

Lecture 2

CIS 5000: SOFTWARE FOUNDATIONS

Steve Zdancewic

Fall 2022

TODO (for you)

- Before next class:
 - Check out Ed Discussion (let us know if you are not already registered)
 - Try to log in to Gradescope
 - Download Poll Everywhere app on your phone
 - Install VSCode + Coq
 - Start reading: Preface and Basics
- **HW1: Exercises in Basics.v**
 - Due: **Tuesday, September 6th at 10:00PM**
 - Available from course web page
 - Complete all non-optional exercises
 - There are no “advanced” problems for this HW
 - Submit via Gradescope

Coq in a Nutshell

- **Types**
 - Types *classify* data values
 - Introduced by the “**Inductive**” keyword
 - Characterized by *constructors* that enumerate possible values
 - we can **Check** the type of an expression.
- **Functional programming**
 - Functions define outputs for given inputs
 - Introduced by the “**Definition**” keyword
 - can use “**match**” to examine the structure of values
 - we can **Compute** an answer.
- **Interactive theorem prover**
 - We can prove an **Example** or **Theorem**
 - using *tactics* (like “**simpl**” or “**reflexivity**”)

Getting acquainted with Coq...

BASICS.V