This homework assignment has 4 problems, for a total of 32 points.

1. (8 points) Identify all of the following statements that are true about extended transaction models
   A. An extended transaction must have a vital subtransaction
   B. A vital subtransaction of extended transaction never needs to have a compensate defined, since if the vital subtransaction fails, the extended transaction is dead anyway
   C. If an extended transaction has exactly two subtransactions, exactly one of which is vital, then the vital subtransaction does not need a compensate defined
   D. If an extended transaction has exactly two subtransactions, neither of which is vital, then we can set things up so we need compensate for only one subtransaction

2. (8 points) Which of the following statements are true about the transactional frameworks?
   A. A Business Transaction Protocol \textit{atom} relaxes atomicity
   B. A Business Transaction Protocol \textit{cohesion} relaxes atomicity and isolation
   C. A Business Transaction Protocol \textit{cohesion} involves a special role called the \textit{BTP Composer}
   D. A Business Transaction Protocol \textit{atom} has the same behavior as a WS-AtomicTransaction

3. (8 points) Identify all correct expressions that capture the following specification involving event computations:
   If both \( e \) and \( f \) occur, then \( g \) occurs in between \( e \) and \( f \)
   A. \( e \lor f \lor g \land f \lor g \land e \)
   B. \( e \land g \land f \lor g \land e \)
   C. \( e \lor f \lor g \land e \land g \land e \)
   D. \( (e \lor f \lor g \land e) \land (e \lor f \lor g \land e) \)

4. (8 points) Identify all correct expressions that capture the following:
   Given that \( e \) is immediate, the dependency \( e \lor g \land e \) strengthens to the following dependency:
   A. \( e \lor g \land e \)
   B. 0
   C. \( g \land e \)
   D. \( e \lor g \land e \)