Assignment 8

Due on 2020-03-20, 23:59 IST.

1. Consider a relation $R(A, B, C, D)$ and the following functional dependencies: $F = \{ A \rightarrow B, C \rightarrow D, AB \rightarrow C, AD \rightarrow C \}$. Is $R$ in BCNF? $2$ point
   
   An answer is not given.

   Assessed Answers:
   
   Yes
   No

2. Consider the relation $R(A, B, C, D)$ and the functional dependencies mentioned in $Q1$ and choose the correct option. $2$ point
   
   $AB \rightarrow C$ is not a dependency in the given $F$.
   $AD \rightarrow C$ is a dependency in the given $F$.
   $B \rightarrow C$ is a dependency in the given $F$.

   Assessed Answers:
   
   1st, 2nd
   1st, 3rd
   2nd, 3rd

3. Consider the functional dependencies $(F)$ of a relation $R$ and the following properties:

   $P1$: $R$ is in BCNF and the relation $R$ has a unique identifier.
   $P2$: $R$ is in BCNF and the relation $R$ has a non-prime attribute.

   Choose the correct option.

   $Q1$: All of the following properties $P1$, $P2$, $P3$, $P4$ are prime.
   $Q2$: All of the following properties $P1$, $P2$, $P3$ are prime.

   Assessed Answers:
   
   True
   False

4. Consider the following schema $R(A, B, C, D)$ and the set of all functional dependencies that hold on it:

   $R(A, B, C, D)$
   $AB \rightarrow C$  $AD \rightarrow C$

   Which of the following statements is true about $F$?

   $F$ contains irredundant set of functional dependencies.
   $F$ contains a compound dependency.

   Assessed Answers:
   
   True
   False

5. Consider a relation $R(A, B, C, D)$ and the set of all functional dependencies that hold on it:

   $R(A, B, C, D)$
   $AB \rightarrow C$
   $AD \rightarrow C$

   Which of the following statements is true about $F$?

   $F$ is a superkey.
   $F$ has a non-prime attribute.

   Assessed Answers:
   
   True
   False

6. Create a relation $A(B, C, D, E)$ and the following functional dependencies: $F = \{ B \rightarrow C, E \rightarrow D, C \rightarrow A, B \rightarrow A, C \rightarrow E \}$. Is $R$ in 2NF? $2$ point

   No, $R$ is not in 2NF.

   Assessed Answers:
   
   True
   False

7. Consider the relation $R(A, B, C, D, E)$ and the following functional dependencies: $F = \{ A \rightarrow B, C \rightarrow D, B \rightarrow C, A \rightarrow D, A \rightarrow E \}$. Is $R$ in 3NF? $2$ point

   No, $R$ is not in 3NF.

   Assessed Answers:
   
   True
   False

8. Consider the following functional dependencies $F$ of a relation $R(A, B, C, D)$:

   $F = \{ A \rightarrow B, C \rightarrow D, AB \rightarrow C, AD \rightarrow C \}$. Is $R$ in 1NF? $2$ point

   Yes, $R$ is in 1NF.

   Assessed Answers:
   
   True
   False

9. Consider the relation $R(A, B, C, D)$ and the following functional dependencies: $F = \{ A \rightarrow B, C \rightarrow D, AB \rightarrow C, AD \rightarrow C \}$. Is $R$ in 2NF? $2$ point

   No, $R$ is not in 2NF.

   Assessed Answers:
   
   True
   False

10. Consider the following functional dependencies $F$ of a relation $R(A, B, C, D)$:

    $F = \{ A \rightarrow B, C \rightarrow D, AB \rightarrow C, AD \rightarrow C \}$. Is $R$ in 3NF? $2$ point

    No, $R$ is not in 3NF.

    Assessed Answers:
    
    True
    False