National University of Computer and Emerging Sciences, Karachi
Fall-2022, FAST School of Computing
MidTerm 2
1st November 2022, 10:00 am – 11:00 am

Course Code: CS2005	**Course Name: Database Systems**
Instructor Name: Dr. Zulfiqar Ali Memon, Ms. Anam Qureshi, Mr. Muhammad Danish Khan, Ms. Eman Shahid, Ms. Hajra Ahmed, Ms. Zumar Noor	
Student Roll No: 20K-0305	**Section:** SE

Instructions:

- Return the questior. paper. Don't write anything on question paper, except your Roll # & Section #.
- Read each question completely before answering it. There **are 2 questions and 2 pages.**
- In case of any ambiguity, you may make assumptions. But your assumptions should not contradict any statement in the question paper.
- All the answers must be solved according to the sequence given in the question paper.
- This paper is subjective. Write the answers only on answer sheet.

Time: 60 minutes.

Max Marks: 15

Question 01: [CLO # 3] **[2.5*3=7.5 marks]**

Table 01: List of Movies and related information

Movie ID	Movie Title	Genre ID	Genre	Lan--guage	Date Release	Release country	Movie Rating	Actor ID	Actor name	Reviewer ID	Reviewer Name	Number of Ratings	Actor Role
M1	God Father	T1	Thriller	English	02-02-2000	UK	5	1	De Niro	R1	Albert	10050	Hero
M1	God Father	T1	Thriller	English	02-02-2000	UK	5	2	Stewart	R1	Albert	10050	Villain
M2	Vertigo	T1	Thriller	French	21-05-2004	France	5	3	Robert	E1	Eric	5005	Hero
M2	Vertigo	T1	Thriller	French	21-05-2004	France	4	4	Grant	F1	Fred	5005	Villain
M3	Harvey	C1	Comedy	Spanish	22-04-2001	Spain	4	5	Harvey	D1	David	6000	Hero
M3	Harvey	C1	Comedy	Spanish	22-04-2001	Spain	5	5	Harvey	F1	Fred	6000	Hero

a. The table 01 shown above is susceptible to update anomalies. Provide one example of insertion, deletion, and update anomalies respectively.
b. Identify all the functional dependencies in the above table 01.
c. Describe and illustrate the process of normalizing the table 01 shown above up to 3NF, by identifying the functional dependencies represented by the attributes. State any assumptions you make about the data shown in the table.

Question 02: [CLO # 2] **[7.5 marks]**

Design an entity-relationship diagram for the ONLINE AUCTION Database. Identify the candidate keys and use proper structural constraints.

Consider an ONLINE AUCTION Database system in which members (buyers and sellers) sell products. The following are the data requirements for this system:

- Members of the website are recognized by a unique member id and are specified by an e-mail address, name, password, home address, phone number, and bank_account_no.
- A member may be a buyer or a seller.
- A buyer's shipping address is stored in the database.
- A seller lists the items for sale, and each item is identifiable by a unique item number provided by the system. Items are also specified by an item title, a description, the starting bid price, the bidding increment, the auction start date, and the auction end date.
- Buyers place bids on products that attract them. The bid price and bid time are both recorded. The bidder with the highest bid price at the end of the auction is proclaimed the victor, and a transaction between buyer and seller may then proceed. only buyer
- Feedback on completed transactions may be recorded ~~by both~~ the buyers and sellers. Feedback includes a rating of the seller/buyer involved in the transaction (1-10) as well as a comment.

Good Luck!