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SOLID Design Principles In Common Lisp

Learn how to apply SOLID design principles with Common Lisp and the powerful CLOS system.



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Let's Go!

What is SOLID?

- Single Responsibility Principle
- Open/Closed Principle
- Liskov Substitution Principle
- Interface Segregation Principle
- Dependency Inversion Principle

S: Single Responsibility

A class should have one, and only one, reason to change.

Bad

```
(defclass printer ()
  ((document-type
    :initarg :document-type
    :accessor document-type)))

(defmethod process-email ((self printer))
  "process email..")

(defmethod send-email ((self printer))
  "send document as email")

(defvar printer-one (make-instance 'printer :document-type "docx"))
(process-email printer-one)
(send-email printer-one)
```

O: Open/Closed

Software entities (classes, modules, functions, etc) should be open for extension, but closed for modification.

L: Liskov Substitution

Let $\Phi(x)$ be a property provable about objects x of type T . Then $\Phi(y)$ should be true for objects y of type S where S is a subtype of T .

.

L: Interface Segregation

Clients should not be forced to depend upon interfaces that they do not use.

D: Dependency Inversion

- High level modules should not depend upon low level modules. Both should depend upon abstractions.
- Abstractions should not depend upon details. Details should depend upon abstractions.