

# CSE 341: Programming Languages

Winter 2006

Lecture 19—Modularity in MzScheme

# Modularity

---

R5RS does not even have `define-struct` or namespace management.

This makes it difficult (impossible in practice?) to maintain library invariants:

- Can use `let` to hide private things
- Can make private copies to detect changes to values or “forged values” (but often may as well just re-check invariants)
- But clients can still assume things about the implementation

It should not be this awkward/expensive!

But can we have strong modules without compile-time types?

Yes, with `define-struct`, name hiding, and run-time checks.

## An interesting comparison

---

In ML, an *abstract type* prevents abstraction-breaking clients (won't typecheck)

In MzScheme, a *fresh type* and *hidden predicate* prevents abstraction-breaking clients (unbound variable).