

Expanding Object Orientated Designs in LabVIEW

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Design Patterns

- Typically design patterns have been introduced by NI via training courses, for engineers without a software background.
- Engineers have typically just run with them.
- These come back in software with various levels of success!
- Concept of alternative design patterns...

Design Patterns (II)

- Design Pattern can typically be broken down into three main types.
 - Creational.
 - Structural.
 - Behavioural.
- Can you think of the typical patterns you use? What category do they fall under?

Common Patterns

- Can you name them?
- State machine.
- Producer/Consumer.
- QMH.
- Actor Framework.

Pattern Strategies

- What do you typically do to reduce the risks in your project?
- Pre-make your code.
- Code reuse.
- Abstraction.
- Cohesion.
- An appropriate design pattern.
- Have you tried making your own?

Creational Patterns

- These pattern abstract the instantiation process.
- The system becomes independent of how its objects are created, composed and represented.
- A class creation pattern will delegate instantiation to another object.
- Can you think of a pattern in LabVIEW that suits this criteria?

Creational Pattern Examples

- Builder
- Factory Method
- Prototype
- Singleton

Structural Patterns

- Structural patterns are concerned with the composition of objects and classes to create larger structures
- Consider two instances of multiple inheritance mixed into one.
- The adapter will be expressed in terms of the adaptee.

Structural Pattern Examples

- Adapter
- Bridge
- Composite
- Decorator
- Façade
- Flyweight
- Proxy

Behavioural Patterns

- Behavioural patterns concern an assignment of responsibility.
- Typically use of inheritance to distribute behaviour between classes.
- These patterns break up complex control flow.
- Allows you to concentrate on the way objects are connected.
- Can you think of a behavioural pattern you've used??

Behavioural Pattern Examples

- Command
- Interpreter
- Iterator
- State