

# CS112 (Fall 2018) Homework 2

## First Order Logic

Due September 28, 2018

The following problems are taken from Huth and Ryan's Exercises for Chapter 2, starting on page 157 of the book. Please read the directions for each question carefully!

As before, your proofs should be written in the style we used on the last problem set. You may use the natural deduction rules for propositional logic from the last problem set, the equality/universal/existential introduction/elimination rules from section 2.3.1 of Huth and Ryan, and the 'copy' rule from page 20. If you want to use any other rules, you must supply an additional proof that shows why that rule can be used.

Partial credit will be given, so, if you're stuck on one of the proofs, try sketching out your strategy for doing the proof and do what you can. Good luck!

1. Translations  
Exercise 2.1, problem 2(a, b, c) — **3 questions**
2. Natural Deduction  
Exercise 2.3, problem 9(a, b) and problem 13(f, h) — **4 questions**
3. Predicate Logic Semantics  
Exercise 2.4, problem 11(a, d) and problem 12(b) — **3 questions**