EVERYTHING AUTO

ONLINE CHANNEL AND INVENTORY SYSTEM

A sample business case designed to facilitate discussions in a classroom context.

Author: Victor Nguyen

School of Continuing Studies, York University

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Everything Auto (EA) is a dealership which sells a variety of auto-part products. It maintains partnerships with a list of vendors who supply auto-part products. With its impressive growth over the past 3 years, EA has expanded its business into different regions in Ontario and Quebec with 6 stores.

Most sales are currently conducted in stores or by customers calling in to place orders.

The current data that EA collects includes financial info (orders, billing), customer information, inventory, vendors, sales, promotions are stored in Excel and flat files local to each store. A self-taught IT technician who is also the firm's accountant maintains all aspects of the firm's IT.

EA believes that there is a great potential demand for their products. If customers could reach them via an online channel, view product catalogue, and place orders, sales would increase. There is also a need for process efficiency improvement, which would reduce the amount of manual work for bookkeeping and taking orders via telephone. Product inventory would be tracked in real-time to support just-in-time stock level requirements and facilitate better integration with suppliers.

Your team has been hired as consultants to build the online order system and create a centralized relational database to support both internal and external operations.

For this exercise, you are only required to focus on designing a database for the online order system.

A) Review the business case from the business owner's viewpoint

You would play a role as a consulting team to identify the business opportunities & challenges before looking into technologies as enablers. Ask the follow questions:

1. What is the business goal the business owner seeks when this project is implemented? For example: Increase sales and maximize profit.
2. What are the operations this project will support to achieve the business goal?
    a. Provide an online channel to reach customers across different geographic locations and potentially globally; order fulfillment is open 24/7.
    b. Online transactions require less support operations, hence would reduce operating costs
    c. Inventories tracked in real time hence would result in more effective supply chain operation and vendors/supplier management
    d. Online customer data are collected for analysis to better support customers and identify opportunities to boost sales
    e. Financial operations are carried more effectively and timely
        i. Monthly, quarterly, bi-annually, and annually sales per store
        ii. Revenue versus expense per store
    f. Track customer acquisition costs and loyalty to provide customer insights

B) **Review the business case from the project implementation perspective.**

Ask the following questions

1. Who are the key stakeholders of this project (they are the people you will need to interview to gather detailed business requirements and later define system requirements)?
    a. Business owner
    b. Store managers
    c. Accountant
    d. Technician
    e. Store/sales staffs
    f. Inventory management staffs
2. What is the data being collected today?
3. Where is data being stored (files, hardcopy, book of records...)
4. What is new data to be collected?
5. What are the data types to be collected to support the new online order system with regard to the operations identified in Section A) 2.

C) Database Design

Items to be in focus:

- List of Entities
- Use purpose (support what operations)
- Entities and their attributes
- Relationships between the entities
- Entity Diagrams
- Entity physical specifications (required an underlying DB, I.e MySQL, to support, data types, constrains, etc.)

1. **Conceptual Data Model** -- Identify the data entities required for the system

    a. Customer
    b. Store
    c. Personnel
    d. Suppliers
    e. Order
    f. Order Item
    g. Product
    h. Payment
    i. Customer Contact
    j. Shipment
    k. Inventory

2. **Logical Data Model – Identify the attributes for each data entity**

Entity	**Attributes**
Customer	Customer ID, First Name, Last Name, ...
Payment	Payment ID, Payment Method, Card Number, Card Holder First Name, Cust Holder Middle Name, Card Order Last Name, Card Expiry Date, Card Security Code
Customer Contact	Contact ID, Apt Unit, Address, City, Province, Country, Postal Code, Phone 1, Phone 1, Phone 1 Label, Phone 2, Phone 2 Label, Email
Store	Store ID, Address, City, Province, Country, Postal Code, Phone, Fax, Email
Order	Order ID, Order Date, Customer ID, Salesperson ID, Shipment ID, Promotion Code, Shipment Cost, HST, Total Amount, Note
Order Item	Order Item ID, Order ID, Product ID, Unit Price, Quantity, Total Amount
Product	Product ID, Skew Code, Name, Description, Manufactured Date, Origin Country, Supplier ID

Supplier	Supplier ID, Name, Description, Address, City, Province, Country, Postal Code, Phone, Fax, Email, Website
Personnel	Personnel ID, First Name, Last Name, Department, Role, Phone, Email
Shipment	Shipment ID, Description, From Address, To Address ID, Customer ID, Shipment Start, Expected Delivery Date, Status
Inventory	Inventory ID, Product Id, Quantity Available, Supplier ID, Note

Entity Relationship Analysis

a) A Customer may have 1 or more Contact's, e.g. Home Address, Shipment Address
b) A Customer may have 1 or more Payment's method, e.g. Visa 1, Visa 2, Master Card
c) An Order has 1 or more Order Item's
d) An Order Item has 1 and only 1 product
e) An Order has 1 Shipment
f) A Supplier has 1 or more Product's
g) An Inventory has 1 Product
h) An Inventory has 1 Supplier
i) A Store has 1 manager
j) A Store has several employees
k) An employee may work for several stores

Note: Managers and employees are part of Personnel

Entity Relation Diagram

To be specified

3. Physical Data Model

To be done by students. Below is an example.

Table Name	**Field Name**	**Field Definition**
CUSTOMER	CUSTOMER_ID	INT PRIMARY KEY
	FIRST_NAME	VARCHAR (50) NOT NULL
	LAST_NAME	VARCHAR (50) NOT NULL
To be specified		
