

**EXERCISE 1:** Create your own two tables, binding them via keys, define your fields (simple structures, didactic applications, catalog, student data etc.). Insert data by using the statement INSERT INTO. Create simple SELECT statements.

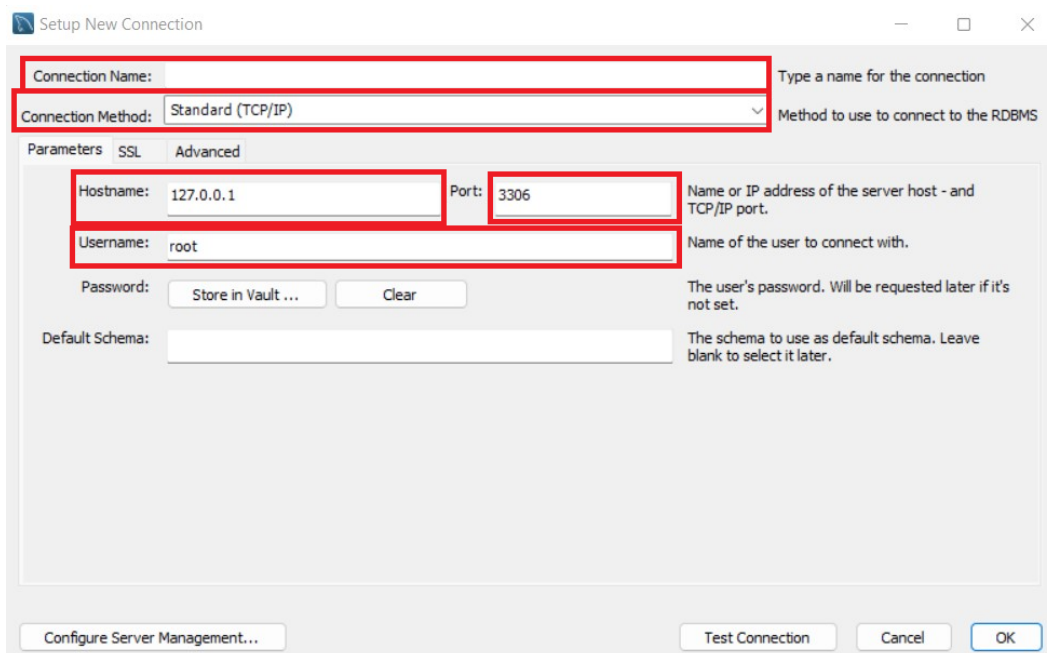
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## STEP 1. MySQL Workbench configuration (*creating a local server connection*)

### General set-up

On the first screen (*Welcome to MySQL Workbench*) we press the  next to *MySQL Connections* and we create our server connection:

- Connection Name : choosen by the user;
- Connection Method: *Standard (TCP/IP)*;
- Hostname: by default or the IP address of the server host;
- Port: 3306
- Username: user name to be used (by default is *root* - represents the admin user)



Setup New Connection

Connection Name:  Type a name for the connection

Connection Method:  Method to use to connect to the RDBMS

Parameters SSL Advanced

Hostname:  Port:  Name or IP address of the server host - and TCP/IP port.

Username:  Name of the user to connect with.

Password:  Store in Vault ... Clear The user's password. Will be requested later if it's not set.

Default Schema:  The schema to use as default schema. Leave blank to select it later.

Configure Server Management... Test Connection Cancel OK

After that we press *Test Connection* button

The screenshot shows the 'Setup New Connection' dialog box. It has a title bar with a blue icon and the text 'Setup New Connection'. The dialog contains several fields and tabs. At the top, there is a 'Connection Name' text box with the placeholder 'Type a name for the connection'. Below it is a 'Connection Method' dropdown menu set to 'Standard (TCP/IP)' with the placeholder 'Method to use to connect to the RDBMS'. There are three tabs: 'Parameters', 'SSL', and 'Advanced'. The 'Parameters' tab is active, showing fields for 'Hostname' (127.0.0.1), 'Port' (3306), 'Username' (root), 'Password' (with 'Store in Vault ...' and 'Clear' buttons), and 'Default Schema'. To the right of these fields are explanatory text labels. At the bottom, there are four buttons: 'Configure Server Management...', 'Test Connection' (highlighted with a red rectangle), 'Cancel', and 'OK'.

