Sample Final

(Make sure you finish in 35-40 mins)

1. Which one of the following is syntactically equivalent to ?



1. While calculating , what is the collection of variables that we need to age?



1. We know that , then which one of the following must be true?
   1. For some state , it is the case that .
   2. For some state , it is the case that.
   3. For some state , it is the case that .



* 1. For some state , it is the case that.

1. Which one of the following is semantically equivalent to ? You may assume that and are both valid indices of array .



1. Under total correctness, create a full proof outline for the following minimal proof outline. Remember that each triple and each implication you use in the proof outline must be provable.

1. The following program calculates the sum , where . We want to store the sum in a variable and show that in the postcondition. Create a full proof outline under total correctness of this program by fulfilling the missing conditions and statements.

1. Given the following two threads written in proof outlines:

Do these two threads interfere with each other? Show your work.

One way is to test the validity of the following triples:

They are all valid, so these two threads don’t interfere with other.