Storing and Retrieving Data

Final Project – Group 03

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International Online Bookstore

Our goal is to design a database for an international online bookstore. In this bookstore, whenever a customer wants to purchase a book, he/she will be required to create an account (with an identifying number), which can be premium or not. To do so, it is necessary for the user to provide some information, namely the customer's name, birth date, address, zip code, country, e-mail, phone number, and their VAT number (being the latter one not mandatory).

Every time a client wants to buy one or more books from this online bookstore, an order will be generated. This order will have a unique identifier number, the date in which the order was made, the date of shipment, and the estimated date of delivery. Notice that the company chose not to apply any delivery cost to the orders, hence those costs are not being considered. In addition, a customer can purchase more than one copy of the same book and is also able to classify any book from the bookstore in a scale of 1 to 5. However, he/she can only classify each book once and can do so even without purchasing it. The client is able to comment each book once, if he/she rated the book.

Regarding the books, each book will be identified by its ISBN (International Standard Book Number), the book name, the author, a supplier, a publisher, a description, the release date, the edition number, the number of pages, the language of the book, and its price. Furthermore, to each book a discount may be applied, by the bookstore. Finally, each book has a stock which can vary depending on whether the bookstore restocks the book or if a client orders the book.

Additionally, every book must have at least one author, and for each author there will be an identifier number, a name, their nationality, and their birthday.
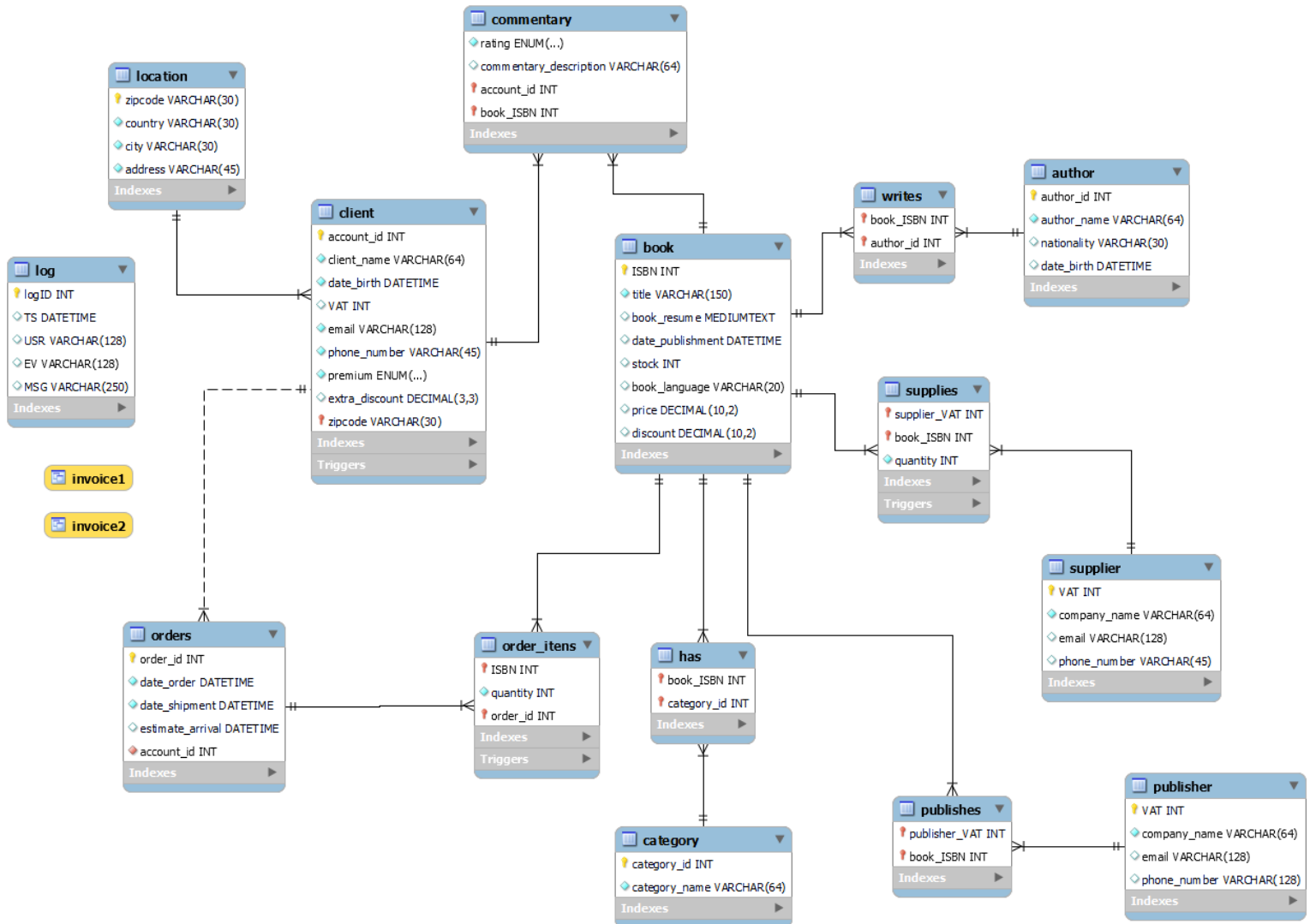
Each book is related to different categories, which can have different books associated to them. For each category there will be a number and a name identifier.

