methods to an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=167.167875) [interface, it will break the existing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=169.314625) [implementors. And in this situation, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=171.868375) [cannot really use default implementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=173.88212499999997) [because there is no good default for Write](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=175.665) [operations. And if we were to throw an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=179.2466) [exception or return null by default, then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=181.1378888888889) [we would probably be violating the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=182.99457142857136) [interface-segregation principle. Instead](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=184.923) [of modifying our existing interface, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=187.9356) [can create a new interface to represent](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=189.7925) [both Read and Write operations. In this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=192.0805) [case, IPersonRepository includes the Add,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=195.3942) [Update, and Delete methods, and it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=197.77733333333333) [inherits IPersonReader so it also includes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=200.3782857142857) [the Get methods as well. With the new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=202.67366666666666) [interface, our implementors can decide if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=205.67074999999997) [they want to implement Read/Write](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=207.29824999999994) [operations or only Read operations. In](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=209.06320000000002) [addition, our calling code can use the new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=212.06500000000003) [interface if it really needs the Write](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=214.47137499999994) [operations. By building up interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=217.02614285714284) [using inheritance, we make sure that our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=218.65179999999995) [existing contracts stay valid while also](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=220.97900000000007) [giving us another route to extended functionality.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=6&mode=live&start=223.15857142857138)

[Interfaces vs. Abstract Classes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live)

[Now that we have spend a bit of time](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=1.166) [learning about interfaces, let's loop back](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=2.4) [around to look at the differences between](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=5.025) [interfaces and abstract classes. This will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=6.785) [help us decide which is the better tool](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=10.135) [for our particular situation. The thing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=12.131666666666666) [about interfaces is that they do not have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=14.5205) [any implementation code. The exception to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=17.103800000000003) [this is when we have default](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=19.389124999999996) [implementation for our member. Abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=20.959200000000003) [classes may contain implementation code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=23.694666666666667) [This means that if we have code that is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=26.408) [the same across our different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=27.969500000000007) [implementations, we can put it into the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=30.207800000000006) [abstract class rather than repeating it in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=32.158) [each child class. A big thing about](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=35.052875000000014) [interfaces is that a class may implement](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=37.497) [any number of interfaces. As we saw, List](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=39.798571428571435) [of T implements seven different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=42.938500000000005) [interfaces. In contrast, we have single](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=45.202) [inheritance in C#. This means that we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=48.424625000000006) [inherit from a single class. If we use an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=50.994250000000015) [abstract class, then it would take up that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=53.98825000000001) [one inheritance spot. The members of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=56.947666666666656) [interfaces are automatically public. As](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=59.14928571428572) [mentioned, this makes sense since the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=60.92028571428571) [terms of the contract need to be known by](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=62.704) [both callers and implementors. The members](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=64.679) [of abstract classes can contain access](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=68.24514285714287) [modifiers, public, private, protected, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=70.271) [internal. Finally, interfaces can contain](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=73.54766666666666) [properties, methods, events, and indexers.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=76.51660000000003) [In addition to properties, methods,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=80.067) [events, and indexers, abstract classes can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=81.76950000000002) [also contain fields, constructors, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=84.24999999999999) [destructors. Of all of these differences,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=87.61399999999998) [the first two are what I use to decide](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=89.58112499999997) [whether to use an interface or an abstract](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=91.40639999999996) [class. If I have shared code, then I am](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=94.18119999999999) [more likely to use an abstract class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=96.2175555555555) [otherwise I am likely to use an interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=98.83425000000001) [since it keeps the inheritance spot open.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=100.91800000000003) [Let's look at the code from our examples](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=103.707) [to see this. Back when we were talking](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=105.18877777777777) [about regular polygons, we had a number of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=108.34385714285713) [members that had shared implementation](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=110.34825) [across the polygons. NumberOfSides is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=112.65849999999999) [same for every polygon. SideLength is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=115.947) [same for every polygon. The calculation of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=119.32528571428573) [the perimeter is the same for every](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=122.1002857142857) [polygon. The only thing not shared was the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=125.26700000000002) [calculation of the area. With so much](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=127.847) [shared code, I would use an abstract class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=131.21466666666666) [for the regular polygon example then all](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=133.32566666666668) [of the shared code could go into the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=135.67537500000003) [abstract base class. When we look at our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=138.68100000000004) [repositories, we see something completely](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=141.61849999999995) [different. We do not have any shared code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=143.66700000000003) [The GetPeople method for the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=146.564) [ServiceRepository is completely different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=147.751) [that the GetPeople method of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=150.577) [CSVRepository, and that is completely](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=151.606) [different from the GetPeople method of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=154.738) [SQLRepository. With no shared code, I](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=158.70262499999995) [would use an interface for our repository example.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=7&mode=live&start=160.41025000000002)

