

Laboratório de Engenharia de Software I

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Aula 04
Design patterns

Bibliografia

- GAMMA, Erich et al. Design patterns: Elements of Reusable Object-Oriented Software. Addison Wesley, 1994, United States Of America, 395 p.

Pattern (Wiktionary)

- **pattern** (*plural* [patterns](#))
- that from which a [copy](#) is made
- [design](#), [motif](#) or [decoration](#) formed from [multiple](#) copies of an [original](#) fitted together
- arrangement of [objects](#), [facts](#) etc. which has a [mathematical](#), [geometric](#), [statistical](#) etc. relationship
- a series of steps, repeated
- the quality held in common by a pattern
- (linguistics) in [Semitic](#) and other [Afro-Asiatic](#) languages, the arrangement of [prefixes](#), [suffixes](#), [consonant](#)-doubling, [vowels](#), and [stress](#) in a word formed around a consonantal [root](#)
- (computing) A [design pattern](#).

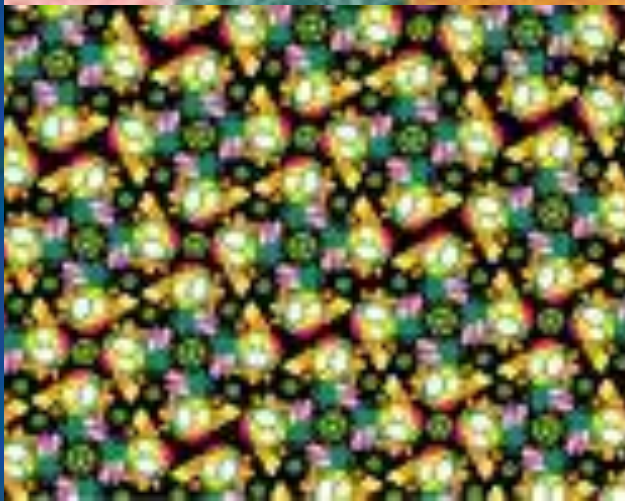
Standard (Wiktionary)

- **standard** (*plural* [standards](#))
- A level of [quality](#) or [attainment](#).
- Something used as a [measure](#) for comparative [evaluations](#).
- An object [supported](#) in an [upright](#) position.
- A [musical](#) work of established [popularity](#).
- The flag or [ensign](#) carried by a [cavalry](#) unit.
- A rule or set of rules or requirements which are widely agreed upon or imposed by government.
- A [bottle](#) of [wine](#) containing 0.750 [liters](#) of fluid.
- One of the upright members that supports the [horizontal axis](#) of a [transit](#) or [theodolite](#).
- A manual transmission vehicle.

