**MIS 320 Database Management Systems: Assignment 4**

1. This assignment is due on **Tuesday, March 26th, 2024**. Please submit your assignment on Canvas as a file upload. Both docx and pdf file uploads will be allowed. DO NOT use a google document. The deadline is 11:59 PM on Tuesday, March 26th, 2024.

2. This is a **group assignment**. Your group may discuss this assignment with your classmates, but your answers should be your own. There will be a severe penalty for submitting copied answers. Make sure that you review the slides, book chapter and in-class solution.

2. Please indicate your **roster** **name** in your homework submission. **10 points will be deducted from your grade for missing your name.**

3. The grading rubric is at the end of the assignment.

*I pledge on my honor that I have not given or received any unauthorized assistance on this assignment.*

**Your Roster Names:**

Sign: Giselle Echeverria Date: 03/26/2024

Sign: Janida Magallanes Date:03/26/2024

Sign: Date:

1. An airline company called We-Fly-High currently maintains data in one large table that has the following attributes:

**FlightNo**, Origin, Destination, Distance, **FlightDate**, **PassengerNo**, PassengerName, SeatNo, SeatLocation, LuggageID, LuggageDescription, ItineraryChangeCharges

The company realizes that in order to keep flying, it needs to normalize this table. You have been asked to help the company normalize this relation to 3NF. PassengerNo determines SeatNo and LuggageID. FlightNo, FlightDate and PassengerNo determine ItineraryChangeCharges. You can assume that the table has no repeating groups. Identify all dependencies and covert to 3 NF. First convert the above to 1NF then 2NF and lastly, 3NF. Show all your work, including any assumptions you make. [**25 points**]

**Table in 1NF**

ArlineDetails: **FightNo,** Origin, Destination, Distance, **FlightDate**, **PassengerNo**, PassengerName, SeatNo, SeatLocation, LuggageID, LuggageDescription, ItineraryChangeCharges

**Dependencies**

FlightNo, FlightDate and PassengerNo -> ItineraryChangeCharges [Full Dependency]

FlightNo -> Origin, Destination, Distance, PassengerName, FlightDate[Partical Dependency]

PassengerNo -> PassengerName, SeatNo, SeatLocation, LuggageID, LuggageDescription, FlightNo**,** FlightDate**,** ItineraryChangeCharges[Partical Dependency]

SeatNo -> SeatLocation [Transitive Dependency]

LuggageID -> LuggageDescription [Transitive Dependency]

**Table in 2NF**

FlightChange: **FlightNo, FlightDate, PassengerNo**, ItineraryChangeCharges

Flight: **FlightNo**, Origin, Destination, Distance, PassengerName [FlightNo is also FK to FlightChange]

Passenger: **PassengerNo**, PassengerName, SeatNo, SeatLocation, LuggageID, LuggageDescription [PassengerNo is also FK to FlightChange]

**Table in 3NF**

FlightChange: **FlightNo, FlightDate, PassengerNo**, ItineraryChangeCharges

Flight: **FlightNo**, Origin, Destination, Distance, PassengerNo [FlightNo is also FK to FlightChange, PassengerNo is FK to Passenger]

Passenger: **PassengerNo**, PassengerName, SeatNo, LuggageID [PassengerNo is also FK to FlightChange; SeatNo is FK to Seat; LuggageID is FK to Luggage]

Seat: **SeatNo**, SeatLocation

Luggage: **LuggageID**, LuggageDescription

2. Assume that you have been given the following attributes for an information system created for museums:

MuseumID, MuseumName, MuseumCity, ItemID, ItemName, ItemFeatures, SupplierID, SupplierName, SupplierAddress, ItemPrice, LocationID, LocationDetails

An item can be supplied by only one supplier, but a supplier can supply multiple items. ItemFeatures is a multi-valued attribute (so there IS a repeating group; address this first). ItemID determines the supplier which supplied it. ItemID also determines the location in the museum where an item is stored. Item\_Price depends on the museum, item and supplier. Identify all dependencies and covert to 3 NF. First convert the above to 1NF then 2NF and lastly, 3NF. Show all your work, including any assumptions you make. [**25 points]**

**Table in 1NF**

MuseumDetails: **MuseumID**, MuseumName, MuseumCity, **ItemID**, ItemName, **SupplierID**, SupplierName, SupplierAddress, ItemPrice, LocationID, LocationDetails

ItemFeature: **ItemID, ItemFeatures** [ItemID is FK to MuseumDetails]

**Dependencies**

MuseumID, SupplierID, ItemID -> ItemPrice [Full Dependency]

ItemID -> ItemName, LocationID, LocationDetails [Partical Dependency]

SupplierID -> SupplierName, SupplierAddress [Partical Dependency]

MuseumID -> MuseumName, MuseumCity [Partical Dependency]

LocationID -> LocationDetails [Transitive Dependency]

**Table in 2NF**

MuseumItem: **MuseumID, SupplierID, ItemID**, ItemPrice

Item: **ItemID**, ItemName, ItemFeatures, LocationID, LocationDetails [ItemID is also FK to MuseumItem]

Supplier: **SupplierID**, SupplierName, SupplierAddress [SupplierID is also FK to MuseumItem]

Museum: **MuseumID**, MuseumName, MuseumCity [MuseumID is also FK to MuseumItem]

**Table in 3NF**

MuseumItem: **MuseumID, SupplierID, ItemID**, ItemPrice

Item: **ItemID**, ItemName, ItemFeatures, LocationID [ItemID is also FK to MuseumItem; LocationID is FK to Location]

Supplier: **SupplierID**, SupplierName, SupplierAddress [SupplierID is also FK to MuseumItem]

Museum: **MuseumID**, MuseumName, MuseumCity [MuseumID is also FK to MuseumItem]

Location: **LocationID**, LocationDetails

**Grading Rubric for Assignment 4**

**GRADING RUBRIC**

1. -2 if composite PK not identified for the initial table. -1 if the PK identified is not correct. -1 if PK not identified in later tables. -1 if FK not identified.
2. -1 if not all tables are identified [for both 2NF and 3NF]
3. -2 if dependencies are not mentioned