

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-BOX Series X
* Value: 299.98 | Quantity: 2 | GameControler: X-BOX Series Wireless Controler
* Value: 115.50 | Quantity: 2 | GameControler: X-BOX 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-BOX Series X
* Value: 299.98 | Quantity: 2 | GameControler: X-BOX Series Wireless Controler
* Value: 115.50 | Quantity: 2 | GameControler: X-BOX 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	1014354.46
Smart TV 4k	240	667109.60
Mesa Gamer	312	642637.78
PlayStation 5	100	600012.00
Playstation 5 Pack God Of Wars	110	564918.90
X-Box Series S	260	534694.50
X-Box Series X Pack Doom and Forsa	100	419946.00
X-Box Series SXPack Doom/Forsa 3 months of Game Pass	70	297739.80
AUT_RECL_ARMCHAIR	112	286239.28
X-Box Series X Pack Fifa	70	285162.10
X-Box Series X	70	281455.70
Playstation 4 Pro	60	238528.70
Cadeira Gamer	100	190081.00
X-Box Series S Pack Doom and Forsa	80	179870.50
Playstation 4 Pack God Of Wars	80	178482.70
X-Box Series S Pack Doom/Forsa 3 months of Game Pass	80	178170.80
FiFa 17	316	112619.74
Forsa 6 series X	276	104495.68
God Of War 5	376	99874.74
X-Box Series S Pack Fifa	30	62985.70
Nintendo Switch	25	62495.00
Hirizon 2 Playstation 5	170	59853.50
HD External 2 Tb	110	56716.80
God Of War 5 Playstation	170	55401.40
Playstation 4	25	49750.25
Smart TV Full HD	25	44978.00
HD External 1 Tb	110	43931.10
SDD 500 Gb	100	39976.00
Controle Playstation 5 sem fio	60	38648.40
Controle Playstation 4 sem fio	100	25993.00
Playstation 3	25	25037.75
X-Box One S	25	25023.50
X-Box One	25	22514.50
Gears of War 6 Series S	95	20298.15
X-Box One Controle sem fio	100	20088.00
Monitor Full HD	100	20042.00
Controle Playstation 4	100	19921.00
FiFa 16	70	18229.60
Forsa 6	70	18013.70
Monitor 4k Widescreen Curvo	25	17518.50
Luminaria God of Wars	100	16028.00
Controle Playstation 3	100	15907.00
Handset X-Box Profesional	61	15529.97
X-Box Series Controle sem fio	25	15002.50
HD External 4 Tb	25	14998.25
Monitor 4k	25	14975.75
XBOX_CONTROL	50	14422.50
Hirizon 2	65	14005.70
Forsa 5	70	13834.60
Monitor Widescreen Curvo	25	12504.50
FiFa 13	120	10820.80
Handset sterio	100	9062.00
X-Box Series Controle com fio	35	8887.10
X-Box One Controle com fio	105	8462.55
HD External 500 Gb	30	8304.70
CONTROL	100	8060.00
X-Box 360 Controle sem fio	100	7524.00
HOMETHEATER7.1CH	2	7161.53
Gears of War 6	30	6217.00
God Of War 4	30	5966.20
Chaveiro X-Box	110	5739.40
FiFa 15	30	5573.00
X-Box 360 Controle com fio	100	5037.00
Controle Playstation 2	100	4999.00
Handset mono	100	4997.00
Gears of War 3	110	4306.20
GTX-4060TI 16 GB	3	3991.72
PLAYS_CONTROL	27	3828.50

High-Value Customers (greater than \$ 10000):

Customer:	Amount:	Value:
Wallmarket	4645	4513556.70
Extra Supermarkets	1305	2302115.45
XP Entreteriments	477	984267.41
Game Gears	560	98204.45
Chris Evens	20	14057.00
Henry Cavill	36	10433.41

Press any key to close the app.