



DDL

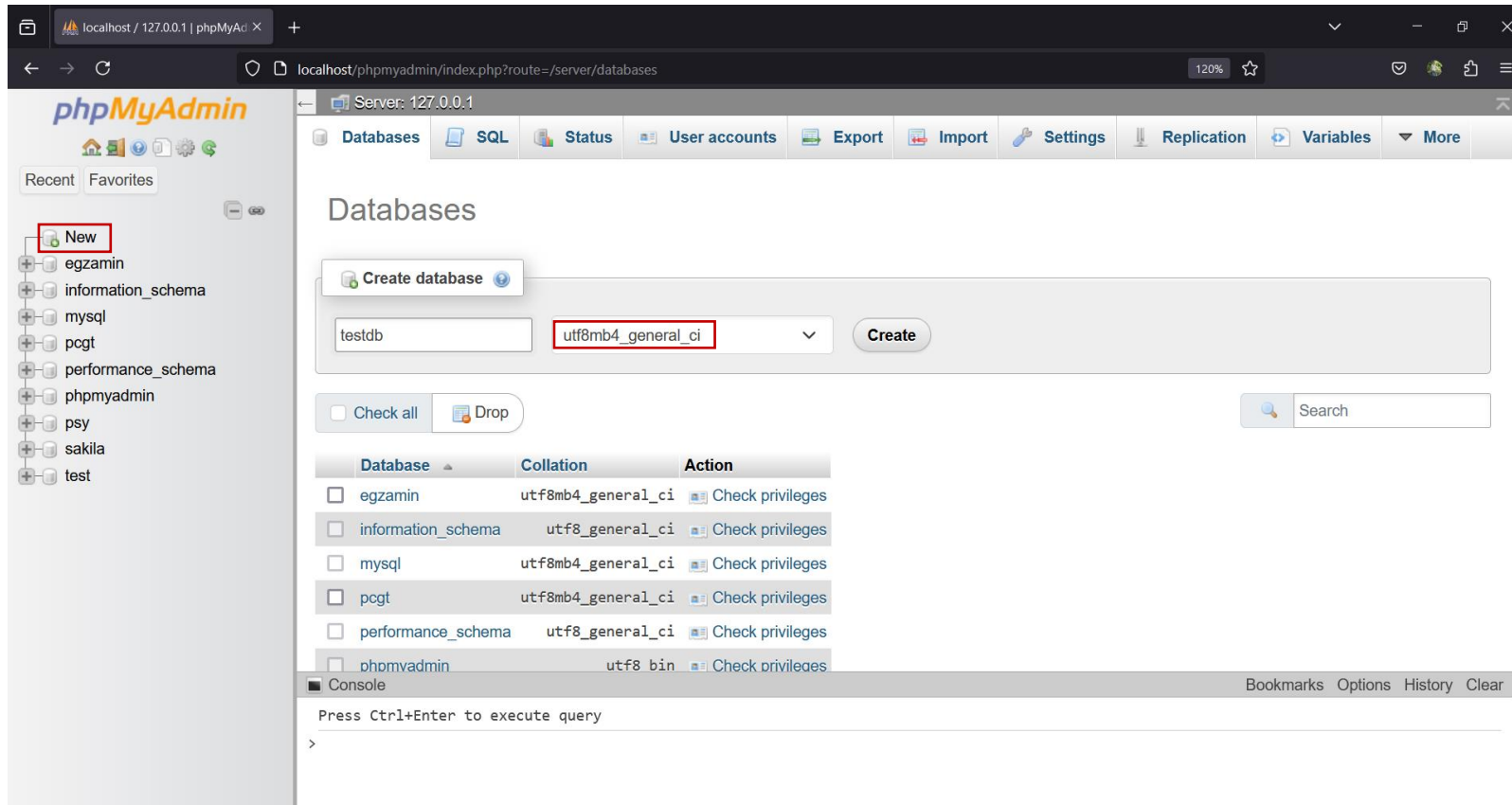
(Data Definition Language)

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- **Data Definition Language, DDL** – grupa instrukcji w języku [SQL](#), które służą do definiowania struktur danych. Możemy do nich zaliczyć polecenia takie jak **CREATE**, **ALTER**, **DROP**. Za pomocą instrukcji DDL nie manipulujemy bezpośrednio danymi, a ich strukturą. Można zdefiniować kolumny tabel, zmienić typy danych, czy usunąć obiekt taki jak widok czy tabela.

