CIS4331 Spring'19 Assign3

Objective

This assignment will help you to understand the following concepts:

- Update Anomaly, Functional Dependency and Types, Normalization to 1NF

Questions:

1. **(40 pts)** Given the following table named BANK ACCOUNTS with sample data:

<u>AccountID</u>	AccountType	CurrentBalance	AccountHolderID	AccountHolderName
A1	Checking	$10,000.00	C1	Donald Smith
			C2	Melania Smith
A2	Checking	$5,500.00	C3	Mary Hernandez
A3	Money Market	$25,000.00	C4	Amy Clark
			C5	Steve Clark
			C6	Jamie Clark
A4	Savings	$60,000.00	C1	Donald Smith
			C2	Melania Smith

Note that AccountID is underlined.

Normalize the table to 1NF by creating a new separate table in addition to the existing table.

It is required that the 2 resulting tables in your answer uses the same structure as above. In another word, for each table, include all column names, mark the primary key using underline, and include all data from the original table before the normalization.

2. **(60 pts)** Given the following relation named LANGUAGE CENTER MIX with sample data:

<u>CourseID</u>	CourseLanguage	CourseLevel	<u>ClientID</u>	ClientName	Attendance	FinalScore
1	French	Basic	C1	Smith	100%	80
2	French	Intermediate	C2	Jones	90%	90
3	French	Advanced	C3	Vance	95%	100
1	French	Basic	C4	Clark	100%	100
2	French	Intermediate	C5	Wong	90%	95
3	French	Advanced	C6	Hess	95%	98
4	Spanish	Basic	C1	Smith	100%	100
5	Spanish	Intermediate	C2	Jones	95%	100

Note that CourseID and ClientID are underlined.

The table above keeps track of clients completing language courses offered in the center.

Each course has a unique Course ID, a Course Language, and a Course Level.

Each client has a unique Client ID and a Client Name.

Each course can be completed by many clients.

Each client can complete multiple courses.

When a client completes a course, his or her attendance and the final score in the course are recorded.

a. **(10 pts)** Give an example of an insertion anomaly.

b. **(10 pts)** Give an example of a deletion anomaly.

c. **(10 pts)** Give an example of a modification anomaly.

d. **(30 pts)** List all the full, partial, and transitive functional dependencies and mark them. Do NOT include trivial, augmented, and equivalent functional dependencies.

Submission:

- **This assignment is due by 11:59pm, Sunday, April 28, 2019.**
- **You must submit your work to Assign3 on Canvas. The first page in your document must contain your full name, course ID 4331, and your answers marked with Question Number.**