Database Systems

ASSIGNMENT#2

BS(CS) - Fall 2018 (Semester Fall 2020)

Total Marks: 120 Deadline: **Dec 22, 2020**

Instructions

- You must complete all tasks individually. Absolutely **NO** collaboration is allowed.
- Any traces of plagiarism/cheating would result in an "F" grade in this course.
- Late submissions will **NOT** be accepted, in any case.
- You are also required to submit .docx (Microsoft Word) file.
- Name of your file should be **YourRollNumber_Normalization_Assignment** e.g. BCSF18M00X_ Normalization_Assignment. Use the same title as a subject of your email for submission.

Books

A. Carlos Coronel, Steve Morris, "Database Systems" Design, Implementation, Management, 13th Edition" P 6-10
B. Jeffrey Hoffer, "Modern Database Management" Design, Implementation, Management, 12th Edition" 4.57, 4.58
C. Thomas Connolly, "Database Systems: A Practical Approach to Design, Implementation and Management (6th Ed.)" 14.19, 14.20

Quesition#1[10]

Normalize up to 3rd NF.

OID	ODATE	CID	CNAME	CSTATE	PID	PDESC	PPRICE	QTY
1006	40110	2	APEX	NC	7,5,4	TABLE, DSEK, CHAIR	800,325,200	1,1,5
1007	40111	6	ACME	GA	11,4	DRESSER, CHAIR	500,200	4,6

Quesition#2 [10]

Normalize up to BCNF.

Visit No.	VisitDate	PatNo	PatAge	PatCity	ProvNo	ProvSpecialty	Diagnosis
V10020	1/13/2007	P1	35	DENVER	D1	INTERNIST	EAR INFECTION
V10020	1/13/2007	P1	35	DENVER	D2	NURSE PRACTIONER	INFLUENZZ
V93030	1/202007	P3	17	ENGLEWOOD	D2	NURSE PRACTIONER	PREGNANCY
V82110	1/18/2007	P2	60	BOULDER	D3	CARDIOLOGIST	MURMUR

Quesition#3 [15]

Book A: Problem 6-10

Quesition#4 [15]

Book B: Problem 4.57

Quesition#5 [15]

Book B: Problem 4.58

Quesition#6 [15]

Book C: Problem 14.19

Quesition#7 [10]

Consider the relation R(V, W, X, Y, Z) with functional dependencies

F = {Z → Y, Y → Z, X → Y,X → V, VW → X}.

a. Find the X-closure of all the attributes A,B,C,D, and E
b. Find all candidate keys.

Quesition#8 [15]

You are given the below functional dependencies for relation R(A,B,C,D,E),

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

a. Find all candidate keys.
b. Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF).
c. Is this relation is in BCNF? If not, show all dependencies that violate it.
d. Is this relation in 3NF? If not, show all dependencies that violate it.

Quesition#9 [15]

You are given the below set of functional dependencies for a relation R(A,B,C,D,E,F,G),

F = {AD → BF,CD → EGC,BD → F,E → D, F → C,D → F}.

a. Find all candidate keys.
b. Find F-closure.
c. Find the minimal cover for the above set of functional dependencies.