7.1 Suppose that we decompose the shema $R = (A, B, C, D, E)$ into

$$(A, B, C)$$

$$(A, D, E).$$

Show that this decomposition is a lossless decomposition if the following set F of functional dependencies holds:

$$A \rightarrow BC$$

$$CD \rightarrow E$$

$$B \rightarrow D$$

$$E \rightarrow A$$

7.2 List all nontrivial functional dependencies satisfied by the relation of Figure 7.17.

A	B	C
a_1	b_1	c_1
a_1	b_1	c_2
a_2	b_1	c_1
a_2	b_1	c_3

Figure 7.17 Relation of Exercise 7.2.

7.14 Show that there can be more than one canonical cover for a given set of functional dependencies, using the following set of dependencies:

$$X \rightarrow YZ,\ Y \rightarrow XZ, \text{ and } Z \rightarrow XY.$$

7.15 The algorithm to generate a canonical cover only removes one extraneous at tribute at a time. Use the functional dependencies from Exercise 7.14 to show what can go wrong if two attributes inferred to be extraneous are deleted at once.