Jak stworzyć BD

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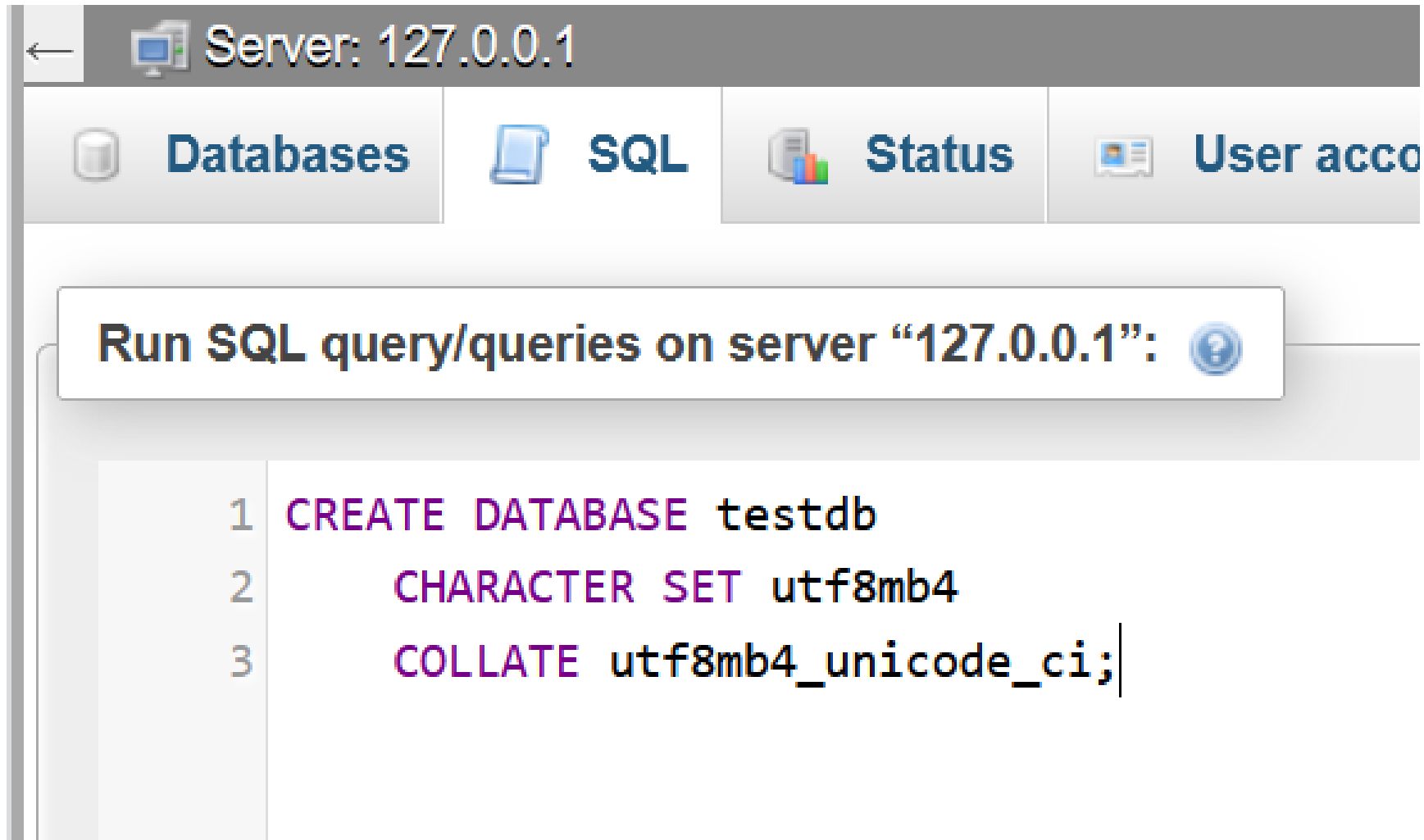


- **utf8mb4_unicode_ci** jest oparty na standardzie Unicode do sortowania i porównywania ciągów, który sortuje ciągi dokładniej w szerokim zakresie języków/alfabetach.

- **utf8mb4_general_ci** nie implementuje wszystkich reguł sortowania Unicode, co często prowadzi do niepożądanych wyników w niektórych sytuacjach dla niektórych języków/znaków.

Jak stworzyć BD

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The screenshot shows a web-based MySQL management interface. At the top, there's a header bar with a back arrow and the text "Server: 127.0.0.1". Below this is a navigation menu with four tabs: "Databases" (with a cylinder icon), "SQL" (with a document icon), "Status" (with a bar chart icon), and "User accounts" (with a person icon). The "SQL" tab is currently selected. Below the navigation menu, there's a white box with the text "Run SQL query/queries on server '127.0.0.1':" followed by a blue question mark icon. Below this box, the SQL query is displayed in a text area with line numbers 1, 2, and 3 on the left. The query is: `1 CREATE DATABASE testdb`, `2 CHARACTER SET utf8mb4`, and `3 COLLATE utf8mb4_unicode_ci;`. The text is color-coded: "CREATE DATABASE" is purple, "CHARACTER SET" is purple, "COLLATE" is purple, and the database name and collation are in black.