[Summary](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live)

[We have looked at a lot of topics. They](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=0.824) [have all helped guide us to use interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=3.799125) [more effectively. We saw the danger of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=5.776666666666666) [having too many interfaces in our code.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=8.336125) [When we add an interface, we add a layer](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=11.006) [of abstraction that makes the code more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=12.943699999999993) [complicated to navigate. And if we take](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=14.78) [abstraction to an extreme, then we can run](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=17.811000000000007) [into problems when trying to debug our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=19.777500000000007) [code. The interface-segregation principle](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=21.9806) [can help us design good interfaces. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=23.719) [we create an interface, we really need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=27.25) [look at how it will be used. The code that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=29.642875) [is calling the interface should determine](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=32.17371428571428) [what members are part of the interface. If](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=33.57542857142857) [only some of the interface members are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=35.67557142857143) [used, then we should look at breaking the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=37.741857142857135) [interface into smaller pieces. We saw the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=40.841) [difficulty of updating interfaces. If we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=44.12357142857144) [add members to an interface, then we break](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=46.58185714285714) [the existing implementors. If we remove](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=49.17299999999999) [members from an interface, then we break](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=51.25885714285714) [existing callers. We really need to think](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=53.77940000000001) [of these as a contract and not change them](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=55.66977777777777) [lightly. Default implementation is one way](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=59.067833333333326) [to add members to an interface without](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=61.1927142857143) [breaking existing implementors. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=63.360833333333325) [default behavior should be valuable rather](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=66.16550000000001) [than simply doing nothing or throwing and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=68.41833333333332) [exception otherwise we really should](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=70.75899999999999) [rethink our design. Interface inheritance](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=73.28275000000001) [is another way to add members to an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=75.94428571428571) [interface. Instead of adding members](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=78.63475) [directly, we create a new interface that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=80.5858) [inherits the original. This way, existing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=83.37900000000002) [implementors continue to work, and we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=85.62099999999998) [decide on a case-by-case basis whether we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=87.94850000000001) [want to use the extended functionality](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=89.999875) [provided by the new interface. Finally, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=91.80516666666666) [compared interfaces with abstract classes.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=95.3798) [If we have shared code, then we want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=97.57528571428571) [lean towards an abstract class, and if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=100.64749999999998) [have no shared code, then we can lean](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=102.67299999999997) [towards an interface to keep the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=104.7625) [inheritance spot open for another type.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=106.518) [With these things in mind, we can design](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=108.843) [more effective interfaces. As a last stop,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=110.503) [we will take a look at where interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=113.58600000000001) [are used in several frameworks and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=115.36699999999999) [patterns. An understanding of interfaces helps us use these tools more effectively.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=0365dfd7-aaae-4ebf-a49e-6bcb690da610&clip=8&mode=live&start=117.67433333333332)

[Interfaces in Frameworks and Patterns](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live)

[Overview](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live)

[Now that we have a better understanding of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=0) [interfaces, other technologies will be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=3.059) [easier to work with. There are a number of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=5.232) [frameworks and patterns that use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=8.236285714285714) [interfaces heavily. Let's take a look at a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=10.270800000000001) [few of those. This is really about where](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=13.484000000000004) [we use interfaces. Dependency injection is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=16.9085) [an extension of many of the topics that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=19.362999999999996) [have looked at. We will see how interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=21.939000000000007) [play a large part in making dependency](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=23.828500000000002) [injection possible. Next, we will look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=26.86233333333333) [several design patterns that are relevant](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=29.378142857142855) [to interfaces. We have seen several of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=31.754333333333328) [these already, including the repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=33.84928571428572) [pattern and factory method pattern. But](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=35.50279999999999) [decorator pattern is a way to intercept](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=38.71725) [method calls to add our own functionality,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=40.196) [and we will see how interfaces play a key](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=43.095) [role in that. Finally, we will look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=44.795) [mocking. Mocking is a way to create](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=49.32033333333332) [in-memory objects that we can use for unit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=51.25742857142857) [testing. This saves us from having to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=53.62625000000002) [create actual classes that we use in our tests.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=0&mode=live&start=55.656249999999986)

