BMEG3120: Exercise List 7

Problem 1. Consider table $T(A, B, C, D, E)$ with candidate key AB. Prove or disprove: function dependency $AB \to C$ holds on T.

Problem 2. Consider table $T(A, B, C, D, E)$ with candidate key AB. Prove or disprove: function dependency $ABC \to D$ holds on T.

Problem 3. Consider table LOAN(cid, lid, bid, amount), where each tuple describes a loan. Specifically, *cid* is the id of the customer borrowing the loan, *lid* is the id of the loan itself, *bid* is the id of the branch lending the loan, and *amount* is the loan amount. Give a functional dependency to enforce each of the following constraints:

(i) Every customer can borrow only one loan.
(ii) No loan can be borrowed by two customers.
(iii) Every customer can borrow only one loan from the same branch.
(iv) No two loans from the same branch can have the same amount.

Problem 4. Consider the table in the previous problem. Suppose that we would like to enforce the functional dependency: bid, amount $\to$ lid. Write an SQL statement to check whether the functional dependency.