Cataschevastica

An Online Transaction Processing Database

Requirements specification document

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Training Partner:

Code.Hub

TITAN REGENERATION

Contents

Abstract

The project refers to an Online Transaction Database (OLTP) for a fictitious manufacturing company Cataschevastica. This database serves as the central repository for managing the end-to-end manufacturing process, from order intake, items production to delivery, while prioritising customer satisfaction, operational efficiency, and service quality.

The trainees will be given a detailed description of the business needs to analyse, design, implement, populate data, and perform transactions and analytic queries on this OLTP database. The implementation will take place firstly at the local development environment and then it will be migrated to Azure Cloud.

1. Project general description

The Cataschevastica company needs an Online Transaction Database (OLTP) for its comprehensive web platform designed to track and persist its entire manufacturing process, focusing on performance, preciseness, and customer satisfaction. A breakdown of the database key features and functionalities is given next.

The company produces building materials used in construction and infrastructure development. Categories of these products include bricks and blocks, concrete and cement, steel and metal products, roofing and insulation materials, plus more. Each building material is described with the name or description of the item, the unique identifier for the specific product variant (SKU), size specifications such as length, width, thickness, and weight, description of the colour or surface finish of the material (where applicable), compliance with industry standards / building codes / regulatory requirements, cost per unit or quantity of the item, list of needed raw materials for its construction along with supplier information for these raw materials. Each item has an **estimated** construction time given in calendar days. A member of the production team verifies that an item **which has been ordered** is ready.

Customers enter the online web application to submit new orders. The order includes customer information, a list of required products, units per product and the datetime of the request. Customers can see their order status, and can modify or cancel the order as desired. **The orders are automatically sent to production for execution.** Once the production of all items is complete, the order is ready for delivery.

As stated above, a production team member is assigned the order, confirms its completion and prepares the delivery details. The delivery is then assigned to a logistics partner from an approved list of partners. The selection of the partner is of no importance to the system; it comes externally and can be considered random.

While the order is still in production, it is considered “in process”. When the order is passed to the logistics partner, it is “in delivery”, and when the partner notifies that the order has been delivered, it is closed as complete. In the case mentioned earlier where the customer has cancelled the order, the state of the order is “cancelled”. **All states** must be recorded with the applicable date.

The OLTP database records all of the above information in connection to the web application. The sales, production, logistics and accounting departments must be able to check an order and know its status, so that they can perform their operations and collaborate efficiently with the other departments.

2. Project development roles

For the purposes of this exercise, as a team you will have to share the roles of the Business analyst, Data engineer and Project manager. The instructor has the role of the Product Owner.

3. Functional requirements

The following elements must be implemented for considering the project complete:

1. A conceptual ERD diagram of the Cataschevastica database
2. Implementation of database for the ER diagram, normalised to 3NF
3. Population of at least ten rows in each table
4. Provision of the necessary query statements to
    a. List of all products ordered yesterday (so that production can start)
    b. List of all finished orders ready to deliver
    c. List of all orders per customer, completed, pending, cancelled
    d. List of all products with quantities, ordered and delivered, ordered and pending, cancelled
    e. List of orders per production team employee, completed, pending, cancelled
    f. Daily order and production report
    g. List of new orders per week and month
    h. List of completed orders per week and month
5. Provision of the necessary command statements to
    a. Create an order
    b. Finalise production
    c. Finalise an order and delivery

4. Non-functional requirements

The following are the non-functional requirements of the project:

1. Use of MS-SQL Server for the database
2. Use of proper tables and fields naming conventions
3. Use of comments in the script to track versions

5. Milestones

The milestones below are provided to you as a logical separation of the various tasks, to help you manage the various stages of implementation in time. It is not obligatory to observe them as ordered, but it is recommended that they be followed so that you have a clear indication of the progress of your deliverables.

1. Analysis and Conceptual Diagram Design (ERD)
2. From ERD to RS
3. SQL script authoring
4. Data Population
5. Usage simulation (testing)

6. Deliverables

The expected deliverables are:

1. The SQL script with all the statements to create the database, tables, relationships, constraints
2. The SQL script with the population of the tables
3. The SQL script with the querying of data
4. A powerpoint presentation of the analysis of your work and the project management issues

The above produced artefacts for this project will be delivered in a folder in your MS Teams private channel, in the files tab.

A Github repository for keeping and sharing your work is recommended but not mandatory.

The deadline for submitting your files is the end of the day before the presentation day. The deadline is an absolute business requirement. The timestamp of the submission files will be used for confirmation.