Server: 127.0.0.1

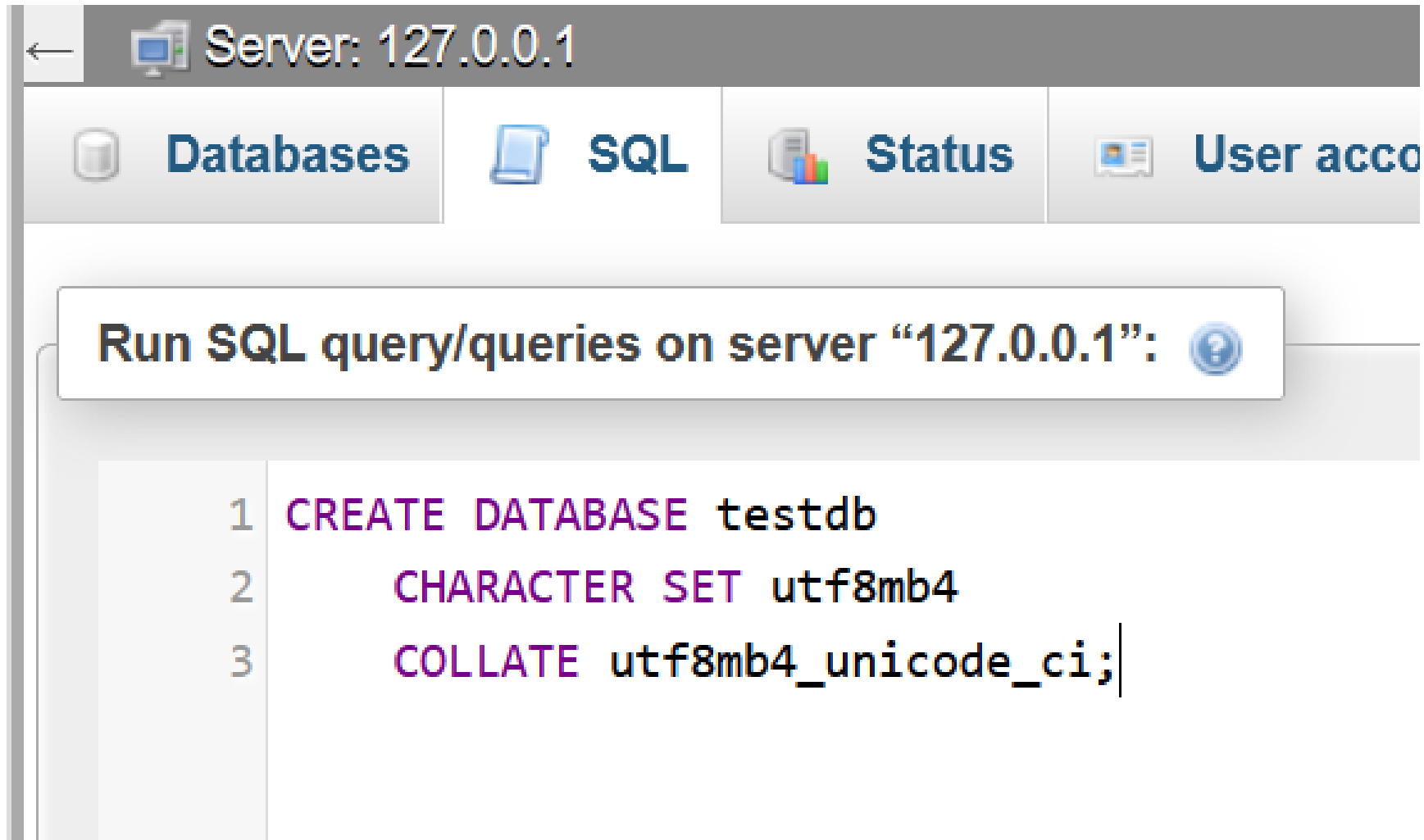
Databases SQL Status User accounts

Run SQL query/queries on server "127.0.0.1": ?

```
1 CREATE DATABASE testdb
2   CHARACTER SET utf8mb4
3   COLLATE utf8mb4_unicode_ci;
```

Jak stworzyć BD

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The screenshot shows a web-based MySQL management interface. At the top, there's a header bar with a back arrow and the text "Server: 127.0.0.1". Below this is a navigation bar with four tabs: "Databases" (with a database icon), "SQL" (with a document icon), "Status" (with a status icon), and "User accounts" (with a user icon). The "SQL" tab is currently selected. Below the navigation bar, there's a white box with the text "Run SQL query/queries on server '127.0.0.1':" followed by a help icon. Below this box, the SQL query is displayed in a text area with line numbers 1, 2, and 3 on the left. The query is: `CREATE DATABASE testdb`, `CHARACTER SET utf8mb4`, and `COLLATE utf8mb4_unicode_ci;` with a cursor at the end of the third line.