Personal set-up

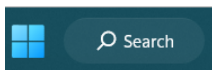
The screenshot shows the 'Manage Server Connections' dialog box. It has a title bar with a blue icon and the text 'Manage Server Connections'. On the left, there is a list box titled 'MySQL Connections' containing the entry 'Booky'. The main area has three tabs: 'Connection', 'Remote Management', and 'System Profile'. The 'Connection' tab is active, showing the same fields as the 'Setup New Connection' dialog, but with the 'Connection Name' set to 'Booky'. At the bottom, there are five buttons: 'New', 'Delete', 'Duplicate', 'Move Up', and 'Move Down'. On the right side, there are two buttons: 'Test Connection' (highlighted with a red rectangle) and 'Close'.

## Notes

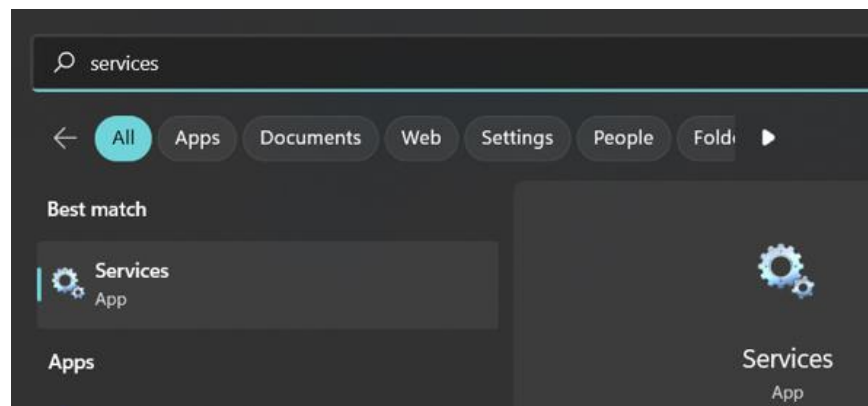
- after pressing *Test Connection*, in case that the username is root (the admin) we will be asked to enter the password we have set-up when installing MySQL:



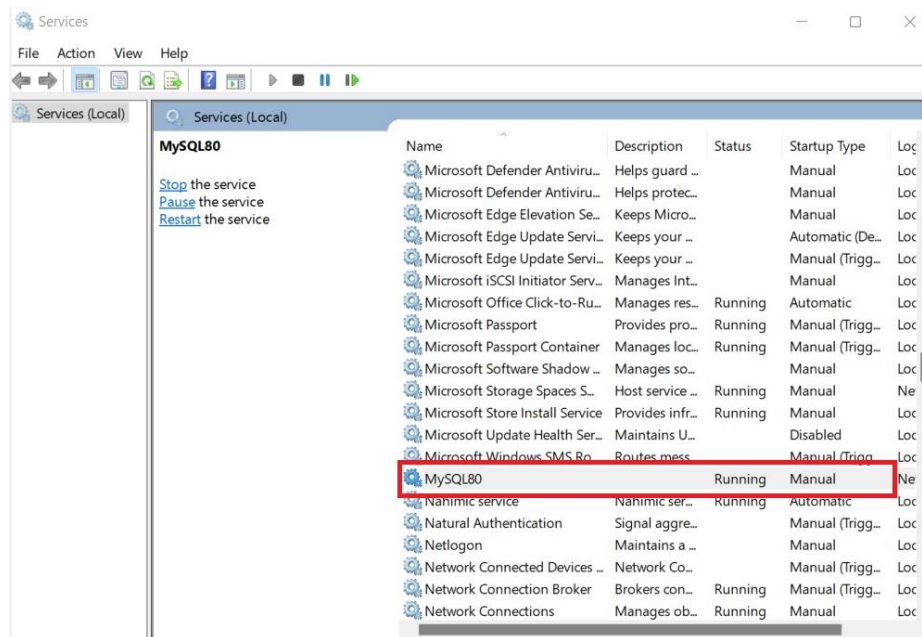
- if we receive an error that the connection cannot be created, then we need to start the server. For that, we use the *Search* feature from the Windows tab