Em português

- Pattern e standard traduzem-se como

PADRÃO

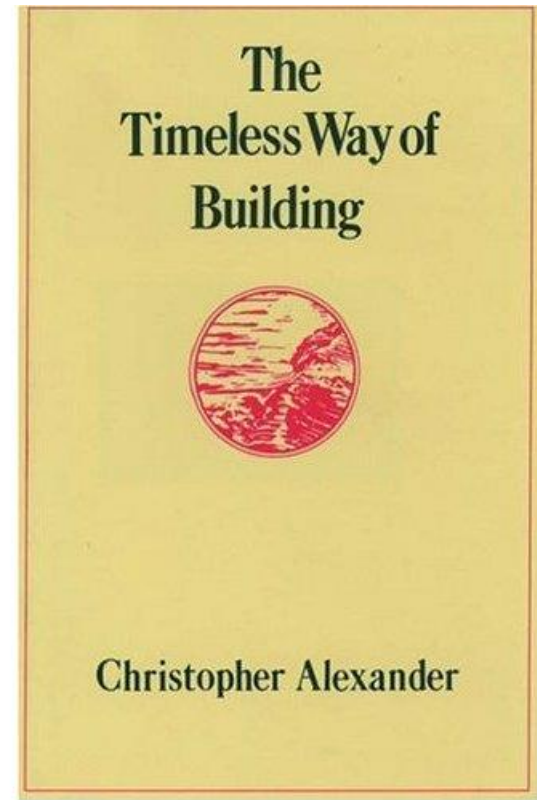


Origem

Cristopher Alexander, arquiteto

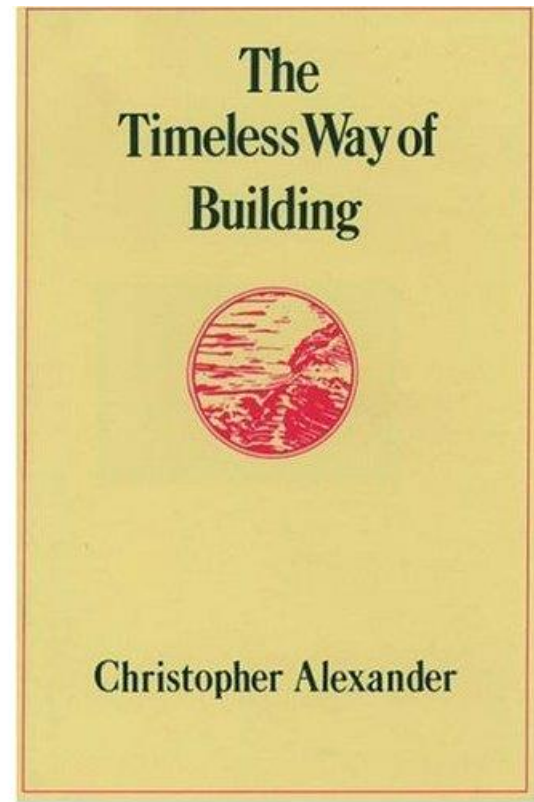
Linguagem de *patterns*

253 patterns para cidades e
construções



Christopher Alexander

- Contexto: condições sobre as quais este Pattern é empregado.
- “forças do sistema”: o problema ou a meta.
- solução: a configuração que equilibra o sistema de forças ou resolve o problema apresentado.



Número Nome Confiança

247 Paving With Cracks: Between the Stones**



...many patterns call for paths and terraces and places where the outdoor areas around a building feel connected to the earth - Green Streets (51), Park Shape (121), Private Terrace on the Street (140), Outdoor Room (162), Connection to the Earth (168), Terraced Slope (169). This pattern provides a way of building the ground surface that makes these larger patterns come to life.

Asphalt and concrete surfaces outdoors are easy to wash down, but they do nothing for us, nothing for the paths, and nothing for the rainwater and plants.

Look at a simple path, made by laying bricks or paving stones directly in the earth, with ample cracks between the stones. It is Good to walk on, good for the plants, good for the passage of time, good for the rain. You walk from stone to stone, and feel the earth directly under foot. It does not crack, because as the earth settles, the stones move with the earth and gradually take on a rich uneven character. As time goes by, the very age and history of all the moments on that path are almost recorded in its slight unevenness. Plants and mosses and small flowers grow between the cracks. The cracks also help preserve the delicate ecology of worms and insects and beetles and the variety of plant species. And when it rains, the water goes directly to the ground; there is no concentrated run-off, no danger of erosion, no loss of water in the ground around the path.

All these are good reasons to set paving stones loosely. As for the flat, smooth, hard concrete and asphalt surfaces, they have almost nothing to recommend them. They are built when people forget these small advantages that come about when paving is made out of individual stones with cracks between the stones.

Therefore:

On paths and terraces, lay paving stones with a 1 inch crack between the stones, so that grass and mosses and small flowers can grow between the stones. Lay the stones directly into earth, not into mortar, and, of course, use no cement or mortar in between the stones.



✦ ✦ ✦

Use paving with cracks, to help make paths and terraces which change and show the passage of time and so help people feel the earth beneath their feet - Connection to the Earth (168); the stones themselves are best if they are simple soft baked tiles - Soft Tile and Brick (248)...

Ilustração

Parágrafo
Introdutório

Resumo

Corpo

Solução

Diagrama

Padrões
Relacionados

Objetivos dos *Patterns*

- Arquivar o conhecimento e a experiência de especialistas em um determinado problema;
- Representar uma abordagem genérica para resolver um determinado problema;
- Identificar problemas que devem ser resolvidos;
- Servir como mecanismo de comunicação (desenvolvedores são capazes de discutir uma solução em nível elevado);
- Facilitar aprendizado para novas pessoas da equipe.

