Quiz 03

Database Systems (CS 203)

Dated: _____ Roll Number: _____ Sec:_____

Note: Total weightage is **2.5**. Time allowed is 40 minutes. Do not cheat.

Question #01: The Gill Art Gallery wishes to maintain data on their customers, artists and paintings. They may have several paintings by each artist in the gallery at one time. Paintings may be bought and sold several times. In other words, the gallery may sell a painting, then buy it back at a later date and sell it to another customer. Figure 01 shows the invoice for of one customer.

Gallery Customer History Form

Customer Name

Jackson, Elizabeth Phone (206) 284-6783
123 – 4th Avenue
Font-hill, ON
L3J 4S4

Purchases Made

Artist	Title	Purchase Date	Sales Price
03 - Carol Chaining	Laugh with Teeth	09/17/2000	7000.00
15 - Dennis Frigs	South toward Emerald Sea	05/11/2000	1800.00
03 - Carol Chaining	At the Movies	02/14/2002	5550.00
15 - Dennis Frigs	South toward Emerald Sea	07/15/2003	2200.00

Figure 01: Customer Purchase History

And the data of multiple customer purchases has been shown in figure 02. Your task is to check if the data given in figure 02 is susceptible to anomalies? If yes, then resolve the anomalies step by step using normalization (up to 3NF). Clearly define Functional Dependencies. In case of any ambiguity you may make assumptions, but your assumptions should be valid with respect to given scenario.

				Artist_Purchase_Details				
Cust: No	**Cust:Name**	**Cust_Addr**	**Cust:Ph**	**Artist_ID**	**Artist_Name**	**Art_title**	**Purchase_date**	**Price**
1	Ahmed	Khi	123456	A010	Wahaj	Nature	1/2/2019	$1200
2	Ali	Hyd	645321	A986	Gulzar	Crisis	1/2/2019	$800
3	Haris	Lhr	876543	A010	Wahaj	Nature	1/32019	$1200
4	Hareem	Isl	876567	A986	Gulzar	Sufism	1/4/2019	$2000
5	Hamid	Khi	876777	A789	Arsh	Sufism	6/6/2019	$2000

Figure 02: Customer Purchase Details

Question #02: Consider a database with the following schema:

Person (name, age, gender) name is a key

Frequents (name, pizzeria) (name, pizzeria) is a key

Eats (name, pizza) (name, pizza) is a key

Serves (pizzeria, pizza, price) (pizzeria, pizza) is a key

Write relational algebra expressions for the following four queries.

a. Find all pizzerias frequented by at least one person under the age of 18

b. Find the names of all females who eat both mushroom and pepperoni pizza.

c. Find all pizzerias that serve at least one pizza that Amy eats for less than $10.00.

d. Find the names of all people who frequent only pizzerias serving at least one pizza they eat.

Good Luck :)