Homework #2

Due: February 2, 2024   **Points:** 100

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).