Nesta aula, dois patterns

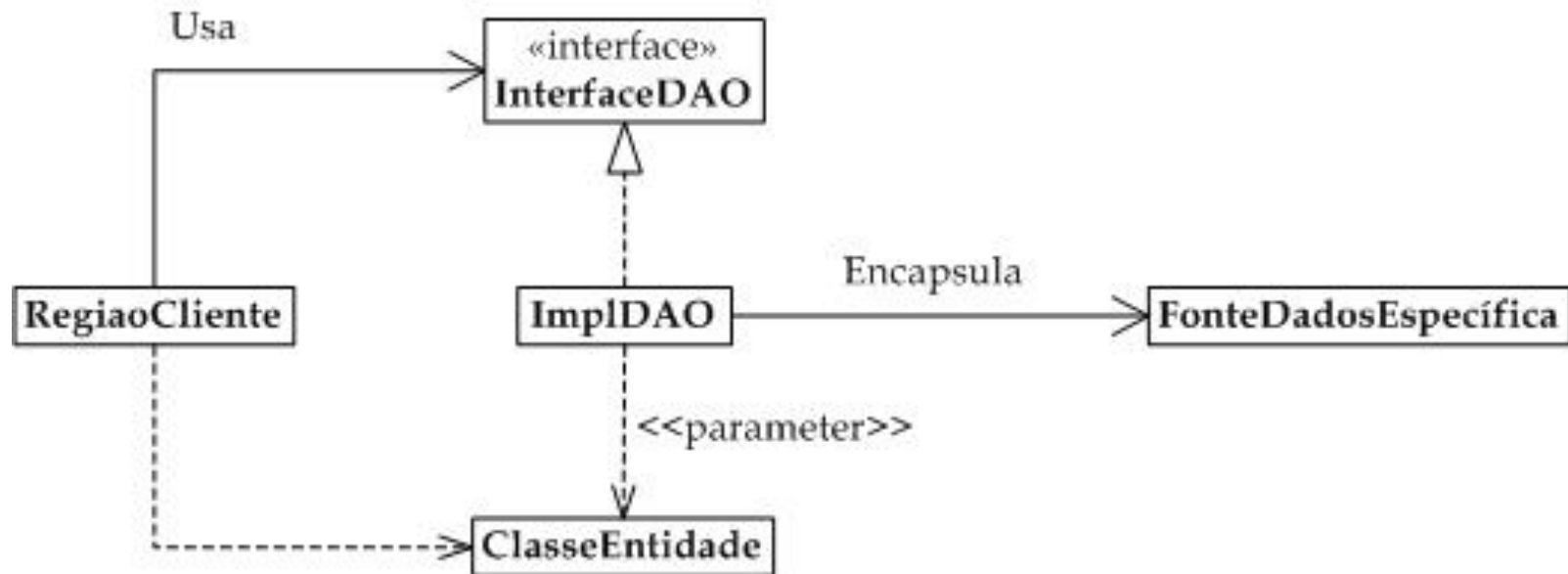
- DAO – Data Access Object
- MVC – Model, View, Controller

Uso do padrão DAO

- O padrão DAO é uma forma de desacoplar as classes do negócio dos aspectos relativos ao acesso ao armazenamento persistente.
 - DAO: *Data Access Object* (Objeto de Acesso a Dados).
- Nessa estratégia, um SSOO obtém acesso a objetos de negócio através de uma interface, a chamada ***interface DAO***.
 - Classes que implementam essa interface transformam informações provenientes do mecanismo de armazenamento em objetos de negócio, e vice-versa.
- O SSOO interage com o ***objeto DAO*** através de uma interface.
 - A implementação desse objeto simplesmente não faz diferença para a aplicação.
 - O objeto DAO isola completamente os seus clientes das particularidades do mecanismo de armazenamento (fonte de dados) sendo utilizado.

