Homework 5

Point: 10

Questions 1-3 are 2 points

Questions 4-7 are 1 points

1. Do you think this schema is in BCNF? Identify functional dependencies and explain why you think the schema is, or is not, in BCNF.
   order(CustID, CustName, ItemNum, Date)
   No, this schema is NOT is BCNF. CustID functionally determines CustName and is not a superkey by itself. This causes the possibility of redundancies in the table.

2. If you think question 1 was not in BCNF, try to decompose the table to achieve BCNF.
   customer(CustID, CustName)
   order(CustID, ItemNum, Date)

3. Here is a schema for orders in an online retail business:
   order(customer_id, first_name, last_name, street, city, state, zip,
   phone, order_id, order_date, item_number, price, has_shipped)

   Do you think the schema has any problems?
   Yes, because there are so many attributes and functional dependencies, there is a high possibility of errors occurring when updating the schema.

   How would you modify the schema to improve it?
   To improve this, the schema would need to be broken down into multiple tables.
   customer(customer_id, first_name, last_name, street, city, state, zip, phone)
   order(customer_id, order_id, order_date, item_number, price, has_shipped)

4. In an ER model, would it be possible for the same two entity sets to participate in two different relationship sets? (yes/no) yes

5. It is possible for a attribute to be multivalued in an ER model but not a relational schema. (Fill in the blanks to get the best possible answer
   that can be formed using the terms 'ER model', 'relational schema', and 'recursive relationship'.)

6. (yes/no) If 'ID → name' and 'name → salary' are FDs of a schema, then is 'ID → salary' also a FD of the schema? yes

7. (yes/no) If a relation schema has a functional dependency, does that mean that instances of the schema definitely have redundancy? _no, it will have a redundancy if and only if X in FD, X -> Y, is NOT a superkey_