This homework assignment has 5 problems, for a total of 40 points.

1. (8 points) Which of the following statements are true about the Hohfeldian concepts?
   A. If a reader has a “right” to access a document, that means the reader has a privilege (with respect to the document owner) to access the document
   B. If a buyer has a “right” to receive goods, that means the buyer has a claim (with respect to the seller) to receiving the goods
   C. If a buyer has a “right” to demand a refund, that means the buyer has an exposure (with respect to the seller) to receiving the refund
   D. Immunity is a correlate of power

2. (8 points) Identify all of the following statements that are true with respect to vector clocks and asynchronous messaging
   A. The sender of a message doesn’t know if the message has been received unless the receiver sends back an acknowledgment
   B. Stating commitments precisely removes the need for maintaining and exchanging vector clocks
   C. When we compare two clock vectors, we can determine either that they are equal or that one is later than the other
   D. Suppose agent A first sends a message $m_{A,B}$ to agent B and then sends a message $m_{A,C}$ to agent C; a feature of vector clocks is that B’s vector clock upon receiving $m_{A,B}$ is smaller than C’s vector clock upon receiving $m_{A,C}$

3. (8 points) Which of the following statements are true about interaction and communication?
   A. Perlocutions are considered the core aspect of a communicative act
   B. The same proposition, e.g., reserve(Alice, UA 872, 14 May 2009), may feature in a request and an inform
   C. We may not be able to decide if a statement such as Shut the door! is true or false but we can decide whether such a statement was made
   D. A statement such as Shut the door! becomes true if the door in question is shut on purpose, not accidentally

4. (10 points) Identify all of the following statements that are true about commitments and commitment protocols
   A. If the debtor of a commitment delegates it simultaneously with the creditor of the same commitment assigning it, additional messages are in general needed for the new debtor and the new creditor to learn about each other
   B. If the debtor of a commitment discharges it simultaneously with the creditor of the same commitment assigning it, no additional messages are needed for the new creditor to learn about that the debtor is compliant
   C. A protocol for payment through a third party could naturally be specified using the delegate of a commitment to pay
   D. Forward-going interactions such as ordering and payment may be modeled as commitment protocols, but not backward-going interactions such as returning goods for a refund
E. Even though a commitment protocol captures the meanings of the messages involved, the participants must accept the protocol in order for it to work.

5. (6 points) Which of the following statements are true about service selection?

A. The protocol roles that a service can play can be used as selection criteria
B. You can perform service discovery through a registry, but service selection is necessarily distributed
C. Setting up a multiparty service engagement, such as a real-estate transaction, can be understood as instantiating a sphere of commitment