european conference

Design patterns with Spring4D

About me

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- Twitter *@thedelphigeek*
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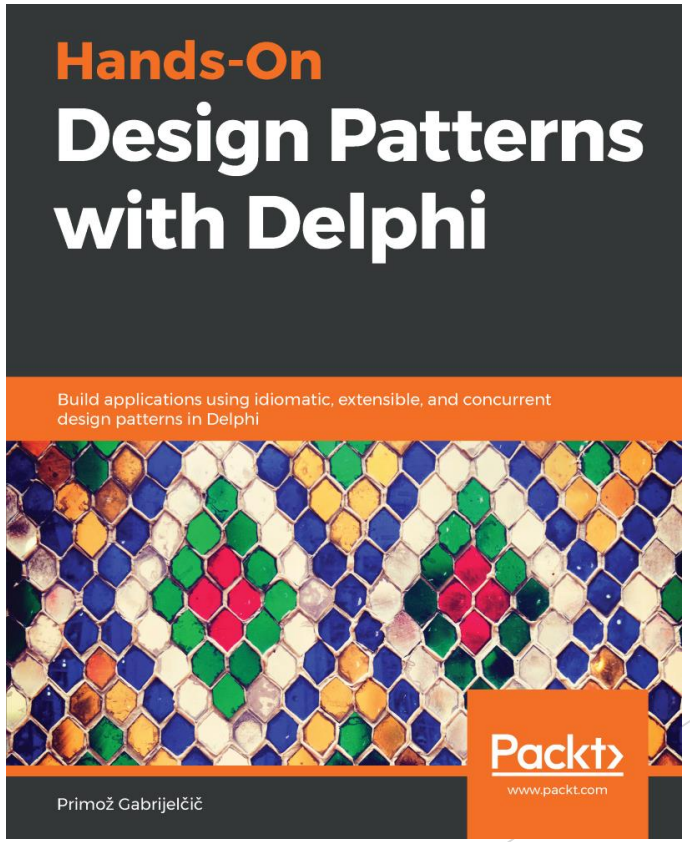
- GitHub *gabr42*

Hands-on Design Patterns with Delphi

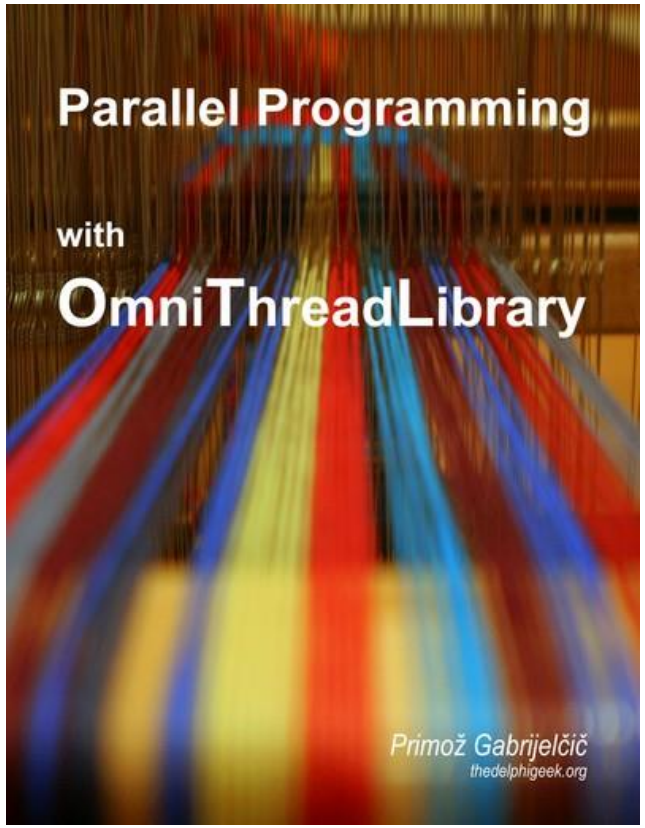
- Packt Publishing
- www.packtpub.com

- http://tiny.cc/pg-dpd



My other books

http://tiny.cc/pg-ppotl



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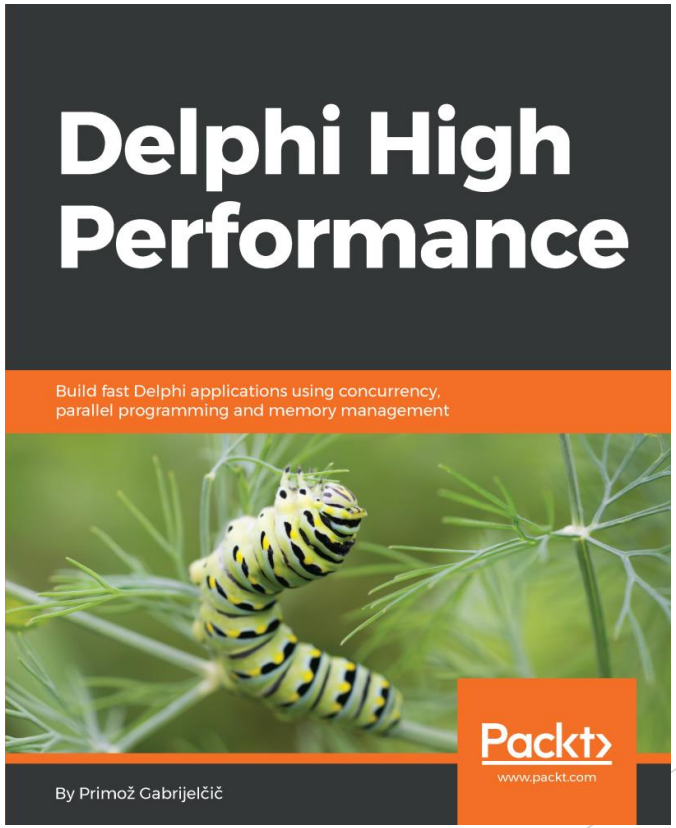

