Take Assessment: Exercise 3

Normalization

Provide your solution to the following in a file named *normalization.txt*. Note: The discussion in this exercise is independent of (i.e., completed unrelated to) the E-Commerce project described in the Appendix.

The following table captures the following fact about an E-Commerce bookstore: the employee whose name is EmpName and whose ID is EmpID has shipped the order (whose Order Number is OrderNo) to the address ShipToAddr on the date ShippedDate. The tracking number for the shipment is TrackingNum. The TrackingNum is provided by the courier company that picks up the shipment. The bookstore uses only one courier company. Note that a single order could be split up into multiple shipments based on the availability of the ordered items. Only one employee handles a shipment. However, multiple employees could handle an order if the order is shipped in multiple shipments.

SHIPMENT	EmpID	EmpName	OrderNo	ShipToAddr	ShippedDate	TrackingNum
	1234	Joe	223	4615 Forbes Ave, Pittsburgh, PA 15147	12/21/99	12435678
	2134	Jones	224	4615 Forbes Ave, Pittsburgh, PA 15147	12/25/99	21345678

1. List the primary key.
2. List all the FDs.
3. List all the update anomalies and provide an example of each.
4. What normal form is the relation in? Explain.
5. Apply normalization to it incrementally, bringing the relation to 3NF. That is, if the relation is unnormalized, bring it to first normal form, then bring the first normal form you've just created to second normal form, and then bring the second normal form to third normal form.

   For each transformation to the next higher normal form X,

   o   Explain the steps you took to bring it to the normal form X.
   o   Provide the normal form X's table structure, primary key(s), and the FDs.
   o   Explain why you think it is in the normal form X.

   That is, if the relation were in an unnormalized form, you would explain the transformation you performed to bring it to first, second, and third normal forms. You would also provide the table structure, the primary key, and the FDs for the first, second, and third normal forms. You would also provide explanation for why you believe it is in first, second, and third normal forms.