Server: 127.0.0.1

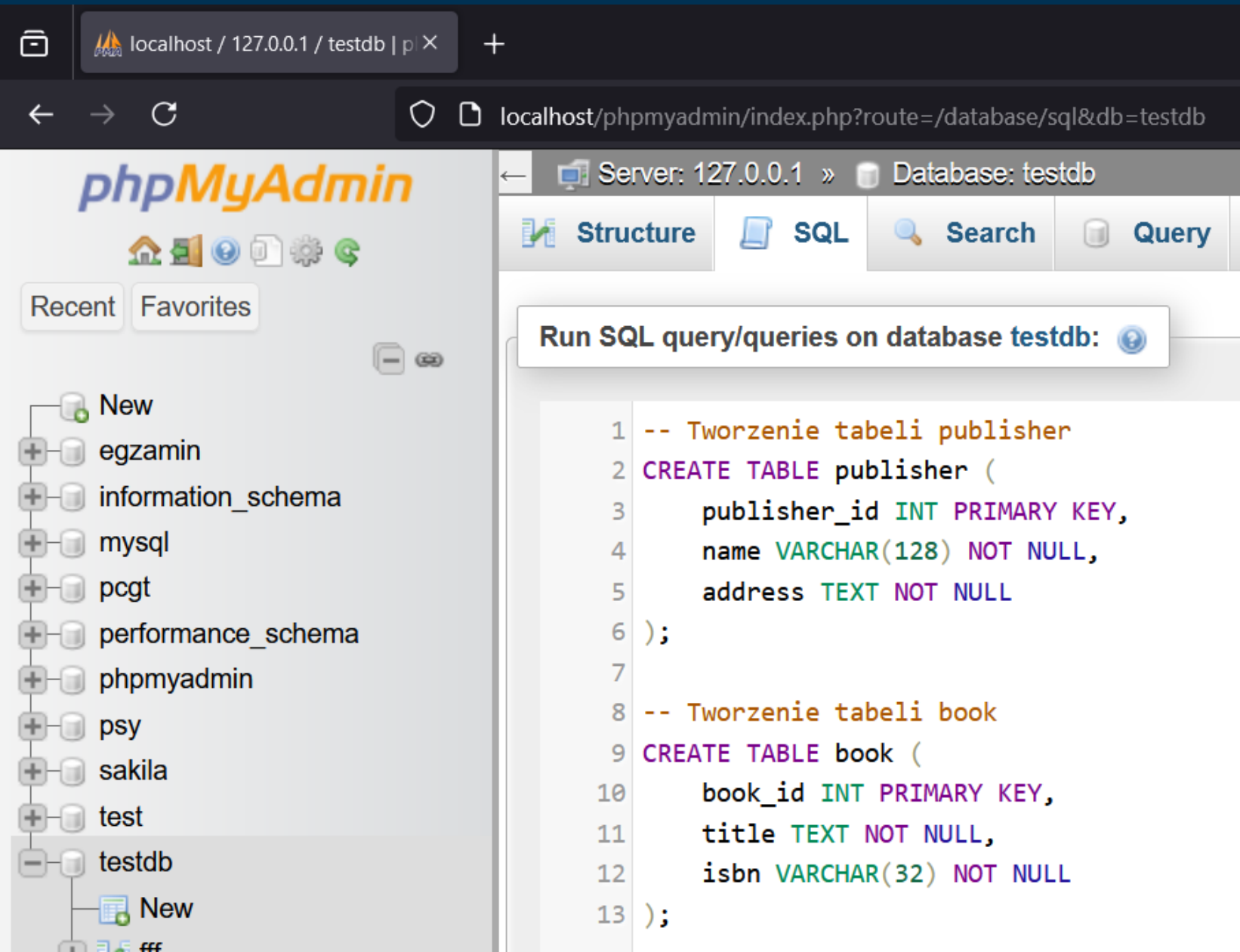
Databases SQL Status User accounts

Run SQL query/queries on server "127.0.0.1": ?

```
1 CREATE DATABASE testdb
2     CHARACTER SET utf8mb4
3     COLLATE utf8mb4_unicode_ci;
```

Jak dodać tabelę w BD

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The screenshot shows the phpMyAdmin web interface. The browser address bar indicates the URL is localhost/phpmyadmin/index.php?route=/database/sql&db=testdb. The interface includes a sidebar with a database tree on the left, showing 'testdb' selected. The main panel has tabs for 'Structure', 'SQL', 'Search', and 'Query', with 'SQL' currently active. A text box at the top of the main panel says 'Run SQL query/queries on database testdb:'. Below this, the SQL editor contains the following code:

```
1 -- Tworzenie tabeli publisher
2 CREATE TABLE publisher (
3     publisher_id INT PRIMARY KEY,
4     name VARCHAR(128) NOT NULL,
5     address TEXT NOT NULL
6 );
7
8 -- Tworzenie tabeli book
9 CREATE TABLE book (
10    book_id INT PRIMARY KEY,
11    title TEXT NOT NULL,
12    isbn VARCHAR(32) NOT NULL
13 );
```

Dla tabeli publisher :

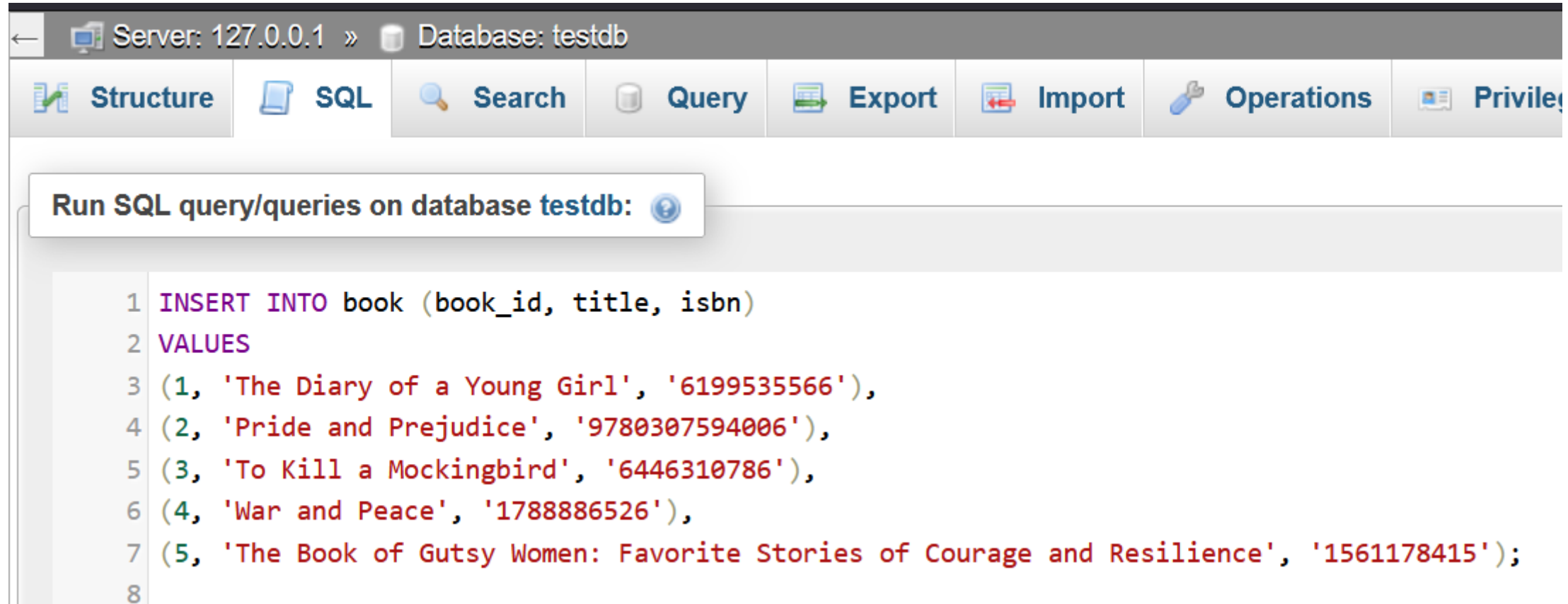
- **publisher_id INT PRIMARY KEY** - jest to klucz główny, który jednoznacznie identyfikuje każdego wydawcę.
- **name VARCHAR(128) NOT NULL** - nazwa wydawcy z limitem 128 znaków.
- **address TEXT NOT NULL** - pole tekstowe do przechowywania adresu.

