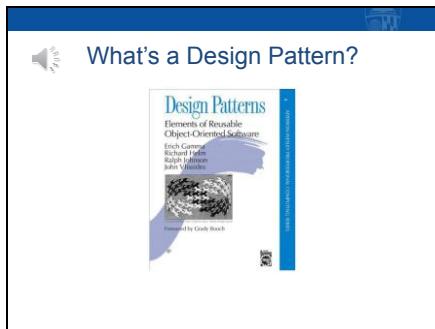


1



In this lecture, we're going to introduce design patterns as one technique that can be applied to achieve reuse.

2



So...what's a design pattern anyway?

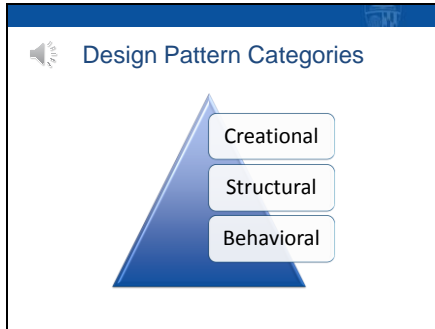
A design pattern is a solution to a commonly occurring design problem that can be applied over and over again in many different project contexts. A formal design pattern has a name, a description of the problem it solves, and a solution strategy.

Design patterns also incorporate best practices in their solutions, and result in very flexible, and reusable designs. And...they can be big timesavers because we don't have to re-invent the wheel...as the saying goes.

Design Patterns were originally made popular in a book entitled Design Patterns: Elements of Reusable Object-Oriented Software. The book's authors are often referred to as the "gang of four", and the twenty-three patterns introduced in their book are often referred to as the "gang of four patterns."

Since the publication of that book, much has been written about design patterns, and dozens of new patterns have been discovered. There's a wealth of information available about design patterns both in published literature and on the Internet. A recent search engine query I performed on "design patterns" yielded about 106 million results.

3



The “gang of four” categorized their design patterns into three categories: creational patterns, structural patterns, and behavioral patterns.

Creational patterns address design issues that focus on how to make a system independent of how its objects are created which results in designs very robust in response to changes. You’ll learn about a very common creational pattern...the Singleton pattern.

Structural patterns describe ways to design objects that work with each other in very robust ways to realize new functionality. You’ll learn about a very handy structural pattern...the Adapter pattern.

Behavioral patterns deal with how to assign responsibilities to objects and how objects communicate with one another. You’ll learn about a widely used behavioral pattern...the Observer pattern.

There are many other categories of design patterns that have been developed over the years, but our focus in this course module will be on these three widely used patterns from the creational, structural, and behavioral categories.