Please think about and answer these questions. Then, when you are ready, take the Hw1 quiz on Moodle, before 11 pm, 9/26/16.

1. Let d be the proposition "The election is decided" and let c be "The votes have been counted." Write PropCalc formulas to express the following:

    (a) "The election is not decided."

    (b) "The election is decided but the votes have not been counted."

    (c) "The election is decided if the votes have been counted."

    (d) "If the election is not decided then the votes have not been counted."

    (e) "The election is not decided unless the votes have been counted."

2. Let a be the proposition, "You get an A in the course"; let f be, "You get a perfect score on the final"; and let w be, "You do all the assigned work". Write PropCalc formulas to express the following:

    (a) "You get an A in the course, without getting a perfect score on the final."

    (b) "To get an A in the course, it is sufficient to do all the assigned work or to get a perfect score on the final."

    (c) "If you don't do all the assigned work then you won't get an A in the course unless you get a perfect score on the final."

    (d) "If you don't get an A in the course, then you didn't do all the assigned work."

    (e) "You get an A in the course but you didn't both do all the work and get a perfect score on the final."

3. Each of A, B, C is either a knight (always tells the truth) or a knave (always lies). Suppose that A says, "I am the only knight or the only knave," B says, "There is exactly one knave," and C says "Exactly one of A and B is a knight." Use truth tables to determine who is who.

4. Using the methods described on the first slide of L6, convert the following PropCalc formula to an equivalent formula in CNF $\sim ((\sim p \wedge q \wedge r) \vee \sim (p \rightarrow (q \rightarrow r)))$