1. Consider the relation X(A,B,C,) is:

An occurrence of the table is:

B

A

;

C

|  |  |  |
| --- | --- | --- |
| A | B | C |
| a1 | b1 | c1 |
| a 2 | b2 | c1 |
| a 3  a4 | b2 b2 | c2  c2 |

The left-hand side of the above diagram illustrates the functional dependencies.

* 1. Suppose a fifth row, starting with a2 as the value of **A**, were to be added. What must be the value of attribute **B**?
  2. What must be the value of attribute **C**?
  3. Why would the fifth row be illegal?
  4. Can attribute **A** contain duplicate values?
  5. Is attribute **A** a candidate key?

1. What is meant by the term Schema Refinement?
2. Briefly explain the two properties considered in decomposition during Normalization.
3. Consider the following functional dependencies for a relation R (A, B, C, D, E,F) F= {A*→C,* C→D, D→B, E→F}

Find all keys of R.

1. Consider the following functional dependencies for a relation R( A, B , C, D , E , F), F = {AB*→*C , D C *→*A E , E *→*F*}*

Find all the keys of R.

1. Consider a relation R= (A,B,C,D,E) with the following functional dependencies: F= {CE →D,D → B,C → A }
2. Find all candidate keys in R
3. Which normal for is R in?
4. If the relation is not in BCNF, convert it to a set of relations in BCNF through decomposition
5. Consider a relation R (A,B,C,D,E), with the following set of functional dependencies over R:

F = {A → BC, BC → E, E → DA}

1. Find all the keys in R.
2. Is R in BCNF? If R is not in BCNF, convert it to a set of BCNF relations
3. Consider the following functional dependencies for a relation R(A,B,C,D,E),

F = *{*AB*→*C, AB *→*D, D*→*A , BC *→*D , B C *→*E}

1. Find all the keys of R.
2. Is R in BCNF? Give reasons for your conclusion. If R is not in BCNF, convert it to a set of BCNF relations
3. Consider a relation R=(A,B,C,D,E) with the following functional dependencies: F= {BC→ADE, D→B}
4. Find all candidate keys in R
5. Which normal for is R in?
6. If the relation is not in BCNF, convert it to a set of relations in BCNF through decomposition