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Good Read: Design Patterns: Elements of Reusable Object-Oriented Software

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E. Gamma, R. Helm, R. Johnson, J. Vlissides. Design Patterns: Elements of Reusable Object-Oriented Software. Addison-Wesley, 1995.

Let's say we want to build a new web application for querying and analyzing ecological data. A service like this sounds pretty great, so where should we start? Assuming we already have a working infrastructure (web server, database, etc.), it's time to get dirty in the code. However, we should first answer a couple more questions: How do we best structure our code so to maximize code reuse and minimize duplicated efforts? What best practices and frameworks exist for promoting optimal code design?

Design Patterns is the first book to document object-oriented design patterns, providing programmers with a rich repository of reusable frameworks and preventing them from having to rediscover these solutions themselves. The four authors worked together to discover, analyze, and provide working examples of 23 previously undocumented design patterns. Essentially, they captured these patterns as abstract ideas, making it easier for developers to design, document, and share their code. (For the programmers, these patterns include the Flyweights, Factory Method, and Singleton class).

Although this book was written before the explosion of the web (it is geared for general software development), everything in it is applicable for building a web service. Be forewarned though: This book is fairly technical, and requires a background in computer science and/or object-oriented programming. That being said, with this book in our library, we can comfortably build any new software with efficiently designed code.