[Interfaces and Dependency Injection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live)

[Dependency injection, or DI, is a set of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=0.941) [software design principles and patterns](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=3.457) [that enable us to develop loosely coupled](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=5.686) [code. When we have loose coupling, our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=8.394124999999999) [code is easier to maintain, extend, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=10.243500000000003) [test. Does that sound familiar? It should](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=13.036833333333336) [be no surprise that interfaces can help us](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=16.446428571428573) [create that loose coupling. In fact,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=19.09457142857143) [interfaces play a key role in dependency](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=21.16725) [injection. We have already seen how](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=24.167) [interfaces help us by delegating details](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=26.851375000000008) [to another class. In our calling code, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=29.180999999999997) [only reference the IPersonRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=32.02525) [interface. There are no references to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=33.834) [concrete repository types. We can call the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=36.43249999999999) [GetPeople method on the interface and not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=39.345) [worry about the details that are in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=41.518) [repository itself. This also creates a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=43.058) [seam in our code so that we can easily](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=46.704) [change the repository without modifying](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=48.595) [the calling code. Dependency injection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=50.73666666666667) [takes this a step further. Here is the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=53.357800000000005) [code from our PeopleViewModel that we saw](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=57.314285714285724) [earlier. This has a private](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=59.878750000000004) [IPersonRepository field. The field is used](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=62.313666666666656) [in the FetchData method to get data from](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=64.1965) [the repository. In the constructor, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=67.04833333333333) [call a Factory method to get an instance](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=69.10014285714284) [of the repository. In this case, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=71.76462500000001) [repository is a dependency. We need the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=74.39699999999999) [repository because we need to call the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=76.591375) [GetPeople method on it. In the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=78.56266666666666) [constructor, we take responsibility for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=80.89066666666666) [that dependency by calling a Factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=82.41728571428573) [method to get it for us. But there is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=84.057) [another way to handle this dependency.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=87.59366666666668) [Instead of calling a Factory method, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=89.553) [add a parameter to the constructor. Now](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=91.96528571428571) [whoever creates the view model must](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=94.98757142857143) [provide an already instantiated](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=96.839) [repository. In this case, we are injecting](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=99.73579999999998) [the dependency through the constructor. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=101.56571428571432) [this specific pattern is referred to as constructor injection.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=1&mode=live&start=104.215875)

[Demo: Dependency Injection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live)

