CSE 370– Database Systems

Assignment 3

Summer 2023

Submission Instructions:

1. Write your name, id, section on top of the first page
2. Your answer should be handwritten, take pictures and create a single pdf.
3. **Submit the pdf in the following form**: https://forms.gle/QnHGLPxMQpkF3SXo7
4. **Submission Deadline**: 17th August, 2023(Thursday) 11:59 pm (midnight)
5. **NO LATE SUBMISSION WILL BE ACCEPTED**

Question 1 **[10 Marks]**

X	Y	Z	A
abcefg	1	q	10
xyz	2	p	11
feg	3	q	12
xyz	2	p	13
abcdefg	3	q	10

State which of the following dependencies are valid or not. For each dependency, briefly write the reasons.

A. X -> YZ
B. XY -> A
C. A -> XYZ
D. YZ -> X
E. Y -> Z

Question 2[CO4] **[10 Marks]**

Consider the following relation:

Computer_Repair(Comp_ID, Engineer_ID, Date_Assigned, Customer_name, Customer_phone, Engineer_Name, Engineer_phone, Date_Repaired, Issue, Priority_Level, Service_Charge, Commission_Percentage, Total_Repairs)

The primary key of the relation is underlined

The relation has the following additional functional dependencies:

FD1: Engineer_ID → Engineer_Name, Total_Repairs, Commission_Percentage, Engineer_phone
FD2: Comp_ID, Date_Assigned → Issue, Priority_Level, Service_Charge
FD3: Comp_ID → Customer_name, Customer_phone
FD4: Priority_Level → Service_Charge
FD5: Total_Repairs → Commission_Percentage

i. Explain if this is in 1NF or not. If not, apply normalization to decompose it to 1NF. [2]
ii. Explain if this is in 2NF or not. If not, apply normalization to decompose it to 2NF. [4]
iii. Explain if this is in 3NF or not. If not, apply normalization to decompose it to 3NF [4]