Dla tabeli book:

- **book_id INT PRIMARY KEY** - klucz główny dla tabeli book.
- **title TEXT NOT NULL** - tytuł książki.
- **isbn VARCHAR(32) NOT NULL** - pole na numer ISBN z limitem 32 znaków.

Wypełnienie tabel danymi

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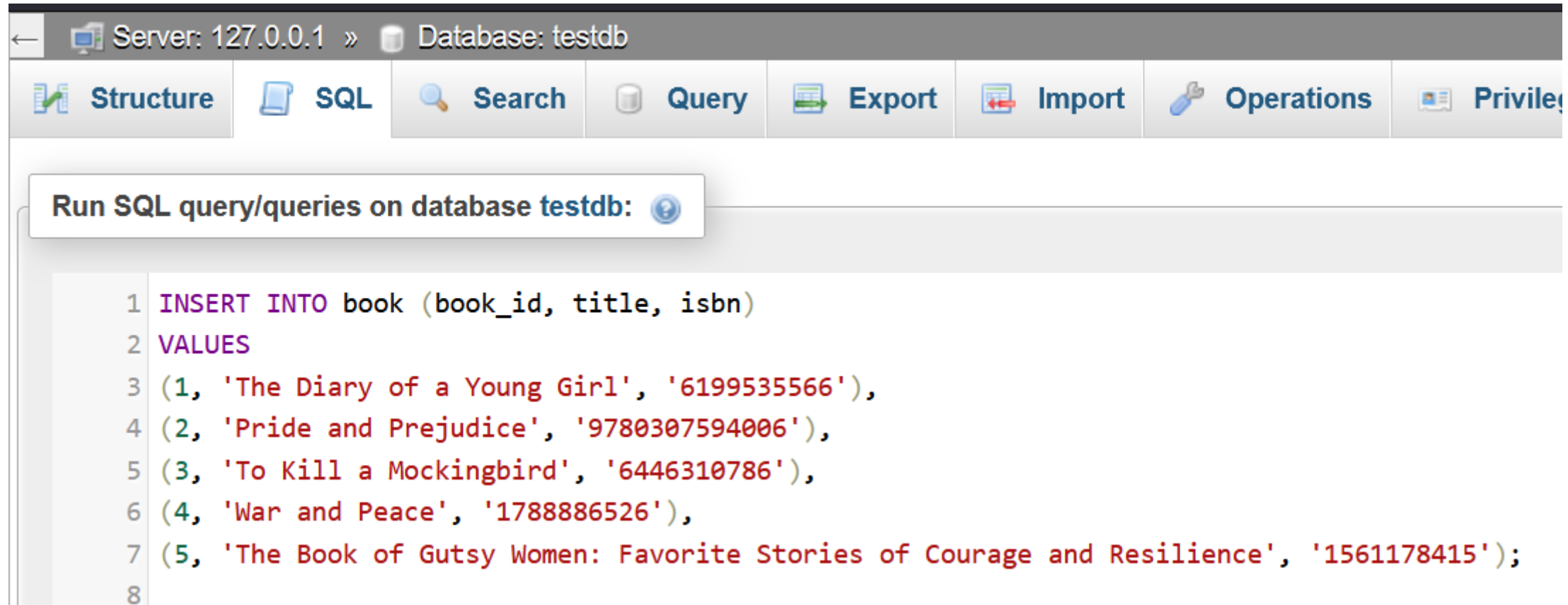
The screenshot shows a database management tool interface. At the top, there's a header bar with 'Server: 127.0.0.1' and 'Database: testdb'. Below this is a toolbar with icons and labels for 'Structure', 'SQL', 'Search', 'Query', 'Export', 'Import', 'Operations', and 'Privileges'. The 'SQL' tab is selected. Below the toolbar, there's a text box that says 'Run SQL query/queries on database testdb:'. Below this text box is a code editor with the following SQL query:

```
1 INSERT INTO book (book_id, title, isbn)
2 VALUES
3 (1, 'The Diary of a Young Girl', '6199535566'),
4 (2, 'Pride and Prejudice', '9780307594006'),
5 (3, 'To Kill a Mockingbird', '6446310786'),
6 (4, 'War and Peace', '1788886526'),
7 (5, 'The Book of Gutsy Women: Favorite Stories of Courage and Resilience', '1561178415');
8
```

To polecenie SQL wstawia pięć rekordów (książek) do tabeli book, określając identyfikator książki (book_id), tytuł (title) i ISBN (isbn). Każdy rekord zawiera unikalny identyfikator i powiązane informacje o książce.

