CSE 370 – Database Systems

Theory Section 8/9 | Assignment 03

Summer 2024

Submission Deadline : 15 September 2024 (Class Time)

Marks
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Question 1 [CO5] : 10 Points

Consider the following relation:

CAR_SALE (Car, Salesperson, Commission, Date_sold, Discount_amt)

The primary key of the relation is underlined. Assume that a car may be sold by multiple salespersons and so {Car, Salesperson} is the primary key.

Suppose the following additional dependencies exist:
Date_sold → Discount_amt
Salesperson → Commission

Based on the given primary key,
(i) Explain whether this relation is in 1NF. If not, decompose it to 1NF. [2 Points]
(ii) Explain whether the relation of no (i) is in 2NF. If not, decompose it to 2NF. [4 Points]
(iii) Explain whether the relation of no (ii) is in 3NF. If not, decompose it to 3NF. [4 Points]

Question 2 [CO5] : 10 Points

Consider the following relation:

T20CricketTournament (TournamentAcronym, Team_ID, Tournament_ID, Tournament_Title, Tournament_Matches, Base_Amount, Final_Amount, Team_Name, Team_Lead, Tournament_Year, Tournament_Sponsor, Tournament_Logo)

The primary key of the relation is underlined.
Suppose the following additional dependencies exist:

FD1: TournamentAcronym → Tournament_ID, Tournament_Title, Tournament_Matches, Base_Amount
FD2: Team_ID → Team_Name, Team_Lead
FD3: Tournament_ID → Tournament_Title, Tournament_Matches

Based on the given primary key,
(i) Explain whether this relation is in 1NF. If not, decompose it to 1NF. [2 Points]
(ii) Explain whether the relation of no (i) is in 2NF. If not, decompose it to 2NF. [4 Points]
(iii) Explain whether the relation of no (ii) is in 3NF. If not, decompose it to 3NF. [4 Points]