[Let's go into some code. We will inject a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=0.848) [view model into a repository using](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=3.8090000000000006) [constructor injection. Then we will take](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=6.093999999999999) [our loosely coupled pieces and snap them](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=8.589571428571427) [together, first manually and then using a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=11.041400000000001) [dependency injection container. This will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=13.689000000000002) [not be a full example of using dependency](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=16.142444444444443) [injection, but it will give us an idea of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=17.885714285714286) [how useful interfaces are in that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=20.398749999999996) [environment. After that, we will look at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=22.136) [unit tests with DI. These tests are](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=24.614) [similar to the tests that we created](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=27.106249999999996) [earlier; however, DI makes the test code a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=28.90228571428571) [bit more obvious. So here we are in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=32.699) [LooseCoupling solution. This sample is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=36.961749999999995) [taken from my Pluralsight course,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=38.44800000000001) [Dependency Injection On-Ramp. We will look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=40.0245) [at just a couple of pieces of the sample](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=42.357600000000005) [here. This application is similar to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=44.672666666666665) [applications that we have used so far. It](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=47.67171428571429) [gets a List of Person objects and displays](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=49.73844444444445) [it in a ListBox. Let's look at a few of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=52.224714285714285) [the files. In our PeopleViewer.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=55.779749999999986) [Presentation project, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=57.66980000000001) [PeopleViewModel. This is our view model,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=60.53699999999999) [and it's similar to the view model that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=62.495555555555555) [saw earlier. The difference is that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=65.40071428571427) [instead of getting the repository from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=67.21814285714287) [factory method, we expect that the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=69.57166666666666) [repository will be passed in as a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=71.46271428571431) [constructor parameter. In addition, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=74.02666666666664) [have a People property to hold our data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=75.5045) [and RefreshPeople and ClearPeople methods](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=77.58999999999999) [to populate that People property. Let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=79.6447142857143) [up a level to the view, the UI code that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=82.61124999999998) [uses this view model. This is in our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=85.48449999999998) [PeopleViewer project's MainWindow. Our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=89.19600000000001) [View has a property for the ViewModel, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=91.308875) [instead of newing it up ourselves, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=94.36057142857143) [ViewModel is passed in as a constructor](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=96.765) [parameter. Just like with our previous](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=99.46000000000004) [view, the ViewModel is used to set the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=101.27833333333331) [DataContext of the Window. This is what](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=103.095) [hooks up our data binding. We also have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=105.90524999999998) [Button\_Click event handlers that pass](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=108.45349999999999) [functionality through to that ViewModel.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=110.3847142857143) [Because we have these constructor](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=113.014) [parameters, our classes are fairly loosely](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=114.306) [coupled. But we need to snap the pieces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=117.45514285714286) [together somewhere, and we do that in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=119.42462499999996) [application startup. To see that, we'll go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=121.584) [to our App. xaml. cs file. The App class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=125.53736363636361) [has an OnStartup method that runs when our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=128.8585) [application starts. We need to create a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=131.6354) [MainWindow object and show it. So let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=133.87437500000001) [ahead and do that. We need to set the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=136.8056666666666) [MainWindow property of our application,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=139.71912499999993) [and we'll do that by newing up a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=141.0002857142857) [MainWindow class. Now the MainWindow class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=144.32180000000002) [does need a PeopleViewModel, so let's go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=146.48157142857147) [ahead and create one of those. So we'll](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=148.49133333333333) [say var viewModel = new PeopleViewModel,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=151.982) [and then we'll pass that to our MainWindow](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=156.24333333333334) [constructor. Now our viewModel constructor](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=163.30280000000002) [wants an IPersonRepository, so we'll say](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=165.29699999999997) [var repository = new ServiceRepository,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=168.05259999999998) [and then we'll pass that through to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=172.384) [PeopleViewModel constructor. And what](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=174.125) [we're doing is snapping our loosely](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=176.85128571428572) [coupled pieces together. So let's go ahead](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=178.62) [and build and run our application. I have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=182.0754) [already started our web service, so we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=184.66485714285716) [already have our data available to us.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=186.62655555555554) [When we click on the Refresh People](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=188.9) [button, we get data from our web service.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=190.67450000000002) [And if we want to change to a different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=193.793) [repository, it's as simple as snapping our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=195.135) [pieces together in a different order. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=197.334) [instead of newing up a ServiceRepository,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=199.65166666666667) [we'll new up a CSVRepository. Now when we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=201.126) [run our application and click the button,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=205.481625) [we have data from a text file. And just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=208.0807777777778) [like with our other example, our text file](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=210.76514285714285) [has an extra record. So this is how we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=213.11571428571426) [set up dependency injection manually. But](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=215.81133333333335) [generally, we use a dependency injection](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=217.85875000000001) [container to manage these objects. We have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=220.08842857142858) [another project in place that's using the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=223.4262857142857) [Ninject dependency injection container. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=226.07733333333334) [we'll set this as a startup project and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=228.5218888888889) [take a look at its Application class. At](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=230.233) [the top of the class, we have an IKernel](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=233.8289090909091) [object. This is the interface that's used](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=236.67209090909088) [by Ninject, and this represents our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=238.32685714285708) [dependency injection container. Now we do](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=240.3416666666666) [have to do some configuration for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=243.14766666666662) [container. In this case, we need to tell](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=244.601375) [it how to match up our Repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=246.679125) [interface with the concrete type. So we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=248.367) [have this call that says Container. Bind](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=251.60242857142856) [IPersonRepository, our interface,. To](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=254.63066666666666) [ServiceRepository, our concrete](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=258.11675) [repository. So this creates an association](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=260.5663333333333) [between an interface and a concrete type.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=262.83228571428566) [Then in order to get a MainWindow, we ask](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=266.087) [our container for it by using the Get](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=268.3344444444445) [MainWindow method. When we do this, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=270.7463333333333) [container handles all of the details of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=273.33674999999994) [newing up objects for us and making sure](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=275.14344444444436) [everything is instantiated properly. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=278.11385714285717) [we run the application, we'll see that we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=280.291) [can get data from our web service. And if](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=282.670125) [we change our mapping to use a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=288.7873333333334) [CSVRepository, now we can get data from a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=290.325) [text file. We do not have time to go into](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=295.609) [all the details of how and why we want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=298.779) [use dependency injection, but we have seen](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=301.151) [the interfaces play a very important role in DI.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=2&mode=live&start=303.893)

[Demo: Unit Testing with DI](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live)