Design patterns

Design patterns

- Pattern = template for a solution
- Pattern = common vocabulary
- Pattern ≠ recipe

- architectural patterns > design patterns > idioms
- design patterns ≠ design principles (SOLID, DRY …)

- *https://en.wikipedia.org/wiki/Software_design_pattern*

Categories

- Creational patterns: *delegation*
  - Creating objects and groups of objects
- Structural patterns: *aggregation*
  - Define ways to compose objects
- Behavioral patterns: *communication*
  - Define responsibilities between objects
- Concurrency patterns: *cooperation*
  - Make multiple components work together

Patterns and Spring4D

Creational patterns

Pattern	Spring4D
Singleton	TSingleton
Dependency injection	Spring.Container …
Lazy initialization	Lazy
Factory method	TFactoryMethod, TFactory

Structural patterns

Pattern	Spring4D
Proxy	Shared, Spring.Interception, Mock
(Marker interface)	Spring.Reflection

Behavioral patterns

Pattern	Spring4D
Iterator	IEnumerable, Spring.Collections
Observer	TObservable, Event
Specification	TSpecification

Concurrency patterns

Pattern	Spring4D
Optimistic initialization	TLazyInitializer

Creational patterns

https://en.wikipedia.org/wiki/Creational_pattern

Singleton

- *“Ensures that a class has only one instance.”*
- TSingleton
  - Spring.DesignPatterns
- Lazy initialization
- *https://en.wikipedia.org/wiki/Singleton_pattern*

Dependency injection

- *"Put appropriate instances in;*
  don't let the object create them."

⇒ Dependency injection

- *https://en.wikipedia.org/wiki/Dependency_injection*

Lazy initialization

- *“Delays the creation of an object until it is actually needed.”*
- ILazy, ILazy<T>, TLazy, TLazy<T>, Lazy<T>
  - Spring
- *https://en.wikipedia.org/wiki/Lazy_initialization*

Factory method

- *“An interface for creating a single object.”*
- TFactoryMethod<T>, TFactory<T>
  - Spring.DesignPatterns

⇒ Dependency injection

- *https://en.wikipedia.org/wiki/Factory_method_pattern*

Structural patterns

https://en.wikipedia.org/wiki/Structural_pattern

Proxy

- *“Provides a replacement for another object so it can control access to the object.”*
- IShared<T>, Shared<T>, Shared
  - Spring
- Spring.Interception, Mock<T>

  ⇒ Interception and dynamic proxy
- *https://en.wikipedia.org/wiki/Proxy_pattern*

Marker interface

- *“Allows us to associate metadata with a class.”*
- HasCustomAttribute<T>, GetCustomAttribute<T>
  - Spring.Reflection
- *https://en.wikipedia.org/wiki/Marker_interface_pattern*

Behavioral patterns

https://en.wikipedia.org/wiki/Behavioral_pattern

Iterator

- *“Provides a way to access elements of an aggregate object without exposing the underlying implementation.”*

- IEnumerable
- Spring.Collections

⇒ Collections

- *https://en.wikipedia.org/wiki/Iterator_pattern*

Observer
[Publish-Subscribe]

- *"A system where a change of objects results in all of its dependents being notified about the change."*

- IObservable<T>, TObservable<T>
  - Spring.DesignPatterns
- IEvent, IEvent<T>, Event<T>, INotifyEvent, INotifyEvent<T>
  - Spring

- *https://en.wikipedia.org/wiki/Observer_pattern*

Specification

- *“Allows business rules to be recombined by chaining them together using boolean logic.”*
- ISpecification<T>, TSpecification<T>
  - Spring.DesignPatterns
- *https://en.wikipedia.org/wiki/Specification_pattern*

Concurrency patterns

https://en.wikipedia.org/wiki/Concurrency_pattern

Optimistic initialization

- Lazy initialization
  - TLazyInitializer
  - Spring

- *https://en.wikipedia.org/wiki/Lock_(computer_science)*

Design pattern pitfalls

Pattern problems

- Using patterns to architect the software
- Blindly applying patterns
- Blindly copying C++/Java implementations

- Design patterns are a **tool**, not a **goal**!