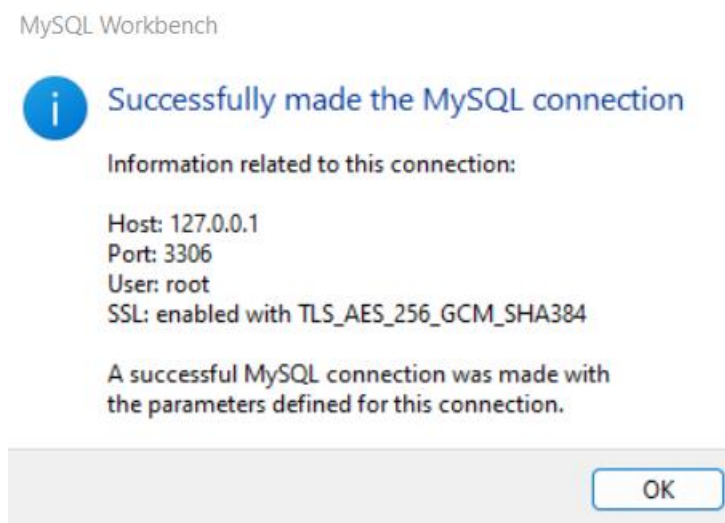
and we lookup *Services*. We choose the app that appears:



After that, we look for MySQL80 and we right-click on it and we press *Start* and we should see *Running* as status.



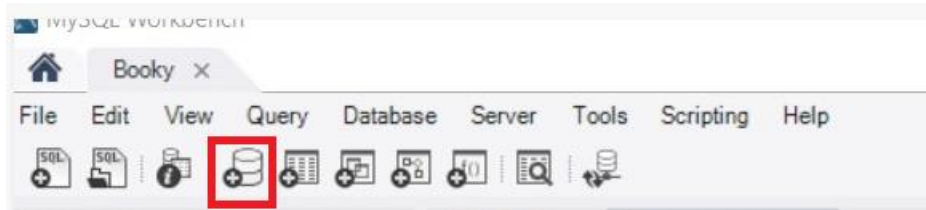
Now, we go back to MYSql Workbench and we test again the connection. If everything is in order, we receive the following message:



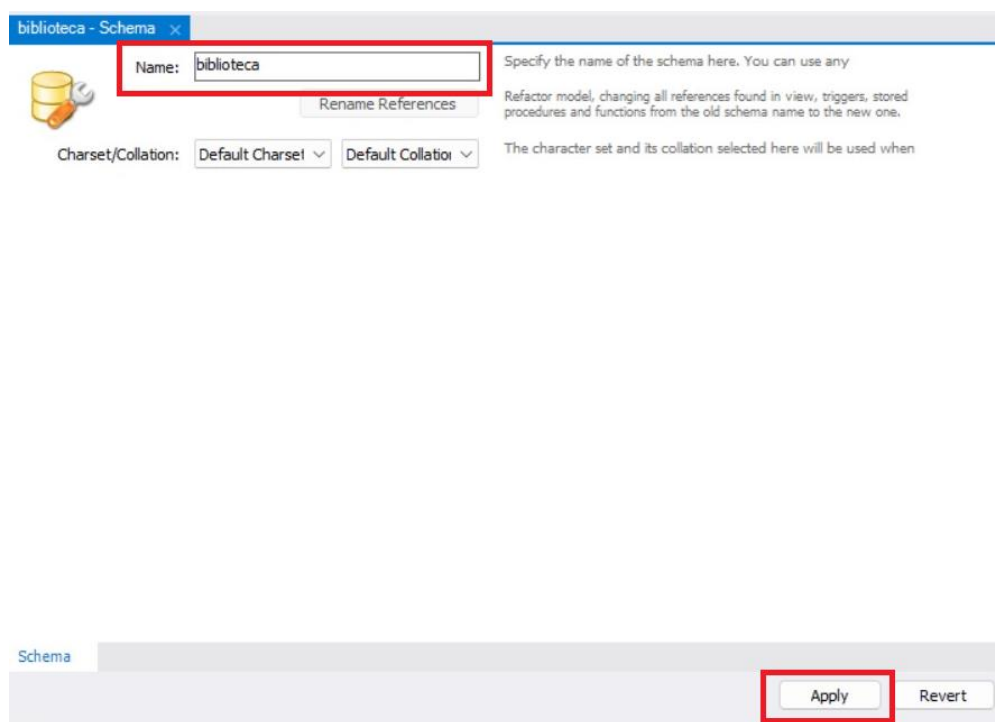
## STEP 2. CREATING TABLES

Before we create the two requested tabels, we need to first create the database that will contain them.