[Now let's see how we would unit test the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=0) [ViewModel. Here we are in our ViewModel.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=3.0846666666666667) [Like our previous ViewModel tests, we want](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=6.692) [to make sure that the People property is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=8.748750000000001) [populated when the RefreshPeople method is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=10.5046) [called. In our test project, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=13.279750000000002) [PeopleViewModelTests class, and we already](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=15.543) [have a stub for this test. This uses the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=18.586) [same Arrange, Act, Assert methodology that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=21.797000000000004) [we saw earlier. So the first thing we want](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=23.865999999999996) [to do is new up our ViewModel. Now our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=26.04300000000001) [constructor does need an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=30.188000000000002) [IPersonRepository, so we'll need to go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=32.539857142857144) [ahead and take care of that. For this,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=34.55571428571428) [I'll just create a new class inside our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=36.651500000000006) [test project to hold our fake repository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=39.10733333333333) [And in fact, we'll call this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=42.941) [FakeRepository, and we'll make this a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=44.104) [public class that implements](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=48.266) [IPersonRepository, and we'll go ahead and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=51.005) [implement those members. Now in our test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=57.602) [project, we already have some test data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=60.513000000000005) [that we can use, so I don't have to create](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=62.194799999999994) [a completely new list for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=64.75774999999999) [FakeRepository, I can just return our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=66.36825) [TestData. So we'll just say return](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=69.48375) [TestData. testPeople, and we do not need](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=71.64) [to implement the GetPerson method because](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=75.18550000000002) [we will not be using that in our tests. So](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=77.27616666666667) [if we go back to our tests, we can new up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=80.48918181818182) [an instance of our FakeRepository. So we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=82.92933333333335) [can say var repository = new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=85.5455) [FakeRepository, and then we can pass that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=87.419) [through to our class. After that, our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=90.158) [action is to refresh the People, and then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=93.5655) [we add some assertions to make sure our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=96.44062500000001) [People property is populated. So I'll say](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=100.43071428571429) [Assert. IsNotNull on viewModel. People,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=104.59949999999999) [and we'll check the count as well, so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=108.30371428571429) [we'll Assert. AreEqual 2 our expected](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=112.07412499999998) [value and viewModel. People. Count. And we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=115.53983333333333) [can run our tests and see that they](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=121.5594) [actually work, and our test is coming up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=122.861) [green. Now one other thing that I'll do is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=129.19966666666664) [I'm going to set a little Factory method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=131.4044444444444) [at the top of this class that we can use](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=133.2228888888888) [for testing, and this will get us a test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=135.12311111111103) [repository. So we'll say private](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=139.2771111111111) [IPersonRepository GetTestRepository, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=143.15959999999995) [in this case, we'll just return a new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=145.78599999999997) [FakeRepository. The reason I'm creating](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=151.1901666666666) [this method is so that we can have some](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=152.59100000000004) [shared code later on when we start looking](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=154.54055555555558) [at mocking. So instead of newing up the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=157.30833333333337) [FakeRepository, we'll call](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=160.18771428571435) [GetTestRepository instead. And when we run](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=162.96299999999997) [our tests, we'll see that it still comes](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=166.2773333333334) [up green. Now I do have another test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=168.86000000000004) [already in place to check the clear](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=171.2593333333334) [functionality, and this is very similar to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=173.44579999999996) [the test that we saw earlier. I'll just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=175.07666666666674) [uncomment this, and then we'll run it to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=178.36242857142864) [make sure that it works, and both tests](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=180.28179999999998) [are coming up green. In these tests, it's](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=183.52900000000005) [very clear which repository is being used](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=187.62842857142854) [because we pass it to the constructor of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=189.9215) [the ViewModel. We created an actual class](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=192.76433333333335) [for testing, FakeRepository, but we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=195.2451428571428) [create an in-memory object by using a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=197.452) [mocking framework. We'll see that in a later example.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=3&mode=live&start=200.23385714285718)

[Interfaces and Design Patterns](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live)

