CSCI.6962/4962 Software Verification Spring 2018
Proof Assignment 1

Instructor: C. Varela

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This assignment is to be done either **individually** *or* **in pairs**. *Do not show your code to any other group and do not look at any other group's code. Do not put your code in a public directory or otherwise make it public. However, you may get help from the instructor. You are encouraged to use the LMS Discussions page to post problems so that other students can also answer/see the answers.*

Part I. Proving Equalities

Exercise 3.29 (Page 187). Write an Athena proof for the distributive property of exponentiation over multiplication:

$$\forall n, x, y : \mathbb{N} \, . \, (x \cdot y)^n = x^n \cdot y^n,$$

i.e., prove the following property of **:

```
define Power-Distributive := (forall n x y . (x * y) ** n = x ** n * y ** n)
```

Part II. Sentential Logic

Exercise 4.4 (Page 293). Give proofs deriving the following sentences from the respective assumption bases:

    (a) `(A ==> B ==> C)`   from   {`(A & B ==> C)`}.
    (b) `(A ==> ~ E ==> ~ C)`   from   {`(A | B ==> C | D ==> E)`}.

Requirements

Due Date: Monday, **02/12, 7:00PM.**

Grading: *The assignment will be graded mostly on correctness, but code clarity / readability will also be a factor (comment, comment, comment!).*

Submission: *Please submit a ZIP file with your code, including a README file. Your ZIP file should be named with your LMS user name(s) as the filename. Examples:* `userid1.zip`, `userid1_userid2.zip`. *Only submit one assignment per pair via LMS. In the README file, place the names of each group member (up to two). Your README file should also have a list of specific features/bugs in your solution.*