CS 6390: Lecture 1
Basics of
Functional Programming

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Prelim Quiz Results

- Results, out of 58:

  - Abstract Syntax Trees: 57

  - Induction: 29

  - Propositional Logic: 40

  - First-order logic: 5, 26

  - Decidability: 9

Logistics

- I did everything wrong

  - The **Friday** Assignment is now the **Monday** assignment

  - Projects: will post links by tonight

  - Piazza thread: will post by tonight

- Enrollment decisions by this Friday

- When I can bump you into the course

- Clicker

- Success with ProofGeneral/CoqIDE?

Today's Agenda

- Functional programming in Coq

  - Lots of overlap with OCaml, Haskell, Scala

- Basic theorem proving

  - Final result: **not** (**not** (**b**)) = **b**
    (might not get this far today)

A Few General Warnings

- We'll be rolling our own version of everything that we use

  - Real FP languages do not make you define bool and nat

- We'll be writing very explicit proofs of everything

  - Real Coq programmers use/write proof libraries