[Design patterns are useful because they](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=1.287) [describe solutions to common programming](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=3.007) [problems. It should be no surprise that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=5.769500000000001) [interfaces can help us implement a number](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=7.9848571428571455) [of design patterns. We have already seen](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=10.962666666666667) [the repository pattern. This allows us to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=13.995857142857146) [separate our application from the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=16.27057142857143) [underlying data storage technology. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=18.104) [we use a repository interface, like we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=20.572666666666667) [have in our samples, our application code](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=22.812) [does not need to know anything about the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=24.874125) [concrete repositories or the details of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=27.413) [what they are doing. We have also seen the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=29.80371428571429) [factory method pattern. This pattern](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=33.26012499999999) [delegates the creation of an object to a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=34.929571428571435) [separate method. In our case, the factory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=37.6654) [method would decide whether to create a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=39.76499999999999) [ServiceRepository, a CSVRepository, or a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=41.338) [SQLRepository based on a parameter. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=45.18385714285714) [interface that we return from this method](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=47.72885714285714) [is a key feature that lets us return any](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=49.49722222222223) [concrete type we want as long as it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=51.562555555555555) [implements that interface. In addition, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=53.927) [could extend this factory method to cache](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=57.10514285714286) [the instances it's already created. Then](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=59.604124999999996) [if we ask for the same repository again,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=62.226875) [we would not have to recreate it. There](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=64.090875) [are a number of directions that we can go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=66.737875) [with this. The decorator pattern is one](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=69.07050000000001) [that we have not seen yet. I have found](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=71.178125) [that this pattern is very useful in my](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=73.60625000000002) [applications. A decorator wraps an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=76.84614285714287) [existing interface to add functionality.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=78.62614285714287) [This lets us intercept method calls and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=80.69400000000002) [add our own functionality. The way this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=84.078) [works is by wrapping an existing interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=86.59425) [and then exposing the same interface to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=88.74033333333333) [the outside world. Let's look at an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=91.69000000000001) [example. In our code, we have a service](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=95.11500000000002) [repository that knows how to talk to a web](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=97.35649999999998) [service. This repository implements our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=100.03444444444449) [interface and has a GetPeople method. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=102.05960000000002) [can create a caching repository that adds](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=105.04185714285714) [a client-side cache to our existing](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=107.3905) [repository. To do this, our caching](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=109.93150000000003) [repository wraps an existing repository,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=112.284375) [such as our service repository. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=113.88742857142857) [caching repository also implements our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=115.7455) [interface and has a GetPeople method. When](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=119.468) [we call the GetPeople method on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=123.052375) [caching repository, it adds the caching](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=124.469) [functionality before making calls to the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=126.829) [GetPeople method of the service](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=129.109) [repository. The result is that this plugs](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=131.01900000000003) [into our application code just like any repository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=4&mode=live&start=132.87175000000002)

[Demo: Caching Decorator](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live)