Wypełnienie tabel danymi

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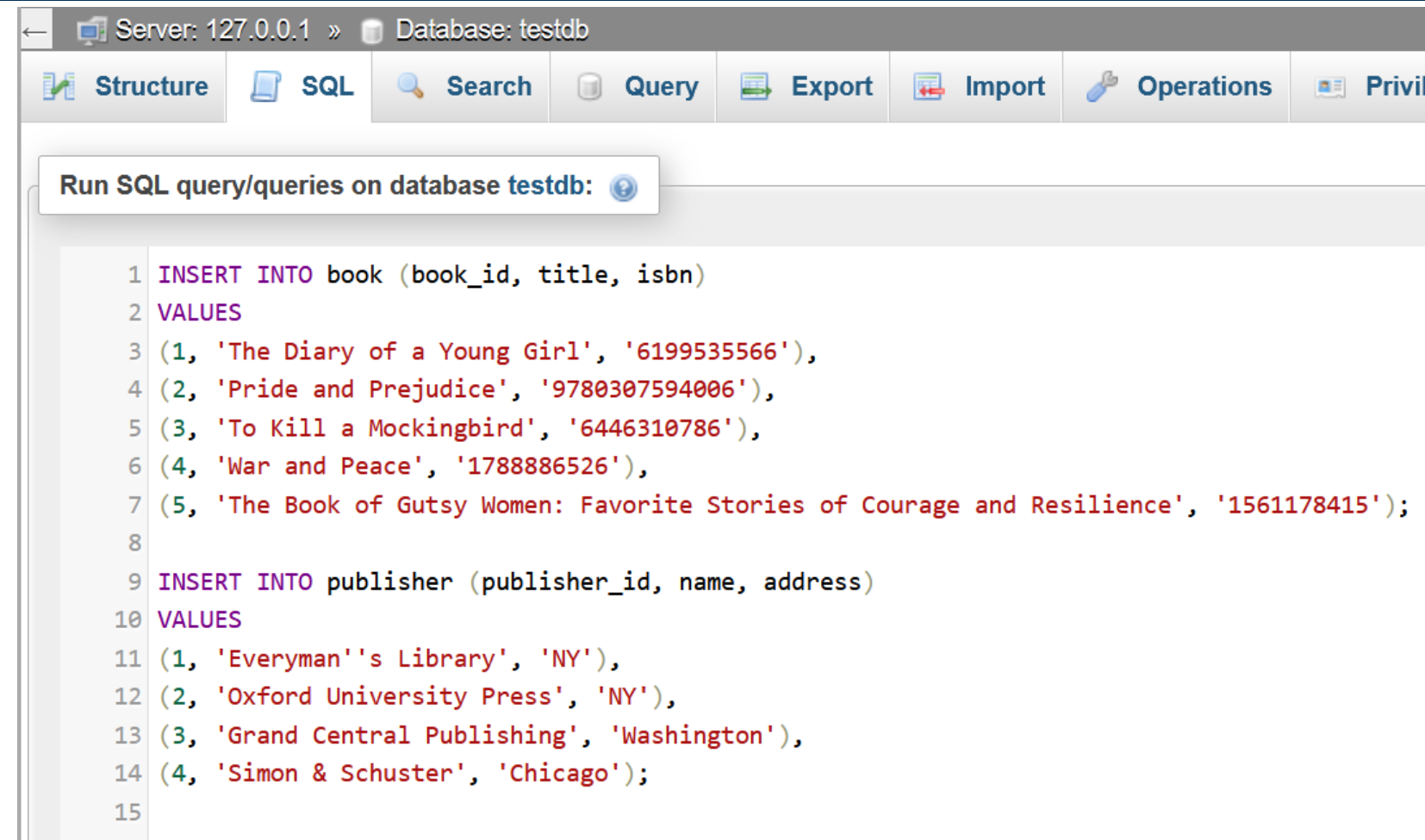
The screenshot shows a database management tool interface. At the top, there's a header bar with a back arrow, a server icon, and the text "Server: 127.0.0.1 » Database: testdb". Below this is a toolbar with icons and labels for "Structure", "SQL", "Search", "Query", "Export", "Import", "Operations", and "Privileges". The "SQL" tab is selected. Below the toolbar, there's a text box with the prompt "Run SQL query/queries on database testdb:" followed by a help icon. The main area displays an SQL query with line numbers 1 through 8 on the left margin. The query is an INSERT statement into a table named 'book' with columns 'book_id', 'title', and 'isbn'. It contains five rows of data, each with a unique 'book_id' and corresponding 'title' and 'isbn' values.

```
1 INSERT INTO book (book_id, title, isbn)
2 VALUES
3 (1, 'The Diary of a Young Girl', '6199535566'),
4 (2, 'Pride and Prejudice', '9780307594006'),
5 (3, 'To Kill a Mockingbird', '6446310786'),
6 (4, 'War and Peace', '1788886526'),
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Wypełnienie tabel danymi

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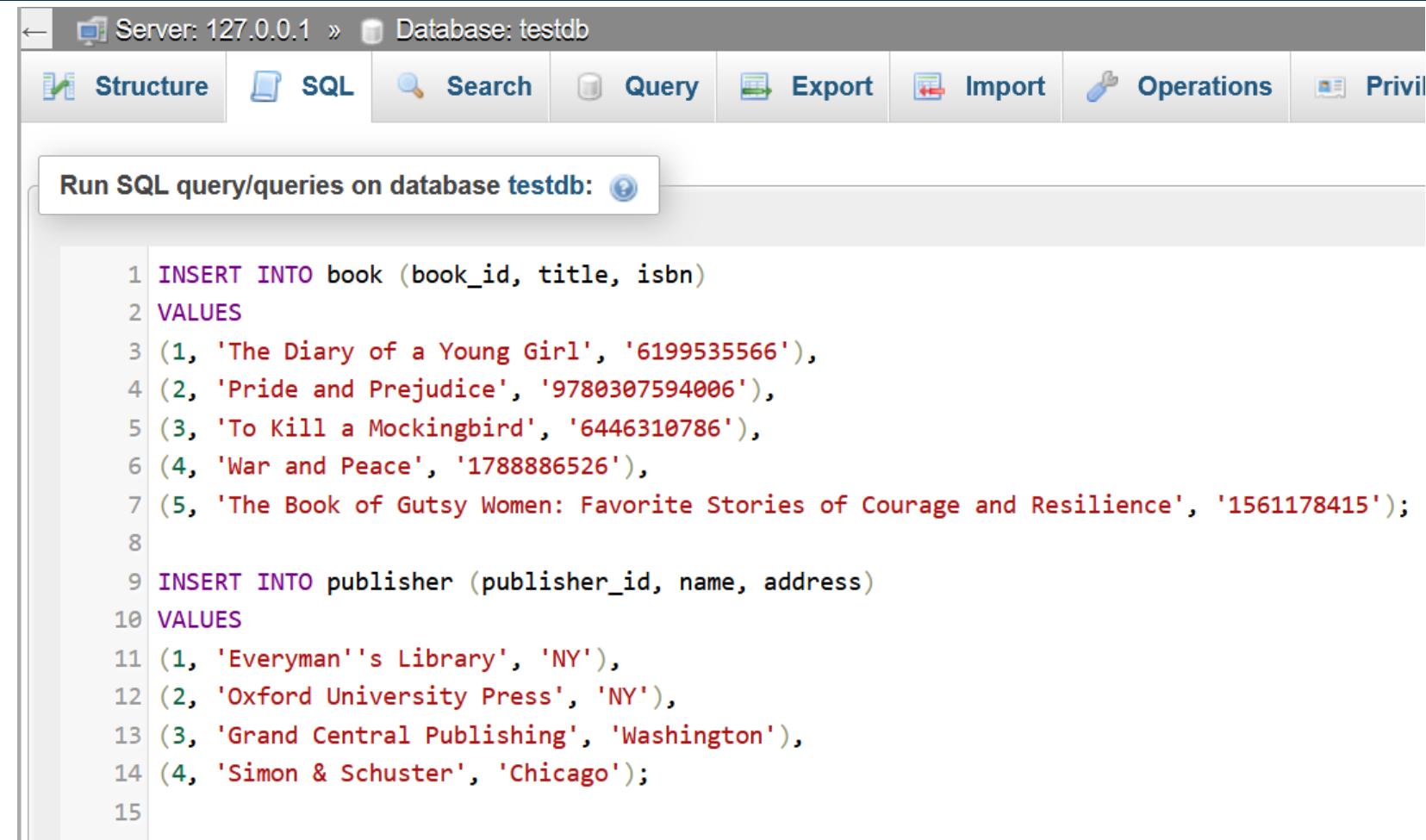
The screenshot shows a database management tool interface. At the top, there's a header bar with 'Server: 127.0.0.1 » Database: testdb'. Below this is a toolbar with icons for Structure, SQL, Search, Query, Export, Import, Operations, and Privileges. A central panel contains a text area for running SQL queries on the 'testdb' database. The queries are as follows:

