# Exercises: Advanced Querying

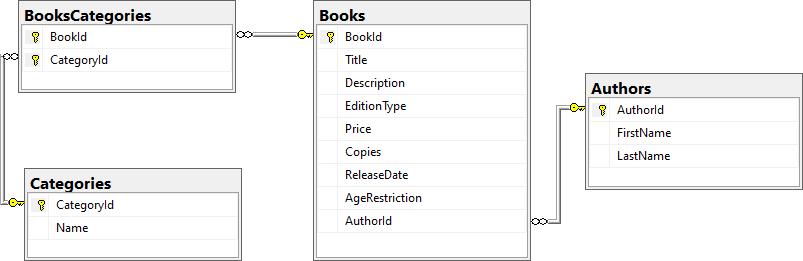
This document defines the **exercise assignments** for the [Databases Advanced - Entity Framework course @ SoftUni](https://softuni.bg/trainings/4842/entity-framework-core-february-2025)  
You can check your solutions in [Judge](https://judge.softuni.org/Contests/3920/Advanced-Querying)

# BookShop System

For the following tasks, use the **BookShop** database. You can download the complete project or create it,but you should still use the pre-defined Seed() method from the project to have the same **sample** data.

## Book Shop Database

You must create a **database** for a **book** **shop** **system**. It should look like this:



### Constraints

Your **namespaces** should be:

* BookShop – for your **StartUp** class
* BookShop.Data – for your **DbContext**
* BookShop.Models – for your models
* BookShop.Models.**Enums** – for your models

Your **models** should be:

* BookShopContext – your **DbContext**
* Author
  + **AuthorId**
  + **FirstName** (up to **50** characters, unicode, not required)
  + **LastName** (up to **50** characters, unicode)
* Book
  + **BookId**
  + **Title** (up to **50** characters, unicode)
  + **Description** (up to **1000** characters, unicode)
  + **ReleaseDate** (not required)
  + **Copies** (an integer)
  + **Price**
  + **EditionType** – enum (**Normal**, **Promo**, **Gold**)
  + **AgeRestriction** – enum (**Minor**, **Teen**, **Adult**)
  + **Author**
  + **BookCategories**
* Category
  + **CategoryId**
  + **Name** (up to **50** characters, unicode)
  + **CategoryBooks**
* BookCategory – mapping entity

For the following tasks, you will be creating methods that accept a **BookShopContext** as a parameter and use it to run some queries. Create those methods inside your **StartUp** class and upload your whole solution to **Judge**.

## Age Restriction

**NOTE**: You will need method **public static string GetBooksByAgeRestriction(BookShopContext context, string command)** and **public StartUp** class.

Return in a **single** **string**allbook **titles**, each on a **new line,**that have**an age** **restriction**, equal to the **given** **command**. Order the titles **alphabetically**.

Read **input** from the console in your **main** **method** and call your **method** with the **necessary** **arguments**. Print the **returned** **string** to the console. **Ignore** the casing of the input.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| miNor | A Confederacy of Dunces  A Farewell to Arms  A Handful of Dust  … |
| teEN | A Passage to India  A Scanner Darkly  A Swiftly Tilting Planet  … |

## Golden Books

**NOTE**: You will need **method public static string GetGoldenBooks(BookShopContext context)** and **public StartUp** class.

Return in a **single** string the **titles of the golden edition books** that have **less than 5000 copies**,each on a **new line**. Order them by **BookId** ascending.

Call the **GetGoldenBooks(BookShopContext context)** method in your **Main()** and print the returned string to the console.

### Example

|  |
| --- |
| **Output** |
| Behold the Man  Bury My Heart at Wounded Knee  The Cricket on the Hearth  … |

## Books by Price

**NOTE**: You will need method **public static string GetBooksByPrice(BookShopContext context)** and **public StartUp** class.

Return in a single string all **titles and prices** **of books** with a **price higher than 40**, each on a **new** **row** in the **format** given below. Order them by **price** descending.

### Example

|  |
| --- |
| **Output** |
| O Pioneers! - $49.90  That Hideous Strength - $48.63  A Handful of Dust - $48.63  … |

## Not Released In

**NOTE**: You will need method **public static string GetBooksNotReleasedIn(BookShopContext** **context, int year)** and **public StartUp** class.

Return in a **single** string with all **titles of books** that are **NOT released** in a given year. Order them by **bookId** ascending.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2000 | Absalom  After Many a Summer Dies the Swan  Ah  … |
| 1998 | Ah  Wilderness!  Alien CornÂ (play)  … |

## Book Titles by Category

**NOTE**: You will need method **public static string GetBooksByCategory(BookShopContext context, string input)** and **public StartUp** class.