Uso do padrão DAO

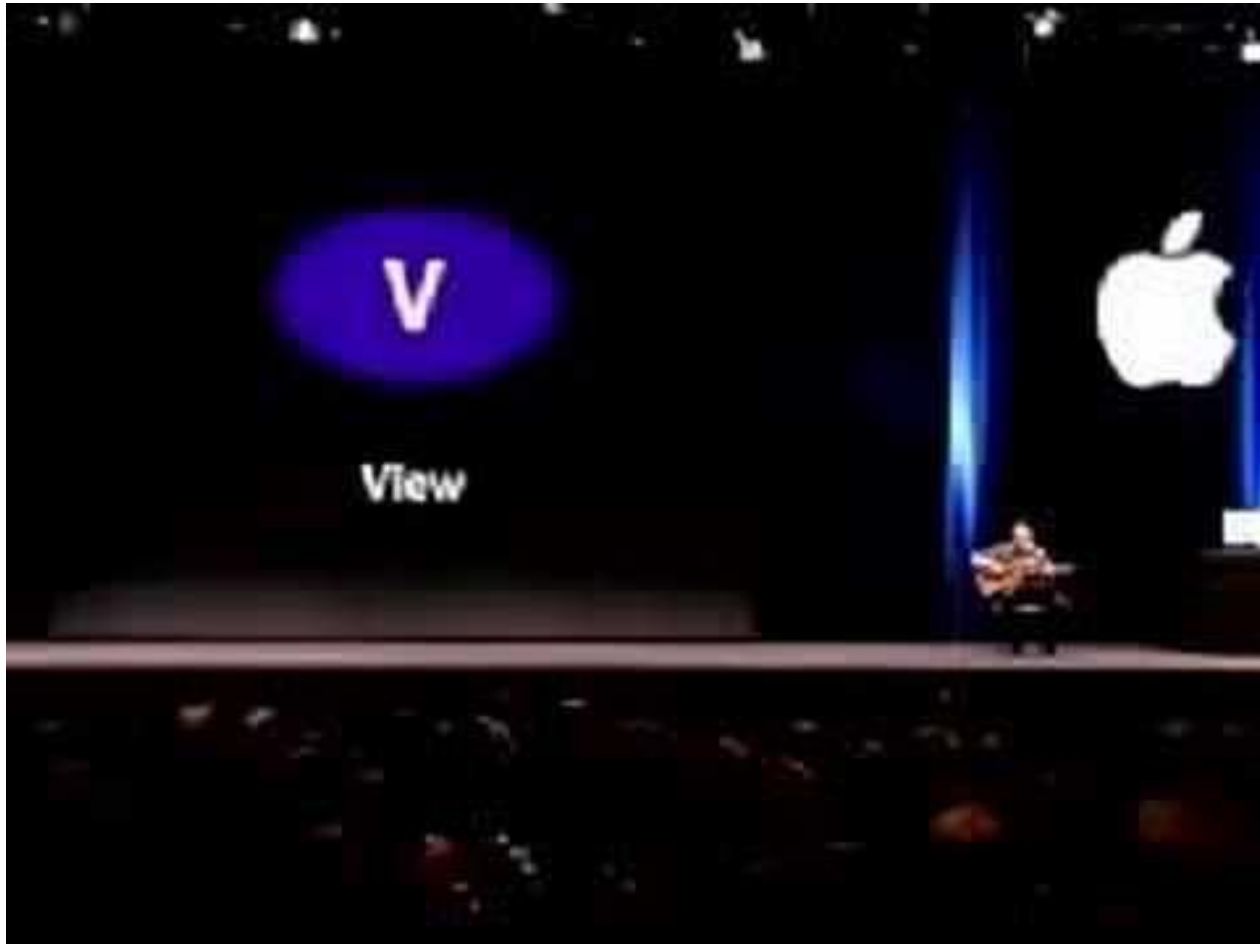
- Estrutura do padrão DAO



DAO

- O DAO encapsula todos os comandos SQL para o banco de dados
- Cada classe do modelo terá o seu correspondente DAO
- Função básica de cada método
 - Conectar com o banco
 - Fazer o acesso aos dados
 - Fechar a conexão
- O DAO não deve implementar a lógica de negócio!
- Convém existir uma classe com os dados de conexão ao BD.

Model-View-Controller



Estereótipos do Model- View- Controller

- VIEW, Classes de fronteira: são classes que se comunicam com agentes externos (por exemplo, usuários humanos)
- CONTROL, Classes de controle: orquestram o caso de uso, coordenando os eventos, a troca de dados e regras de negócio
- MODEL, Classes de modelo (ou domínio): representam a informação manipulada pelo sistema. Em geral, os objetos são persistentes



Item de Venda

(from Classes de Entidade)



Venda

(from Classes de Controle)



Tela de Vendas

(from Classes de Fronteira)

Padrão MVC no diagrama de sequência

