

The FrameSquared

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January 10, 2019

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Abstract

The FrameSquared performs database schema version control and scaffold generation for Postgres databases and the Treefrog C++ MVC framework using YAML to

The FrameSquared is very much a work in progress at this time and is not ready for prime time. Use at your own risk.

xxx

FS2	Postgres	C++/Qt	SOAP	ExtJS/JavaScript
string	varchar	QString	xsd:string	Ext.data.field.String
integer	integer	qint32	xsd:int	Ext.data.field.Integer
float	real	float	xsd:float	Ext.data.field.Number
double	double precision	double	xsd:double	Ext.data.field.Number
numeric	numeric	double	xsd:double	Ext.data.field.Number
boolean	boolean	bool	xsd:boolean	Ext.data.field.Boolean
uuid	uuid	QString	xsd:string	Ext.data.field.String
serial	serial	qint	xsd:int	Ext.data.field.Integer
datetime	timestamp	QDateTime	xsd:string	Ext.data.field.Date
	date			Ext.data.field.Date
	time			Ext.data.field.Date

1 Overview

The rise of iterative and incremental software development methodologies has been transformative. Continuous integration[1], deployment and delivery[2, 3] has met the challenge of regular changes in requirements. Unpredictable and changing requirements[4] have been factored into the development process to enable software architectures to evolve gracefully.

Iterative and incremental methodologies have been successfully applied to database schema revision control and migration[5]. Refactoring database schema effects the database and related queries but also has repercussions to external systems that access the database programmatically, these include models and controllers.

The nature of MVC frameworks lends itself to the use of boilerplate code. Some MVC frameworks create scaffolding using templates to generate boilerplate code. Scaffolding was made popular by Ruby-on-Rails. Most scaffold generators focus primarily on create, retrieve, update and delete (CRUD) operations using HTML[6, 7] and do not generally support single page applications[8] and associated messaging protocols such as SOAP or REST.

The FrameSquared is tool that can generate code to be used as final source files and/or migrations based on serial numbers and up/down direction and can execute programs. The FrameSquared uses the notion of "serial" numbers and "direction" to determine whether a migration "action" should be executed.

2 Getting Started

2.1 Required Libraries

The FrameSquared utilizes the Inja[9] template engine. Inja and The FrameSquared both rely on the nlohmann JSON library[10]. The FrameSquared also uses the jbeder YAML[11] library.

2.2 Building The FrameSquared

The following steps will compile the The FrameSquared tool.

```
mkdir build
cd build
cmake ..
make
./fs2_migration02
```

Figure 1: Steps to building

2.3 Overview

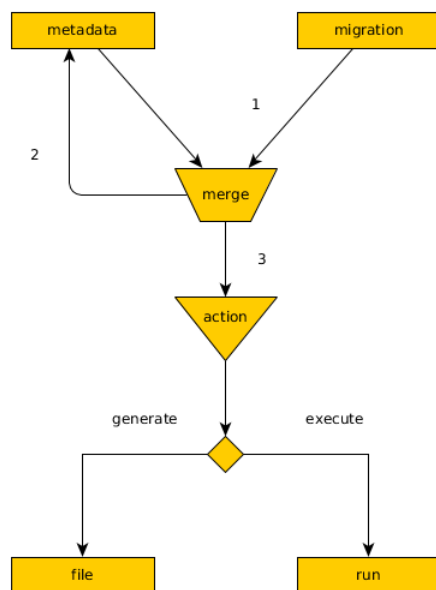


Figure 2: Merge Overview

References

- [1] Paul M. Duvall, Steve Matyas, Paul Duvall, Andrew Glover *Continuous Integration: Improving Software Quality and Reducing Risk* Addison-Wesley, 2007
- [2] Jez Humble and David Farley *Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation* Addison-Wesley, August 2010
- [3] Sten Pitet *Continuous integration vs. continuous delivery vs. continuous deployment* <https://www.atlassian.com/continuous-delivery/principles/continuous-integration-vs-delivery-vs-deployment> Atlassian, Retrieved January 1st, 2019
- [4] Neal Ford, Rebecca Parsons, Patrick Kua *Building Evolutionary Architectures: Support Constant Change* O'Reilly Media Inc, October 8, 2017
- [5] Scott J Ambler and Pramod J. Sadalage *Refactoring Databases: Evolutionary Database Design* Addison-Wesley Professional, March 13, 2006

- [6] *Scaffolding (programming)* [https://en.wikipedia.org/wiki/Scaffold_\(programming\)](https://en.wikipedia.org/wiki/Scaffold_(programming)) Wikipedia, Retrieved January 1st, 2019
- [7] Nick Harrison *Using Scaffolding to Create MVC Applications with Visual Studio* <https://www.red-gate.com/simple-talk/dotnet/asp-net/using-scaffolding-to-create-mvc-applications-with-visual-studio/> www.red-gate.com, 14 December 2015
- [8] Paul Sherman *How Single-Page Applications Work: Getting to know the browser behaviors and APIs responsible for powering more and more web pages* <https://medium.com/@pshrmn/demystifying-single-page-applications-3068d0555d46> medium.com, 11 April 2018
- [9] Inja *A Template Engine for Modern C++* <https://github.com/pantor/inja> GitHub
- [10] JSON for Modern C++ *A Template Engine for Modern C++* <https://github.com/nlohmann/json/> GitHub
- [11] YAML *A YAML parser and emitter in C++* <https://github.com/jbeder/yaml-cpp> GitHub