For that we create what is called a *Schema (database)*



We specify the name of the *Schema (database)* and we press *Apply*:



On the left side we notice that our database has been created. Here, we also see the *Tables* under menu. If we right-click on it, we have the right to create tables for our database.

carti - Table

Table Name:  Schema: **biblioteca**

Charset/Collation:   Engine:

Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
ISBN	INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Author	VARCHAR(255)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Title	VARCHAR(255)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Year	INT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Column Name:  Data Type:

Charset/Collation:   Default:

Comments:

Storage: ☐ Virtual ☐ Stored

☐ Primary Key ☐ Not Null ☐ Unique

☐ Binary ☐ Unsigned ☐ Zero Fill

☐ Auto Increment ☐ Generated

Thus we set:

- table name
- column names with data type and properties (PK – primary key; NN – non-null value / not null etc.)

The related code in MYSQL to create the *cărți* table is:

```
CREATE TABLE `carti` (
  `ISBN` int NOT NULL,
  `Author` varchar(255) NOT NULL,
  `Title` varchar(255) NOT NULL,
  `Year` int NOT NULL,
  PRIMARY KEY (`ISBN`)
)
```

Similarly, we will create the loan table, but here we will also set the foreign key to be able to connect the two tables:

The screenshot shows a database management tool's column configuration window. The column name is 'Year' and the data type is 'INT'. The 'Foreign Keys' tab is selected and highlighted with a red box. Other tabs include 'Columns', 'Indexes', 'Triggers', 'Partitioning', and 'Options'. The 'Apply' button is visible at the bottom right.

The related code in MYSQL to create the *împrumut* table is:

```
CREATE TABLE `împrumut` (  
  `CNP` int NOT NULL AUTO_INCREMENT,  
  `Nume student` varchar(255) NOT NULL,  
  `Data împrumut` date NOT NULL,  
  `Data returnarii` date NOT NULL,  
  `ISBN` int DEFAULT NULL,  
  PRIMARY KEY (`CNP`),  
  KEY `ISBN_idx` (`ISBN`),  
  CONSTRAINT `ISBN` FOREIGN KEY (`ISBN`) REFERENCES `carti` (`ISBN`)  
)
```

### STEP 3. INSERT INTO

In order to add data into the table we can do that either manually or by writing the following code:

**INSERT INTO** `biblioteca`.`imprumut` (`CNP`, `Nume student`, `Data imprumut`, `Data returnarii`, `ISBN`)

**VALUES** ('2840911080041', 'Luana', '29.11.2022', '04.12.2022', '1');

**note** : in order for the operation to take place we need to set-up the ISBN with the same data that exist in column ISBN in the *carti* table. In this case 1 belong to the first record in *carti* table.

	CNP	Nume student	Data imprumut	Data returnarii	ISBN
	284...	Luana	2029-11-20	2004-12-20	1
▶*	NULL	NULL	NULL	NULL	NULL

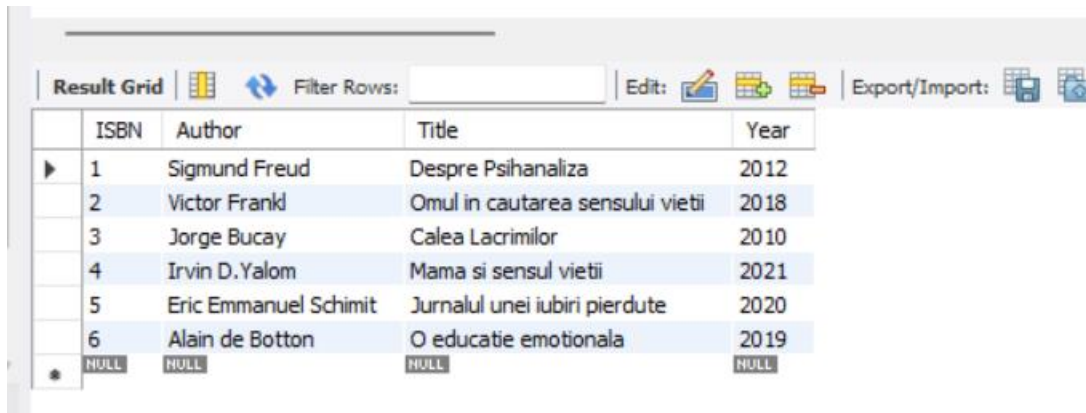
	ISBN	Author	Title	Year
▶	1	Sigmund Freud	Despre Psihanaliza	2012
	2	Victor Frankl	Omul in cautarea sensului vietii	2018
	3	Jorge Bucay	Calea Lacrimilor	2010
	4	Irvin D.Yalom	Mama si sensul vietii	2021



