

# Exercise 1: Building a Data Access Layer for an E-commerce Application

## Statement:

Create a simplified data access layer (DAL) for an e-commerce application using Entity Framework Core, focusing on code-first approach.

## Hints for Implementation:

- **Define Models:** Start by creating simple classes to represent the entities in your e-commerce application, such as Product, Customer, and Order. These classes should include properties that reflect the data you wish to store in the database.
- **DbContext Class:** Implement a class that inherits from DbContext. This class will manage the database operations for your entities. Use DbSet<T> properties to include your entities in the model.
- **Configuration:** Configure the database connection string directly in your DbContext class's OnConfiguring method. This is crucial for establishing a connection to your database.
- **Migrations:** Utilize EF Core migrations to scaffold a database that matches your model. This allows you to create and update your database schema based on the models you've defined.

```
marcelogomesmarques@MACBOOK-PRO-DE-MARCELO DALECommerceApp % dotnet ef migrations add InitialCreate
Build started...
Build succeeded.
Done. To undo this action, use 'ef migrations remove'
marcelogomesmarques@MACBOOK-PRO-DE-MARCELO DALECommerceApp % dotnet ef database update
Build started...
Build succeeded.
Applying migration '20240327204044_InitialCreate'.
Done.
marcelogomesmarques@MACBOOK-PRO-DE-MARCELO DALECommerceApp %
```

Enter customer data:

Name: Marcelo Marques  
Kind: High

Please, review your entry and try again! Details: Requested value 'High' was not found.

Press any key to continue.

Enter customer data:

Name: Marcelo Gomes Marques  
Kind: Person  
Email: mgm3000@gmail.com  
Password: 1234567

See the order entry status:

Client: Person: Marcelo Gomes Marques

Order: 1: PaymentConfirmed - Created: 03-27-2024 Date to Delivery: 04-06-2024 Delivery Date:  
\* Value: 599.99 | Quantity: 1 | GameConsole: X-B0X Series X  
\* Value: 299.98 | Quantity: 2 | GameControler: X-B0X Series Wireless Controler  
\* Value: 115.50 | Quantity: 2 | GameControler: X-B0X Series Controler

Sales Summary:

Invoice Total Value: 1015.47  
Invoice Average Value by Item: 338.49

Press any key to continue.

Querying the OrderId 1

Before Updating Entity State: Unchanged  
After Updating Entity State: Modified  
After SaveChanges Entity State: Unchanged

Press any key to continue.

Updating the Order Delivery date and status

Client: Person: Marcelo Gomes Marques

Order: 1: Delivered - Created: 03-27-2024 Date to Delivery: 04-06-2024 Delivery Date: 3/29/2024 10:54:46 PM  
\* Value: 599.99 | Quantity: 1 | GameConsole: X-B0X Series X  
\* Value: 299.98 | Quantity: 2 | GameControler: X-B0X Series Wireless Controler  
\* Value: 115.50 | Quantity: 2 | GameControler: X-B0X Series Controler

Sales Summary:

Invoice Total Value: 1015.47  
Invoice Average Value by Item: 338.49

Press any key to continue.

Delete Order with OrderId 1:

Entity State Before Removing: Unchanged  
Entity State After Removing: Detached

Press any key to close the app.

## Exercise 2: Implementing Complex Queries Using LINQ with Entity Framework

### Statement:

Write complex queries using LINQ to query the e-commerce application's database for specific data insights, such as total sales per product, products never ordered, and customers with orders above a certain value.

### Hints for Implementation:

- **Total Sales per Product:** Use LINQ to aggregate data from your orders and products. You might need to group by product ID and sum up the total sales for each group. This query demonstrates how to perform aggregations and work with related data.
- **Products Never Ordered:** Craft a LINQ query that selects products which do not appear in any orders. This might involve a combination of Where, SelectMany, and Any methods to filter out products based on their presence in orders.
- **High-Value Customers:** To find customers with orders exceeding a certain value, aggregate the total value of orders per customer. Then, filter these aggregates to identify customers meeting your criteria for "high-value." This will involve grouping orders by customer and calculating the total value of orders in each group.

Database path: /Users/marcelogomesmarques/Library/Application Support/eCommerceApp.db.

Reading files from path: /Users/marcelogomesmarques/Projects/CSharp/DALComplexQueries/DALECommerceApp/Resources  
Total Customers records: 10

Total Products records: 121

Total Orders records: 32

Total Order Items records: 282

Press any key to continue.