As mentioned previously, each book has at least one supplier and one publisher. Both can be identified by their VAT, name of the company, e-mail, and the phone number of the company. Each book can be supplied and/or published by more than one company, and each supplier and publisher can supply and publish different books.

Furthermore, each customer is able to upgrade his/her account to a premium one. This premium account has two variants – normal premium account and extra premium account -, which depend on the annual subscription fee. When a customer becomes a premium member they have some advantages, namely a pre-defined fixed discount in any book ordered - 5% for the normal premium accounts and 7% for the extra premium ones. It is worth noticing that some books may also have a discount, applied by the bookstore and available for all clients, and the premium discount will still be applied cumulatively.

On a final note, the company is able to track the inflow of clients and whether a client account has been upgraded/downgraded to/from premium.

Enhanced Entity–Relationship Diagram

commentary
- rating ENUM(...)
- commentary_description VARCHAR(64)
- account_id INT
- book_ISBN INT
- Indexes

location
- zipcode VARCHAR(30)
- country VARCHAR(30)
- city VARCHAR(30)
- address VARCHAR(45)
- Indexes

log
- logID INT
- TS DATETIME
- USR VARCHAR(128)
- EV VARCHAR(128)
- MSG VARCHAR(250)
- Indexes

client
- account_id INT
- client_name VARCHAR(64)
- date_birth DATETIME
- VAT INT
- email VARCHAR(128)
- phone_number VARCHAR(45)
- premium ENUM(...)
- extra_discount DECIMAL(3,3)
- zipcode VARCHAR(30)
- Indexes
- Triggers

book
- ISBN INT
- title VARCHAR(150)
- book_resume MEDIUMTEXT
- date_publishment DATETIME
- stock INT
- book_language VARCHAR(20)
- price DECIMAL(10,2)
- discount DECIMAL(10,2)
- Indexes

writes
- book_ISBN INT
- author_id INT
- Indexes

author
- author_id INT
- author_name VARCHAR(64)
- nationality VARCHAR(30)
- date_birth DATETIME
- Indexes

supplies
- supplier_VAT INT
- book_ISBN INT
- quantity INT
- Indexes
- Triggers

supplier
- VAT INT
- company_name VARCHAR(64)
- email VARCHAR(128)
- phone_number VARCHAR(45)
- Indexes

invoice1

invoice2

orders
- order_id INT
- date_order DATETIME
- date_shipment DATETIME
- estimate_arrival DATETIME
- account_id INT
- Indexes

order_itens
- ISBN INT
- quantity INT
- order_id INT
- Indexes
- Triggers

has
- book_ISBN INT
- category_id INT
- Indexes

category
- category_id INT
- category_name VARCHAR(64)
- Indexes

publishes
- publisher_VAT INT
- book_ISBN INT
- Indexes

publisher
- VAT INT
- company_name VARCHAR(64)
- email VARCHAR(128)
- phone_number VARCHAR(128)
- Indexes

The attribute rating in the 'commentary' table ranges from 1 to 5.

**The attribute premium in the 'client' table varies between 'default', 'Extra-Premium', and 'Normal-Premium'*