Returnin a single string the **titles of books** by a given **list of categories**. The list of **categories** will be given in a single line separated by one or more spaces. Ignore casing. Order by **title** alphabetically.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| horror mystery drama | A Fanatic Heart  A Farewell to Arms  A Glass of Blessings  … |

## Released Before Date

**NOTE**: You will need method **public static string GetBooksReleasedBefore(BookShopContext context, string date)** and **public StartUp** class.

Return **the title, edition type** and **price** of **all books** that are **released before a given date.** The date will be a string in the format **"dd-MM-yyyy".**

Return all of the rows in a single string, ordered by **release date (descending)**.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| 12-04-1992 | If I Forget Thee Jerusalem - Gold - $33.21  Oh! To be in England - Normal - $46.67  The Monkey's Raincoat - Normal - $46.93  … |
| 30-12-1989 | A Fanatic Heart - Normal - $9.41  The Curious Incident of the Dog in the Night-Time - Normal - $23.41  The Other Side of Silence - Gold - $46.26  … |

## Author Search

**NOTE**: You will need method **public static string GetAuthorNamesEndingIn(BookShopContext context, string input)** and **public StartUp** class.

Return the **full** **names** of **authors**, whose **first** **name** ends with a **given** **string**.

Return all **names** in a **single** **string**, each on a **new** **row**, ordered alphabetically.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| e | George Powell  Jane Ortiz |
| dy | Randy Morales |

## Book Search

**NOTE**: You will need method **public static string GetBookTitlesContaining(BookShopContext context, string input)** **and public StartUp** class.

Return the **titles** of **the book**, which contain a **given** **string**. Ignore casing.

Return all **titles** in a **single** **string**, each on a **new** **row**, ordered alphabetically.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| sK | A Catskill Eagle  The Daffodil Sky  The Skull Beneath the Skin |
| WOR | Great Work of Time  Terrible Swift Sword |

## Book Search by Author

**NOTE**: You will need method **public static string GetBooksByAuthor(BookShopContext context, string input)** and **public StartUp** class.

Return **all titles of books and their authors' names** for books, which are written by authors whose last names **start with the given string**.

Return a single string with each title on a new row. **Ignore** casing. Order by **BookId** ascending.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| R | A Handful of Dust (Bozhidara Rysinova)  Have His Carcase (Bozhidara Rysinova)  The Heart Is a Lonely Hunter (Bozhidara Rysinova)  … |
| po | Postern of Fate (Stanko Popov)  Precious Bane (Stanko Popov)  The Proper Study (Stanko Popov)  … |

## Count Books

**NOTE**: You will need method **public static int CountBooks(BookShopContext context, int lengthCheck)** and **public StartUp** class.

Return **the number of books,** which have a **title longer than the number** given as an input.

### Example

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 12 | 169 | There are 169 books with longer title than 12 symbols |
| 40 | 2 | There are 2 books with longer title than 40 symbols |

## Total Book Copies

**NOTE**: You will need method **public static string CountCopiesByAuthor(BookShopContext context)** and **public StartUp** class.

Return the **total number of book copies** **for each author**. Order the results **descending by total book copies**.

Return all results in a **single** **string**, each on a **new** **line**.

### Example

|  |
| --- |
| **Output** |
| Stanko Popov - 117778  Lyubov Ivanova - 107391  Jane Ortiz – 103673  … |

## Profit by Category

**NOTE**: You will need method **public static string GetTotalProfitByCategory(BookShopContext** **context)** and **public StartUp** class.

Return the **total profit of all books by category**. Profit for a book can be calculated by multiplying its **number of copies** by the **price per single book**. Order the results by **descending by total profit** for a category and **ascending by category name**. Print the total profit formatted to the **second digit**.

### Example

|  |
| --- |
| **Output** |
| Art $6428917.79  Fantasy $5291439.71  Adventure $5153920.77  Children's $4809746.22  … |

## Most Recent Books

**NOTE**: You will need method **public static string GetMostRecentBooks(BookShopContext context)** and **public StartUp** class.

Get the most recent books by categories. The **categories** should be ordered by **name alphabetically**. Only take the **top 3** most recent books from each category – ordered by **release date** (descending). **Select** and **print** the **category name** and for each **book** – its **title** and **release year**.

### Example

|  |
| --- |
| **Output** |
| --Action  Brandy ofthe Damned (2015)  Bonjour Tristesse (2013)  By Grand Central Station I Sat Down and Wept (2010)  --Adventure  The Cricket on the Hearth (2013)  Dance Dance Dance (2002)  Cover Her Face (2000)  … |

## Increase Prices

**NOTE**: You will need method **public static void IncreasePrices(BookShopContext context)** and **public StartUp** class.

**Increase the prices of all books** **released before 2010 by 5**.

## Remove Books

**NOTE**: You will need method **public static int RemoveBooks(BookShopContext context)** and **public** **StartUp** class.

Removeall **books**, which have less than **4200 copies**. Return an **int** - the **number of books that were deleted** from the database.

### Example

|  |
| --- |
| **Output** |
| 34 |