Homework #2

Due: February 2, 2024

1. (15 points) Write a Ponder instance authorization to allow a professor to read an assignment submitted to a drop box between 7:00am and noon.

2. (25 points) Expand the proof of Theorem 4–2 to show the statement, and the proof, of the induction.

3. (15 points) Paul needs to read and write some documents. In the following, assume the system security policy is described completely by the Bell-LaPadula model. Note that the situation described may be impossible, in which case you should say so and show why.
   
   (a) Please give the least clearance that Paul can have if he wishes to read a document with classification (SECRET, {NUC, EUR}) and a document with classification (CONFIDENTIAL, {ASI}).

   (b) Please give the greatest clearance that Paul can have if he wishes to write to a document with classification (TOP SECRET, {EUR}) and a document with classification (SECRET, {EUR, NUC}).

   (c) Please give the greatest clearance that Paul must have if he wishes to read a document with classification (SECRET, {EUR, NUC}), to write a document with classification (CONFIDENTIAL, {NUC, EUR}), and to read another document with classification (TOP SECRET, {ASIA, EUR}).

4. (20 points) Prove Theorem 5–11.

5. (25 points) Prove or disprove: Theorem 6–1 holds for Biba’s ring policy (described in Section 6.2.2).