Bachelor of Information Technology BAIT

MS SQL Server Administration IIS404

F19 Assignment

Manufacturing Sub-System

Prepared by	Eng. Ayham Mohammad
Starting Date	14.04.20
Due Date	20.06.20

Purpose

This assignment aims to refresh student's information related to database architecture and design as well as SQL, and to make students practice some DBA critical missions, such as creating database, managing security, high availability solutions, backup and restore, performance and so forth, furthermore, this assignment aims to give practical experiments in implementing real world systems.

Deliverables

One PDF file only, contains **all scripts** used and screenshots for the **whole screen**, with all forms in all wizards with full illustration.

Statement of Problem

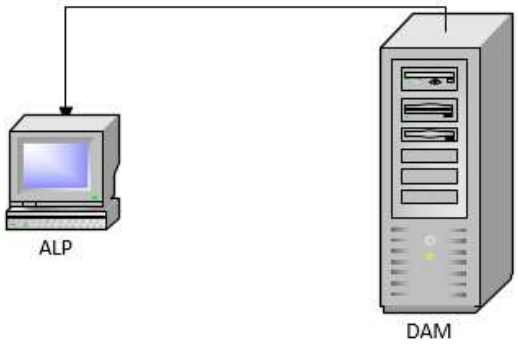

Figure 1 Architecture

Basically manufacturing systems contain ***product*** entity set with an attribute that indicates whether the product is a raw material or manufactured (ready) one, here there is a many to many recursive relationship, that could be broken by ***BOM*** (Bill of Material) entity set which is the Product Recipe.
We want to create a simple manufacturing subsystem; this subsystem consists of a database in Head office (figure 1) located in Damascus (DAM) in which card declarations, manufacturing and inbound/outbound transactions take place, and a branch in Aleppo (ALP), in which there's no card declaration but manufacturing and transactions.
In DAM, users declare Product & Location cards, as well as BOM, those cards should be synchronized automatically to ALP, and also there are manufacturing and inbound/outbound transactions.

Inbound and outbound Transactions also take place in ALP then they should be automatically synchronized with DAM, i.e. at every moment the tables of Transactions and manufacturing should match in DAM & ALP (bidirectional), Also Products and Location should match but synchronized only from DAM to ALP (one-way).
I'm pretty sure you know that you have to break the many-to-many relationships by the three tables: BOM (as mentioned above), Transaction Details and manufacturing details, and that those tables should have at least Qty field, and the second must have a value (Cost in inbound and Price in outbound), don't create it as a calculated field, don't use a trigger for it, simply make it as a manual entry (sure the application should suggest in real world).

Qty on Hand field in Product table is a calculated field, use a function for it.

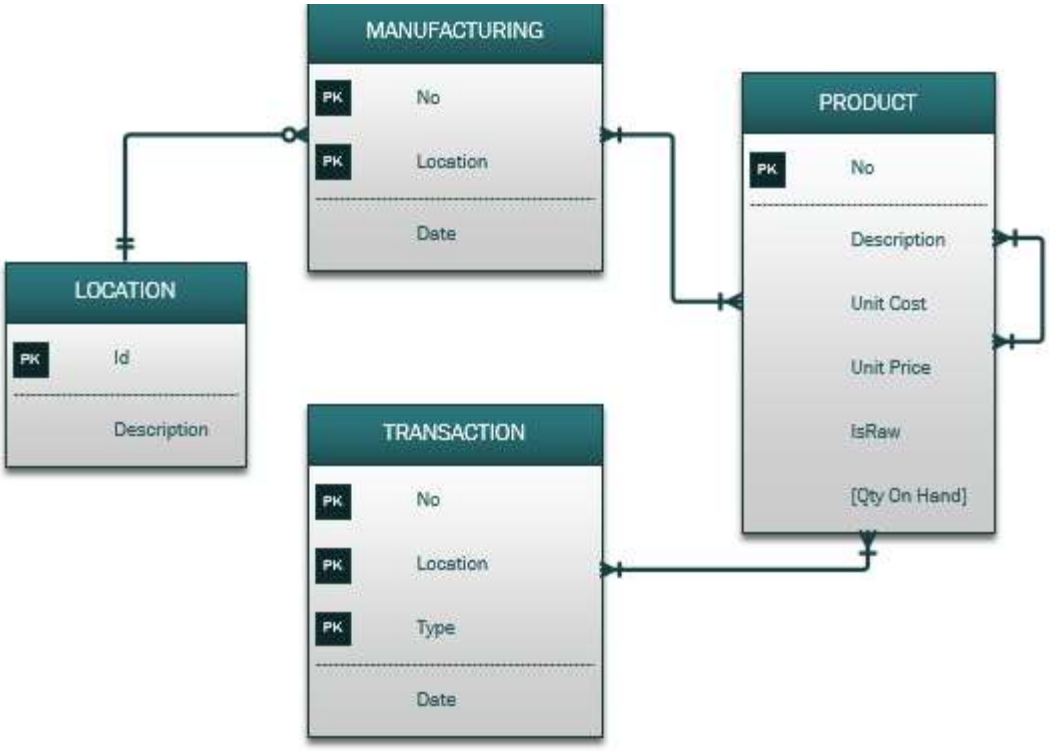

Figure 2 ERD

You are requested to fulfill the following issues:

1. Database Creation (35 Marks)

Create two DBs, (DAM & ALP) with all required tables and fields, taking into account that tables should adhere to 3rd NF, DB & Table creation (and filling three lines per table) should be by SQL scripts only, not by the designer.

Please adhere to ERD naming, and the function should start with the prefix 'udf_' and the rest of the name should stick to Pascal naming convention, and should be identical.

2. Synchronization (33 Marks)

Create a solution that synchronizes the data up and down as aforementioned, discuss the following **fully**, and choose the convenient:

a. Merge Replication.
b. Snapshot Replication.
c. Transactional Replication.
d. Mirroring.
e. Log shipping.

Important Notes:

<u>The synchronization should be done over internet, so you should have a VPN, otherwise you will lose 10 marks.</u>

P.S.

I. Number of students: five (max).
II. Cheating deserves zero.
III. Uncommented scripts and unillustrated screenshots, or screenshots of active windows only (not the whole screen) will divide the question marks by 2 (%50 of Marks are for comments, illustrations & full screen mode).

Answer Key

Question	Sub	Marks	Note
Q01 DB Creation using	Tables	8	
	Details Tables	12	
	Qty on Hand Function	10	
	Filling data	7	
Q02 Synchronization	Discussing the Options.	10	The full screenshots and comments should be clear, and should clarify the testing.
	DAM to ALP	16	
	Bidirectional	22	
	Over Internet	10	
Professional Assignment report		5	

Good Luck…