quiz 5

Relation schema R(A,B,C,D,E) has following functional dependencies set :

F={A->B, B->A, AB->C, B->C, CD->E}.

> *Compute the Canonical Cover of F.*

$$1.F = \{A->B, B->AC, CD->E\}$$

> *Find all candidate keys of the relation.*

$$AD, BD$$

> *Is R in BCNF? Why?*

$$no. For A \rightarrow B, the\ left\ value\ is\ not\ R's\ superkey\ (AD/BD)$$

> *Decompose the relation into a collection of BCNF relations. The decomposition must be lossless-join.*

$$R_1 = (A, B), F_1 = \{A \rightarrow B\ , B \rightarrow\ A\}$$
$$R_2 = (C, D, E), F_2 = \{CD \rightarrow E\}$$
$$R_3 = (A, C), F_3 = \{A \rightarrow C\}$$
$$R_4 = (A, D), F_3 = \{\}$$

> *Whether the decomposition of 4) is dependency preserving or not?*

$$Yes, (F_1, F_2, F_3)^+ == F^+$$