## STEP 4. SELECT

- select all data:

```
SELECT * FROM biblioteca.carti;
```

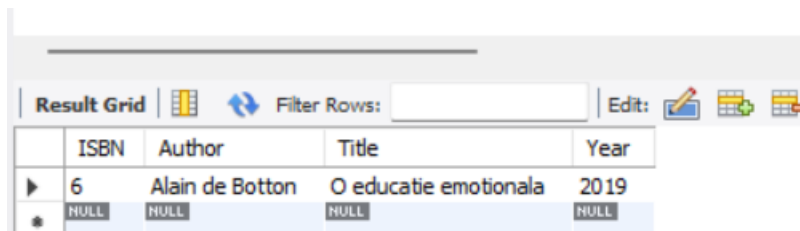


The screenshot shows a database application interface with a 'Result Grid' tab. The grid displays 6 rows of data from the 'biblioteca.carti' table. The columns are ISBN, Author, Title, and Year. The data is as follows:

	ISBN	Author	Title	Year
▶	1	Sigmund Freud	Despre Psihanaliza	2012
	2	Victor Frankl	Omul in cautarea sensului vietii	2018
	3	Jorge Bucay	Calea Lacrimilor	2010
	4	Irvin D. Yalom	Mama si sensul vietii	2021
	5	Eric Emmanuel Schmit	Jurnalul unei iubiri pierdute	2020
	6	Alain de Botton	O educatie emotionala	2019
*	NULL	NULL	NULL	NULL

- select specific data exemple with **Where**

```
SELECT * FROM biblioteca.carti where ISBN = 6;
```

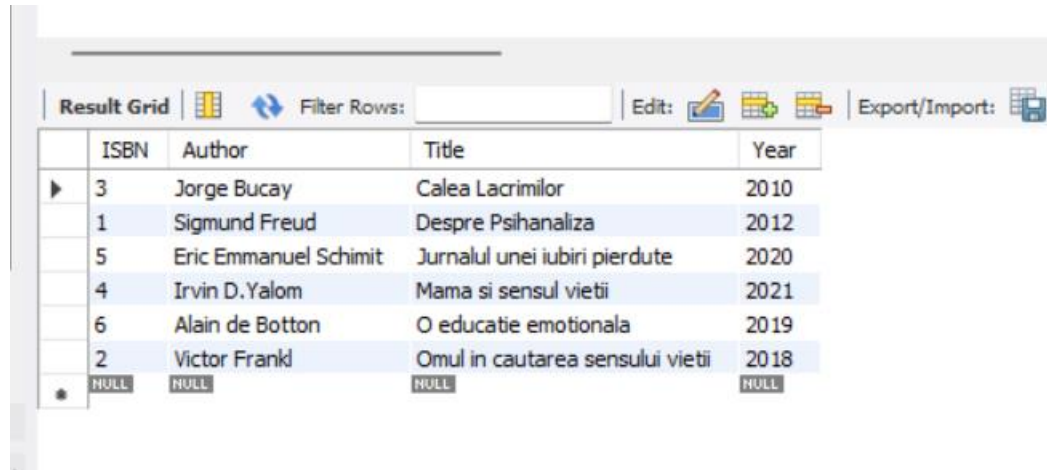


The screenshot shows the same database application interface, but the 'Result Grid' now only displays 1 row of data, filtered by the condition 'ISBN = 6'. The data is as follows:

	ISBN	Author	Title	Year
▶	6	Alain de Botton	O educatie emotionala	2019
*	NULL	NULL	NULL	NULL

- select specific data exemple with **Order By**

```
SELECT * FROM biblioteca.carti order by Title;
```

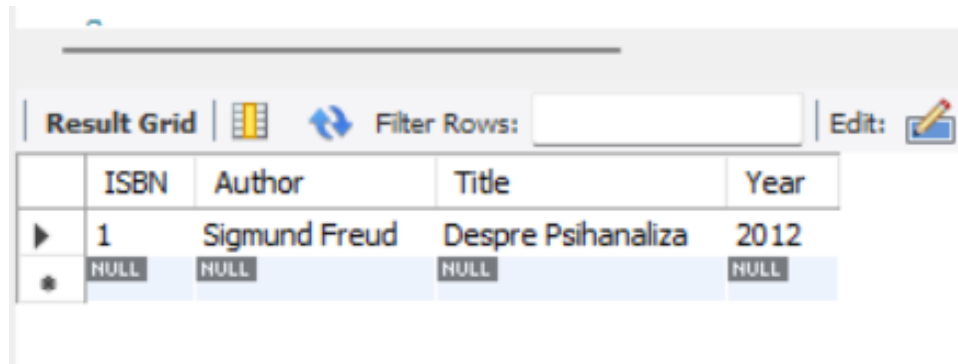


The screenshot shows a database application interface with a 'Result Grid' tab. The grid displays 7 rows of data from the 'biblioteca.carti' table, ordered by the 'Title' column. The columns are ISBN, Author, Title, and Year. The first row is highlighted with a blue background. The last row shows NULL values for all columns.