[Let's look at some more code. In this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=0.441) [code, we will see how the caching](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=3.3518888888888885) [decorator works and use it in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=4.594) [application. We are back in the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=8.376625) [LooseCoupling solution. This is the same](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=10.766999999999996) [solution where we looked at dependency](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=12.171500000000002) [injection. One of the classes included is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=14.440666666666667) [a caching decorator. This is in our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=17.329666666666668) [PersonRepository. Caching project, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=19.772333333333332) [it's called CachingRepository. Let's look](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=22.007600000000004) [at what we have here. The first thing to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=24.865857142857145) [note is is that CachingRepository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=26.945999999999998) [implements IPersonRepository. So that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=29.133333333333333) [means it does have a GetPeople and a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=32.68022222222223) [GetPerson method, so it does satisfy our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=34.972625) [repository interface. We won't go into the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=37.343) [full details of the functionality, but](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=40.37266666666667) [let's look at the fields that we have at](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=41.63457142857143) [the top of this class. The first one is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=44.17644444444445) [the cacheDuration. This is how long our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=46.97866666666667) [in-memory cache is valid for. In this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=49.025124999999996) [case, we've set it to 30 seconds. Our next](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=50.636333333333326) [two properties, the dataDateTime and the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=53.41666666666667) [cachedItems, manage our cache. The fourth](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=56.0498) [field is an important one. This is an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=58.54199999999999) [IPersonRepository. This is the real](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=63.05033333333334) [repository that we're wrapping, and this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=64.83571428571429) [could be a ServiceRepository, a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=66.70599999999999) [CSVRepository, a SQLRepository, or](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=69.71300000000001) [anything else that implements that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=71.99100000000001) [interface. In our constructor, we can see](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=74.645) [that we're using constructor injection to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=76.65575) [inject that wrappedRepository into our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=78.68933333333335) [class. To use this repository, we just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=81.60225) [snap our pieces together in a different](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=83.97675000000002) [order. We will use manual dependency](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=86.27383333333336) [injection because it's easier to follow in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=88.25866666666664) [this case. So in our App. xaml. cs file,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=90.48349999999998) [we're just going to snap our pieces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=93.827) [together in a different order. So instead](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=95.35) [of using the CSVRepository, we'll use the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=98.00566666666667) [CachingRepository. Now the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=101.66699999999999) [CachingRepository does have a parameter,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=102.99033333333334) [which is an IPersonRepository, and this is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=105.01520000000001) [the real repository that we're wrapping.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=108.30633333333333) [So let's create a variable, which is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=110.775) [wrappedRepository, and new up](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=112.024) [ServiceRepository for this, and we'll just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=115.359) [pass that through to our constructor](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=118.629) [parameter. So we've taken our loosely](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=121.54500000000003) [coupled pieces and snapped them together](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=123.41385714285715) [in a different order, and now we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=124.77900000000001) [client-side caching in our application.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=127.2144285714286) [Let's run the application and see how this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=128.88449999999997) [works. So when we click the button, it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=132.19483333333332) [actually gets data from our service. And](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=134.806) [now what I can do is I can go to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=137.99874999999997) [service and stop it, so now our service is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=139.261) [no longer running. But when I go back to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=143.074) [our application, I can click Clear Data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=145.895) [and Refresh People, and we still have data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=148.13587499999994) [coming in, and that's because it's using](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=150.794) [this 30-second client-side cache. If we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=152.966) [keep clicking the buttons, eventually, our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=155.99766666666667) [class will expire, and it will try to go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=157.60459999999998) [to the surface to refresh the data. At](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=159.71720000000008) [that point, we'll see that things change a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=161.9913333333333) [little bit. Since the service is not](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=164.69800000000006) [there, our ServiceRepository throws an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=166.71066666666673) [exception, and our CachingRepository is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=169.59220000000005) [designed so that if it cannot reach the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=171.5273333333333) [real repository, it just gives a No Data](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=173.36728571428577) [Available record. So we've just seen a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=175.833) [client-side cache in action. In fact, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=178.482) [can restart our service and go back to our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=181.8696666666667) [application and see that it's working](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=184.58612500000004) [normally again. The decorator pattern is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=186.65666666666667) [very powerful because we can intercept](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=189.44066666666666) [interface members to add our own](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=191.32666666666663) [functionality. This could be used to retry](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=194.32279999999994) [calls that fail. It could be used to add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=197.17666666666662) [logging. It could be used to add](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=200.09771428571435) [authorization code, and we can even have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=203.24375) [decorators call other decorators to stack](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=205.58425000000005) [different functionality. There are a lot](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=207.95260000000002) [of possibilities of what we can do with this technology.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=5&mode=live&start=209.84166666666667)

[Interfaces and Mocking](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live)

[Our last topic is mocking. Mocking is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=0.71) [creating an in-memory object that we can](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=3.908666666666667) [use for testing. So far, our tests have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=6.5325) [used a FakeRepository class. This is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=8.90557142857143) [real class that provides test data for our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=12.213249999999999) [ViewModel tests. But if we create real](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=14.747799999999998) [classes for each scenario that we need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=16.9325) [test, the number of classes in our test](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=19.10783333333334) [can get out of control. Instead of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=20.905555555555548) [creating real classes, we can use a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=23.42014285714286) [mocking framework to create in-memory](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=25.66487500000001) [objects. The mocking framework I like to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=28.249333333333333) [use is MOQ, and it is available as a NuGet](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=31.092000000000002) [package. MOQ works with an interface to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=34.45112500000001) [create an in-memory instance. In this](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=36.32674999999998) [code, we have a set of test data called](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=38.7902) [TestPeople. Then we create a new mock of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=41.63177777777779) [our interface, IPersonRepository. Then we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=45.2013) [tell our mocking framework how we want it](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=47.06225) [to behave. The syntax for MOQ takes a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=49.124750000000006) [little getting used to. In the setup](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=51.872) [method, we tell our mock that if someone](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=53.97866666666667) [calls the GetPeople method, it should return the TestPeople object.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=6&mode=live&start=56.23033333333333)

[Demo: Mock Repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live)

