Difference between Architectural Styles and Design Patterns

Avikalp Kumar Gupta

CSE, IIT Kanpur

February 26, 2016

Architectural Style

An architectural style is a named collection of architectural design decisions that

- are applicable in a given development context
- constrain architectural design decisions that are specific to a particular system within that context; and
- elicit beneficial qualities in each resulting system

Architectural Pattern

An architectural pattern is a general, **reusable solution** to a **commonly occurring** problem in software architecture within a given **context**. Architectural patterns are similar to software design pattern but have a broader scope.

Architectural Style vs Architectural Pattern

The main difference is that a pattern can be seen as a solution to a problem, while a style is more general and does not require a problem to solve for its appearance.

Examples

Architectural Patterns:

- MVC (Model-View-Controller) Architectural Pattern
- Publish-Subscribe
- Pipes-and-filter
- Layers

Architectural Styles:

- Abstract Data Types
- Subroutines

But in general, all architectural patterns are also architectural styles.

Design Pattern

A general reusable solution to a commonly occurring problem within a given context in software design.

- Not a finished design that can be transformed directly into code.
- Description or template to solve a problem that can be used in many different situations
- formalized best practices

Examples of Design Patterns

Creational Design Patterns :

- ► Singleton
- ► Factory
- ► Builder
- ► Prototype

Behavioral Design Patterns :

- ► Chain of responsibilities
- ► Command Interpreter
- ► Iterator

Structural Design Patterns :

- ► Adapter
- ► Bridge
- ► Composite

For more details: http://www.oodesign.com/

Architectural Styles vs Design Patterns

Architectural Styles	Design Patterns
Few	Many
Large-scale system organization	Localized, small-scale design solutions

But still they are often used interchangably.

Acknowledgement

This presentation was not possible without the help from the following sources:

- IT Passion: Differences and Similarities between Design Patterns and Architectural Styles
- Stack Overflow: What's the difference between design patterns and architectural patterns?
- SlideShare: Architectural styles and patterns
- CS654A slides on Patterns
- Wikipedia, the free encyclopedia