```
1 INSERT INTO book (book_id, title, isbn)
2 VALUES
3 (1, 'The Diary of a Young Girl', '6199535566'),
4 (2, 'Pride and Prejudice', '9780307594006'),
5 (3, 'To Kill a Mockingbird', '6446310786'),
6 (4, 'War and Peace', '1788886526'),
7 (5, 'The Book of Gutsy Women: Favorite Stories of Courage and Resilience', '1561178415');
8
9 INSERT INTO publisher (publisher_id, name, address)
10 VALUES
11 (1, 'Everyman's Library', 'NY'),
12 (2, 'Oxford University Press', 'NY'),
13 (3, 'Grand Central Publishing', 'Washington'),
14 (4, 'Simon & Schuster', 'Chicago');
15
```

- Pojedynczy apostrof w łańcuchach SQL musi być uniknięty podwójnym apostrofem: 'Everyman's Library'.
- Każdy rekord jest oddzielony przecinkiem, a średnik (;) jest używany tylko na końcu całego zapytania.

Wypełnienie tabel danymi

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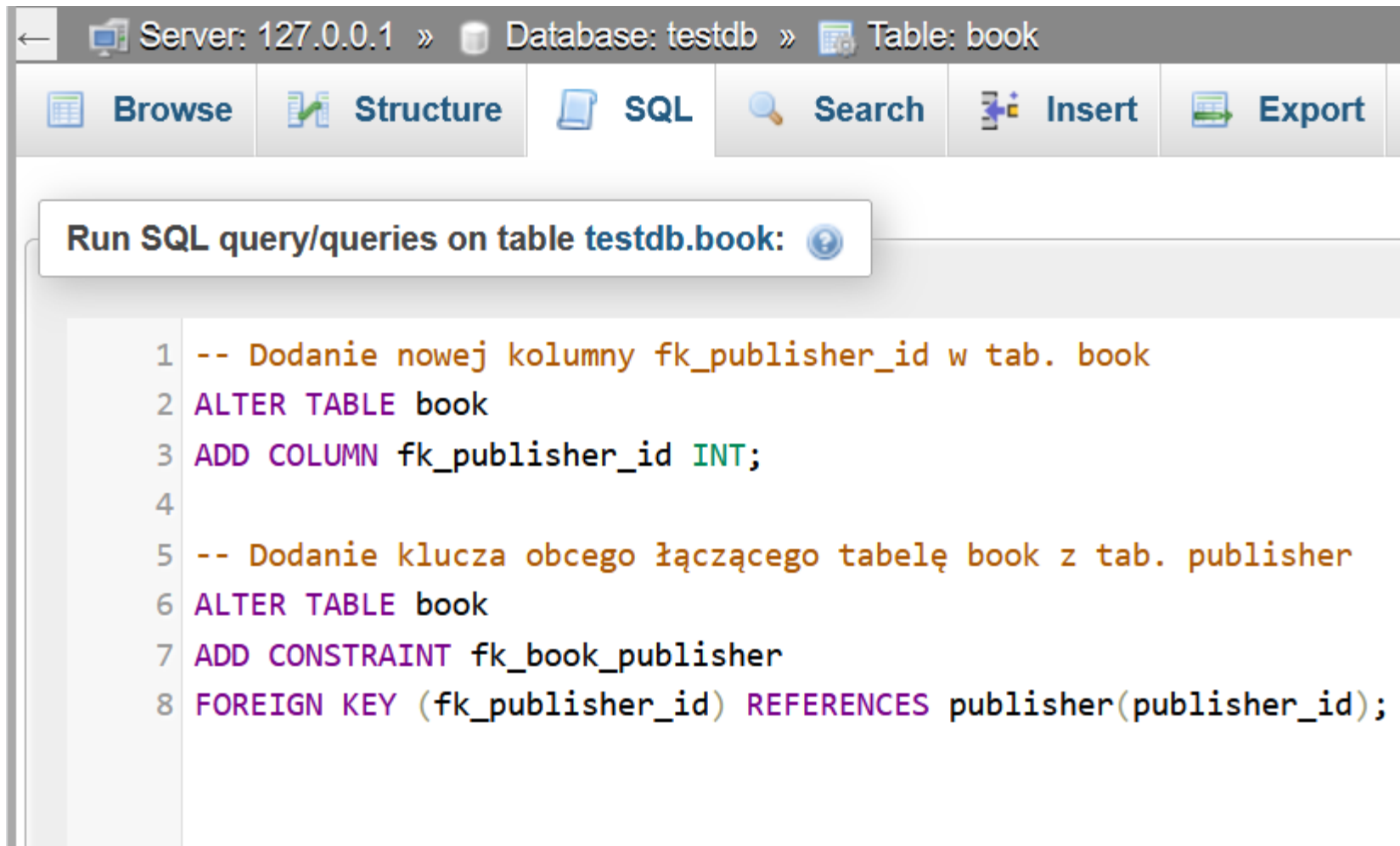
The screenshot shows a database management tool interface. At the top, there's a header bar with a back arrow, a server icon, and the text 'Server: 127.0.0.1 » Database: testdb'. Below this is a toolbar with icons and labels for 'Structure', 'SQL', 'Search', 'Query', 'Export', 'Import', 'Operations', and 'Privileges'. A central panel has a tab labeled 'Run SQL query/queries on database testdb:'. Below this tab is a text area containing SQL code for inserting data into two tables: 'book' and 'publisher'. The code is numbered 1 through 15. The 'book' table insert consists of five rows of data, and the 'publisher' table insert consists of four rows of data. The code uses single quotes for string literals and double semicolons to separate the two insert statements.

