**DB Coursework: The Creation of OLTP and OLAP Databases for Fitness Products Online Shop**

**OLTP:**

The OLTP database contains the following tables: customer, address, city, cart\_product, product, category, brand, order\_product, order\_info, and status.

**Key Points:**

1. The city table does not include a country column because the online shop works only in Belarus.
2. The product's unit price and order's total are stored in Belarusian rubles.
3. Each product must have a unique name.
4. Each customer must have a unique name.
5. The cart\_product table represents the products customers put in their cart. There is no separate cart table, as each user has only one cart.
6. Product weights are stored in kilograms.
7. User passwords are not stored in CSV files for security reasons.
8. When transferring order data from CSV to the OLTP database, orders are identified by the customer and the ordered date, that's why the ordered date has time. For other columns, time isn't significant.

**Steps to Create the OLTP Database:**

1. Create the OLTP database.
2. Run the OLTP.sql script in the OLTP database.
3. Data for the OLTP database is stored in the following files: Products.csv, Orders.csv

Run ETL1.sql using the following command:

psql -U <username> -d <database> -f ETL1.sql --set=products\_path='pathTo/Products.csv' --set=orders\_path='pathTo/Orders.csv'

1. There's also a Cart.csv file that stores initial data about users' carts. It's used only for the convenience of initial database filling, as the application cart would be modified by inserts, updates and deletes, not stored in CSV files. To fill the cart run ETL\_cart.sql with the following command:

psql -U <username> -d <database> -f ETL\_cart.sql --set=cart\_path='pathTo/Cart.csv'

**OLAP:**

The OLAP database is designed to answer analytical questions such as:

* Which brand's products are most frequently added to carts?
* Which cities have the highest number of orders?

**Key Points:**

1. DimCustomer and factProductInCart are implemented as Slowly Changing Dimensions Type 2 (SCD2) to maintain the history of data changes.
2. DimProductBridge implements the relationship between the order and its products. If some orders have the same products with the same quantity, they would have the same product\_bridge\_id.

**Steps to Create the OLAP Database:**

1. Create the OLAP database.
2. Run the OLAP.sql script in the OLAP database.
3. Modify ETL2.sql:
   * **Line 6:** Update the database name to your OLTP database name:

options (host '127.0.0.1', port '5432', dbname 'db\_coursework');

* + **Line 9:** Update the user and password with your PostgreSQL credentials:

options (user 'postgres', password 'postgres');

1. Run the ETL2.sql script in the OLAP database using the modified ETL2.sql file.