### Products Never Ordered:

ID:	Product Name:	Category:
12	GAME Holly World	Games
14	GAME Take Care Babies	Games
33	PlayStation 2	GameConsole
61	Playstation 2	GameConsole
65	X-Box 360	GameConsole

Press any key to continue.

Total Sales per Product:

Product:	Amount:	Value:
Smart TV 4k QLED	202	\$1,014,354.46
Smart TV 4k	240	\$667,109.60
Mesa Gamer	312	\$642,637.78
PlayStation 5	100	\$600,012.00
Playstation 5 Pack God Of Wars	110	\$564,918.90
X-Box Series S	260	\$534,694.50
X-Box Series X Pack Doom and Forsa	100	\$419,946.00
X-Box Series SXPack Doom/Forsa 3 months of Game Pass	70	\$297,739.80
AUT_RECL_ARMCHAIR	112	\$286,239.28
X-Box Series X Pack Fifa	70	\$285,162.10
X-Box Series X	70	\$281,455.70
Playstation 4 Pro	60	\$238,528.70
Cadeira Gamer	100	\$190,081.00
X-Box Series S Pack Doom and Forsa	80	\$179,870.50
Playstation 4 Pack God Of Wars	80	\$178,482.70
X-Box Series S Pack Doom/Forsa 3 months of Game Pass	80	\$178,170.80
FiFa 17	316	\$112,619.74
Forsa 6 series X	276	\$104,495.68
God Of War 5	376	\$99,874.74
X-Box Series S Pack Fifa	30	\$62,985.70
Nintendo Switch	25	\$62,495.00
Hirizon 2 Playstation 5	170	\$59,853.50
HD External 2 Tb	110	\$56,716.80
God Of War 5 Playstation	170	\$55,401.40
Playstation 4	25	\$49,750.25
Smart TV Full HD	25	\$44,978.00
HD External 1 Tb	110	\$43,931.10
SDD 500 Gb	100	\$39,976.00
Controle Playstation 5 sem fio	60	\$38,648.40
Controle Playstation 4 sem fio	100	\$25,993.00
Playstation 3	25	\$25,037.75
X-Box One S	25	\$25,023.50
X-Box One	25	\$22,514.50
Gears of War 6 Series S	95	\$20,298.15
X-Box One Controle sem fio	100	\$20,088.00
Monitor Full HD	100	\$20,042.00
Controle Playstation 4	100	\$19,921.00
FiFa 16	70	\$18,229.60
Forsa 6	70	\$18,013.70
Monitor 4k Widescreen Curvo	25	\$17,518.50
Luminaria God of Wars	100	\$16,028.00
Controle Playstation 3	100	\$15,907.00
Handset X-Box Profissional	61	\$15,529.97
X-Box Series Controle sem fio	25	\$15,002.50
HD External 4 Tb	25	\$14,998.25
Monitor 4k	25	\$14,975.75
XBOX_CONTROL	50	\$14,422.50
Hirizon 2	65	\$14,005.70
Forsa 5	70	\$13,834.60
Monitor Widescreen Curvo	25	\$12,504.50
FiFa 13	120	\$10,820.80
Handset sterio	100	\$9,062.00
X-Box Series Controle com fio	35	\$8,887.10
X-Box One Controle com fio	105	\$8,462.55
HD External 500 Gb	30	\$8,304.70
CONTROL	100	\$8,060.00
X-Box 360 Controle sem fio	100	\$7,524.00
HOMETHEATER7.1CH	2	\$7,161.53
Gears of War 6	30	\$6,217.00
God Of War 4	30	\$5,966.20
Chaveiro X-Box	110	\$5,739.40
FiFa 15	30	\$5,573.00
X-Box 360 Controle com fio	100	\$5,037.00
Controle Playstation 2	100	\$4,999.00
Handset mono	100	\$4,997.00
Gears of War 3	110	\$4,306.20
GTX-4060TI 16 GB	3	\$3,991.72

High-Value Customers (greater than \$ 10,000.00):

Customer:	Amount:	Value:
Wallmarket	4645	\$4,513,556.70
Extra Supermarkets	1305	\$2,302,115.45
XP Entreteriments	477	\$984,267.41
Game Gears	560	\$98,204.45
Chris Evens	20	\$14,057.00
Henry Cavill	36	\$10,433.41

Press any key to close the app.