

1 C#, .NET, & SQL Server, & Code Generation

Hopefully you've managed to setup everything needed for the last homework, etc., and I hope everyone found it tedious, boring, repetitive, and annoying¹. With that in mind, today, you'll learn how to rapidly develop database applications without the pain and hassle of writing it by hand.

2 Strategy: Code Generation

All database applications are nearly the same anyway, so why bother writing each one from scratch? It turns out, you don't have to!

Microsoft Access kept that in mind, and that's why it's used everywhere: it is seen as an easy way to develop a database application. Microsoft Access however isn't really a true database (well, it may look nice, etc., but most people wouldn't trust it with anything serious).

Anyway, to make a long story short, we can develop application using C# (or Java, or VB.NET, etc.) to use SQL Server (or any database) with just about as much ease as modifying a configuration file.

3 Repository: `metadata.xml`

For our purposes, we store the 'repository' all knowledge in a file named `metadata.xml`. This file specifies everything we need to know about an 'entity' in a database—among other things.

For example, our database deals with "Contact" objects, so `metadata.xml` will have a definition for an object "Contact" and information about various attributes, and other various properties.

4 Generator: `gen_all.pl`

Now that we have a repository, what do we do with it? Well, we need to have a generator that takes the repository and outputs source code. We do that with a Perl program named `gen_all.pl`.

4.1 Details

There are many little details about the `gen_all.pl`, first of all, it generates the database (including table definitions, and stored procedures), C# database access code, C# list code, C# add/update form, and a general form to enclose the whole application.

¹Not something that you'd want to repeat again.

5 Glue: Other things...

There are a few other classes that are needed to glue the application together. These include the database lookup code (code that figures out where and how to connect to database), as well as database creation code, and of course the Main.cs application startup code—since it's only used once, there is no real point to generate it.

6 Conclusion

That's about it. Play around with the code—learn from it, etc.