

Design Patterns

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Design Patterns

Introduction Lite

Some guys got together and wrote down some *patterns* they've encountered over their careers in software development and slapped some names on them.

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Some guys got together and wrote down some *patterns* they've encountered over their careers in software development and slapped some names on them.

That's it... really.

Design Patterns

Introduction Lite

Definition

Design Patterns are recurring architectural concepts in software development that have been used to solve specific problems.

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1. There are many named *patterns* in the wild.
2. You've already derived and used a couple patterns.

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You just did not know it was a *thing* that had a name.

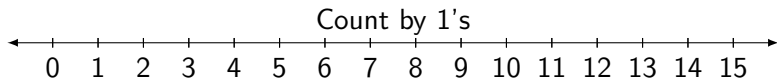
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Introduction Lite

And they exist everywhere **else...**

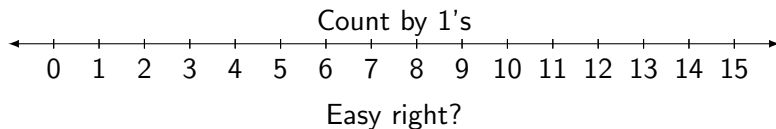
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Learning how to count... again



Design Patterns

Learning how to count... again



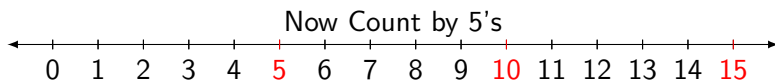
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Learning how to count... again

What mathematical operation did you use?

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Learning how to count... again



Design Patterns

Think like a programmer

1. Create a function that calculates the *nth* multiple of 5.
2. Create a function that calculates the *next* multiple of 5.
3. What do all the multiples of 5 have in common?

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Think like a programmer

Definition

intrinsic state - sharable features that gives rise to an entity's uniqueness.

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Think like a programmer

Definition

intrinsic state - sharable features that gives rise to an entity's uniqueness.

Definition

extrinsic state - features/behavior created by a context of usage and therefore can not be shared.

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Think like a programmer

1. Provide an **intrinsic state** of an object that represents only the numbers 5, 15 and 25.

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Think like a programmer

1. Provide an **intrinsic state** of an object that represents only the numbers 5, 15 and 25.
2. Provide an **extrinsic state** of an object that represents only the numbers 5, 15, and 25.

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Think like a programmer

Task: Create a **NumberLine** class that represents all multiples of 5 on the interval $(0, \infty)$

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Flyweight

A **flyweight** is a pattern where you can use a single shared object to represent many *items*.

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Flyweight

Huh?!

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Flyweight

~~Kanye's~~ Conway's Game of Life

1. why couldn't we create an object for each cell in a *large* grid?
2. what was the **intrinsic state** of a cell?
3. what was the **extrinsic state** of a cell?

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Flyweight

Task: Create an object or object instance that represents all live cells in a ∞ -by- ∞ sized grid.

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Flyweight

Ta-dah!