	ISBN	Author	Title	Year
▶	3	Jorge Bucay	Calea Lacrimilor	2010
	1	Sigmund Freud	Despre Psihanaliza	2012
	5	Eric Emmanuel Schimit	Jurnalul unei iubiri pierdute	2020
	4	Irvin D.Yalom	Mama si sensul vietii	2021
	6	Alain de Botton	O educatie emotionala	2019
	2	Victor Frankl	Omul in cautarea sensului vietii	2018
*	NULL	NULL	NULL	NULL

- select specific data exemple with **AND**

```
SELECT * FROM biblioteca.carti where ISBN = 1 AND Year = 2012;
```

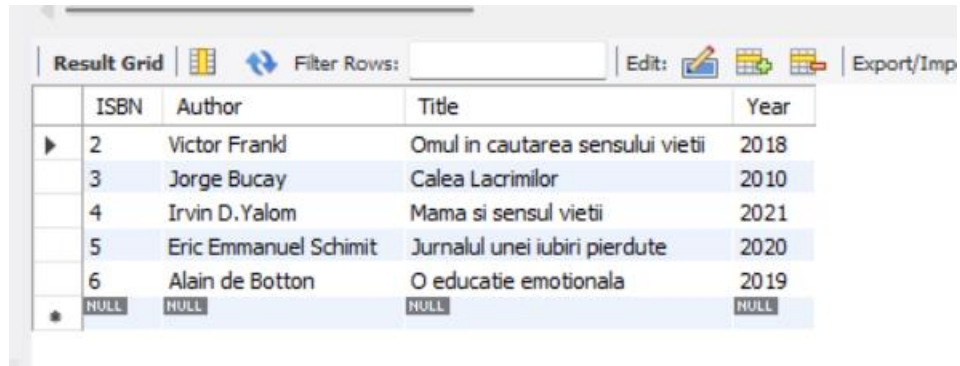


The screenshot shows the same database application interface, but the result grid now only displays 2 rows. The first row is the book with ISBN 1 and Year 2012. The second row shows NULL values for all columns.

	ISBN	Author	Title	Year
▶	1	Sigmund Freud	Despre Psihanaliza	2012
*	NULL	NULL	NULL	NULL

- **select specific data exemple with *Where Not***

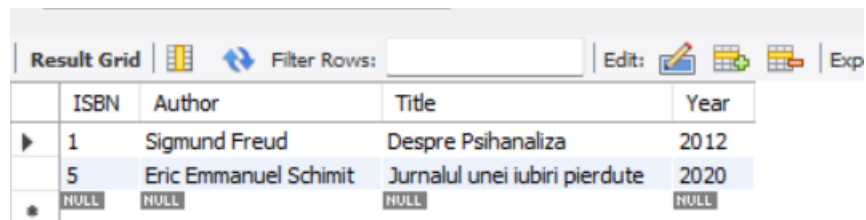
```
SELECT * FROM biblioteca.carti where not ISBN = 1;
```



	ISBN	Author	Title	Year
▶	2	Victor Frankl	Omul in cautarea sensului vietii	2018
	3	Jorge Bucay	Calea Lacrimilor	2010
	4	Irvin D. Yalom	Mama si sensul vietii	2021
	5	Eric Emmanuel Schmit	Jurnalul unei iubiri pierdute	2020
	6	Alain de Botton	O educatie emotionala	2019
✱	NULL	NULL	NULL	NULL

- **select specific data exemple with *OR***

```
SELECT * FROM biblioteca.carti where ISBN = 1 OR ISBN = 5;
```



	ISBN	Author	Title	Year
▶	1	Sigmund Freud	Despre Psihanaliza	2012
	5	Eric Emmanuel Schmit	Jurnalul unei iubiri pierdute	2020
✱	NULL	NULL	NULL	NULL