[Let's go back to the code. This time, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=0.9) [will use MOQ to create an in-memory mock](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=3.9106666666666663) [repository that we can use with our tests.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=5.839428571428571) [We are still in the LooseCoupling](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=10.426) [solution. And this time, we're going to go](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=12.543999999999999) [back to our ViewModelTests. We want to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=13.936111111111117) [replace the FakeRepository that we have](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=16.269428571428573) [with a mock repository. To do this, we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=18.923) [will modify the GetTestRepository method.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=21.580285714285708) [I have already installed MOQ from NuGet so](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=24.584) [we can start updating the code. We will](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=26.78) [start out by getting a list of test people](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=30.23288888888889) [that we can use. So we'll say List of](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=32.124) [Person testPeople =, and again, we have a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=36.22025000000001) [TestData object that has a testPeople](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=39.34175) [property that we can use. Next, we'll new](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=41.31087500000001) [up our mock repository. So we'll say var](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=44.097) [mockRepo = new Mock of IPersonRepository.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=48.392199999999995) [So here we're telling our mocking](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=53.059) [framework that we would like a Mock object](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=54.389285714285705) [based on this particular interface. The](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=56.28244444444444) [next thing we need to do is configure our](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=58.781) [test behavior. So we can say mockRepo.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=60.90314285714286) [Setup, and this uses Lambda expressions.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=63.894999999999996) [So what we'll say is that if somebody](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=69.385) [calls the GetPeople method on our Mock](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=70.98055555555551) [object, we want to return or testPeople.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=74.70542857142854) [Since this is the only method we'll be](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=79.235) [using in our tests, we don't need to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=80.797) [configure any of the other interface](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=82.538) [members. The last thing we need to do is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=85.01342857142855) [return our object. So we could return the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=87.7190909090909) [mockRepo, but the problem is this is a](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=90.47400000000002) [mock of IPersonRepository, and we need an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=92.39222222222222) [IPersonRepository. Well, with MOQ, we just](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=96.5428333333333) [say. Object, and that gives us the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=99.1157142857143) [underlying type in IPersonRepository. And](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=102.16077777777777) [with this in place, we can run our unit](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=104.2306) [tests, and they use the in-memory mock](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=106.207) [repository instead of the fake repository](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=108.254) [we were using earlier. Just to show that](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=110.509) [this is the case, let's go ahead and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=113.27900000000002) [return a new empty list instead of an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=115.61133333333332) [actual populated list to see what happens.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=118.530875) [So now if someone calls the GetPeople](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=121.18125) [method on our mock, they will get an empty](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=123.583625) [list back. And if we run our tests now,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=126.21966666666667) [we'll see that they both fail. And if we](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=129.69150000000002) [look at the error messages, on the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=132.71475000000004) [RefreshPeople one, it's saying it expected](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=134.57114285714283) [2 objects, but received 0. So this is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=136.545) [showing that our in-memory object is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=139.89371428571428) [actually being used. Let's go ahead and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=141.83280000000002) [put those back and run our tests again. We](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=143.72244444444448) [do not have time to go into all of the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=145.9398) [details of mocking and mocking frameworks,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=149.07549999999998) [but we can see that interfaces play a key](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=150.56214285714285) [role in this technology. By using the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=154.124) [in-memory objects, we have more](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=157.05919999999998) [flexibility, and we do not have to worry](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=158.5885) [about out test project filling up with various test classes.](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=7&mode=live&start=160.78228571428568)

[Summary](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live)

[We have seen several places where](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=1.278) [interfaces are used in other frameworks](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=2.73) [and technologies. We saw how interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=5.3759999999999994) [are used in dependency injection. This](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=7.260857142857142) [makes it easy to create loosely coupled](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=9.967714285714285) [code that can be snapped together in](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=11.780714285714286) [different ways. We saw how interfaces play](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=13.806142857142857) [a role in some key design patterns,](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=16.444125) [including the repository pattern, the](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=18.566) [factory method pattern, and the decorator](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=20.65675) [pattern. And we saw how interfaces are an](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=23.3425) [important part of mocking. This gives us](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=25.57012499999999) [the ability to create in-memory objects](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=27.748750000000005) [that we can use for our tests. This is](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=29.485000000000003) [just a quick overview of how interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=32.546124999999996) [are used in these areas. With a good](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=34.96185714285715) [understanding of interfaces, we can make](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=37.4372857142857) [our code easier to maintain, extend, and](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=39.283) [test, and we are also better prepared to](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=41.7765) [jump into technologies that use interfaces](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=44.865) [extensively. Thank you very much for](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=47.88025) [joining me in this course and happy coding!](https://app.pluralsight.com/player?course=using-csharp-interfaces&author=jeremy-clark&name=f172bfc7-1937-4054-abb0-e3dce1c7ef89&clip=8&mode=live&start=49.31388888888888)