

What's cool about **Scheme**?

# The Plan

1. Enough basics for (2)
2. Cool stuff
3. Resources

# The Basics

# Design Philosophy

R<sup>5</sup>RS famously proclaims,

"Programming languages should be designed not by piling feature on top of feature, but by removing the weaknesses and restrictions that make additional features appear necessary."

# A First Macro

We can define a "wordy" if-expression:

```
(define-syntax wif
  (lambda (stx)
    (syntax-case stx (then else)
      [(wif test then one-thing else another)
       #'(if test one-thing another)])))
```

## Macro Practice

Not digging this recursion thing? Fine, here's a while-loop!

```
(define-syntax while
  (lambda (stx)
    (syntax-case stx ()
      [(while guard body)
       #'(letrec ([loop
                    (lambda ()
                      (if guard
                          (begin body (loop))))])
           (loop))])]))
```

# Slideshow: A DSL for Presentations

This presentation is a Scheme program!

Its source starts like this:

```
(module scheme-talk (lib "run.ss" "slideshow")
  (slide/center
    (page-para "What's cool about"
      (tt "Scheme") "?"))
  (slide/title
    "The Plan"
    ...)
  ...)
```

# Programming Environment

- PLT Scheme: <http://www.plt-scheme.org/>
  - DrScheme IDE
  - MzScheme command-line interpreter/compiler
- Plenty of other (also) free ones



## Resources

- *How to Use Scheme*: <http://www.htus.org/>
- *The Schematics Scheme Cookbook*: <http://schemecookbook.org/>
- *The Scheme Programming Language*:  
<http://www.scheme.com/tspl3/>
- PLT Scheme mailing list: <http://www.plt-scheme.org/maillist/>

# Macro Reading

- *Automata as Macros*
  - Paper: <http://www.cs.brown.edu/~sk/Publications/Papers/Published/sk-automata-macros/>
  - Presentation: [http://technetcast.ddj.com/tnc\\_play\\_stream.html?stream\\_id=644](http://technetcast.ddj.com/tnc_play_stream.html?stream_id=644)
- *Writing Hygienic Macros in Scheme with Syntax-Case:*  
<ftp://ftp.cs.indiana.edu/pub/scheme-repository/doc/pubs/iucstr356.ps.gz>