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Software Engineering

Object-Oriented Thinking

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The inheritance relationship

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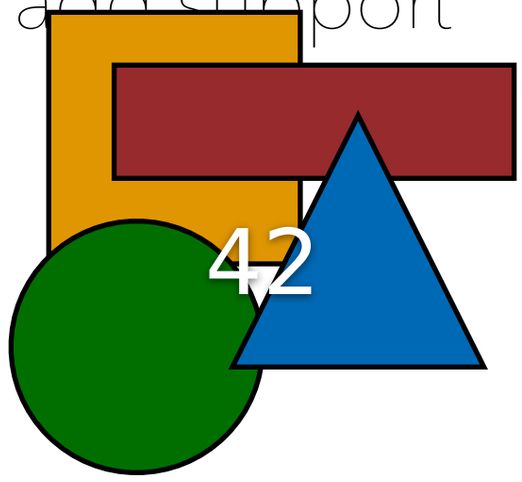
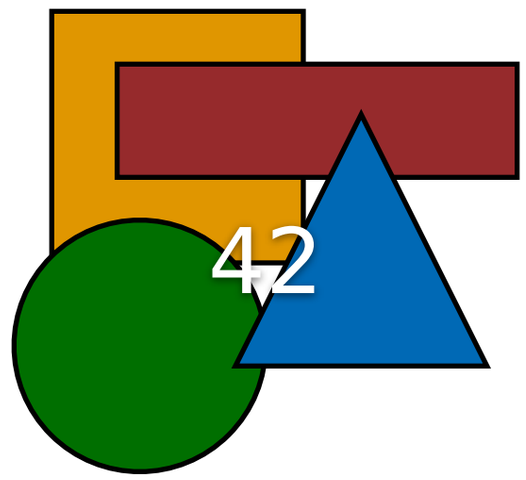
A common pitfall in object-oriented design is the inheritance relation.

- Let's assume that we want to extend our library for vector graphic applications and our library already defines classes for **`Circles`** and **`Squares`**.
- Let's assume we want to further evolve our library and add support for **`Rectangles`**...



A common pitfall in object-oriented design is the inheritance relation.

- Now let's assume we want to further evolve our library and add support for **`Rectangle`**s…
- Should **`Rectangle`** inherit from **`Square`**?
- Should **`Square`** inherit from **`Rectangle`**?
- Is there some other solution?



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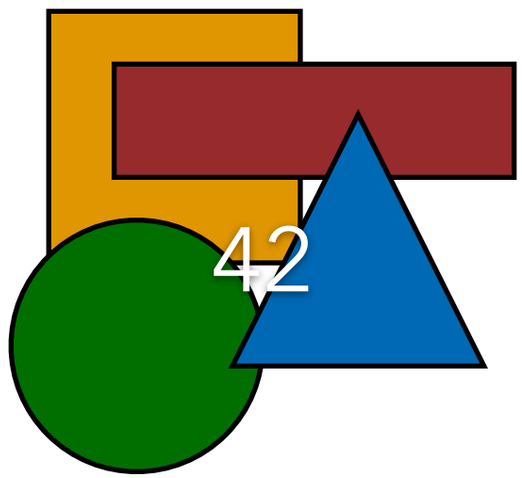
A first test:
"Is a Rectangle a Square?"



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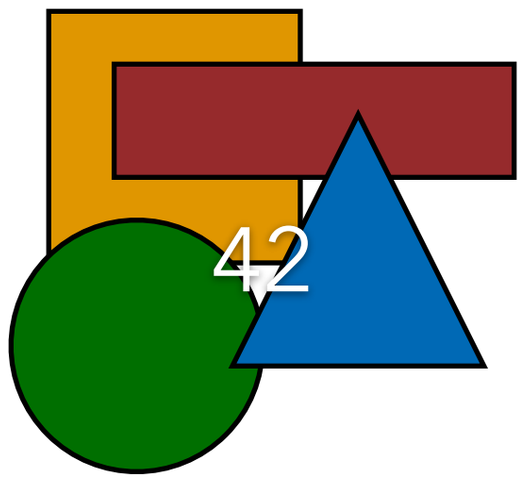
No.



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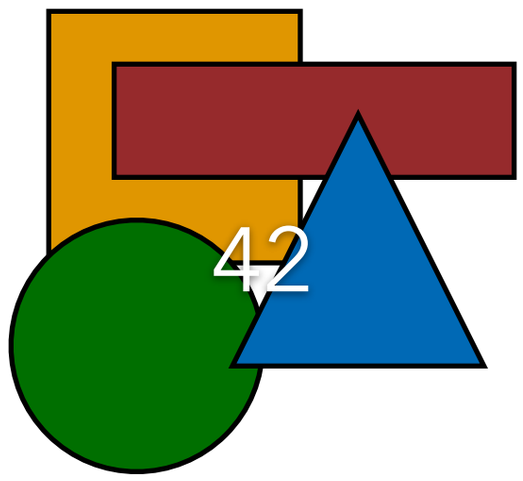

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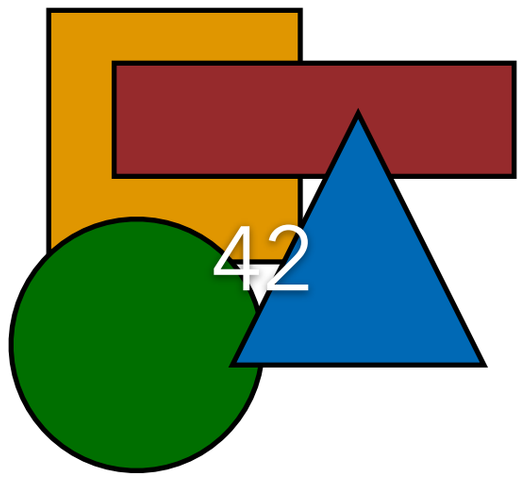

Object-Oriented Thinking

- Summary

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A large number of Design Heuristics and Design Principles exists that help you to design “better” programs.

- Low Coupling
- High Cohesion
- Single Responsibility Principle
- Don’t repeat yourself
- No cyclic dependencies
- Liskov Substitution Principle
- Open-Closed Principle
- …

The goal of this lecture is to enable you to systematically carry out small(er) software projects that produce well-designed software.