```
1 INSERT INTO book (book_id, title, isbn)
2 VALUES
3 (1, 'The Diary of a Young Girl', '6199535566'),
4 (2, 'Pride and Prejudice', '9780307594006'),
5 (3, 'To Kill a Mockingbird', '6446310786'),
6 (4, 'War and Peace', '1788886526'),
7 (5, 'The Book of Gutsy Women: Favorite Stories of Courage and Resilience', '1561178415');
8
9 INSERT INTO publisher (publisher_id, name, address)
10 VALUES
11 (1, 'Everyman's Library', 'NY'),
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15
```

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Dla połączenia tabel wykorzystamy **klucz obcy**. Dodamy w tabelę book dodatkową kolumnę z indeksem wydania



The screenshot shows a database management tool interface. At the top, there is a breadcrumb navigation: "Server: 127.0.0.1 » Database: testdb » Table: book". Below this is a toolbar with buttons: "Browse", "Structure", "SQL", "Search", "Insert", and "Export". A tab labeled "Run SQL query/queries on table testdb.book:" is active. Below the tab, there is a text area containing SQL code:

```
1 -- Dodanie nowej kolumny fk_publisher_id w tab. book
2 ALTER TABLE book
3 ADD COLUMN fk_publisher_id INT;
4
5 -- Dodanie klucza obcego łączącego tabelę book z tab. publisher
6 ALTER TABLE book
7 ADD CONSTRAINT fk_book_publisher
8 FOREIGN KEY (fk_publisher_id) REFERENCES publisher(publisher_id);
```

- **ADD COLUMN** `fk_publisher_id` `INT`; - do tabeli `book` dodawana jest nowa kolumna `fk_publisher_id` typu `INT`, która posłuży jako klucz obcy do połączenia z tabelą `publisher`.
- **ADD CONSTRAINT** `fk_book_publisher` - dodawane jest ograniczenie klucza obcego, które łączy kolumnę `fk_publisher_id` tabeli `book` z kolumną `publisher_id` tabeli `publisher`.

The screenshot shows a database management tool interface. At the top, a breadcrumb navigation bar indicates the path: Server: 127.0.0.1 » Database: testdb » Table: book. Below this is a toolbar with five buttons: 'Browse' (with a table icon), 'Structure' (with a document icon), 'SQL' (with a document icon), 'Search' (with a magnifying glass icon), and 'Insert' (with a plus icon). Below the toolbar is a text box with the prompt 'Run SQL query/queries on table testdb.book:' followed by a help icon. The main area is a code editor with a line number margin on the left. It contains two SQL queries. The first query, starting at line 1, is a comment '-- Pierwsze 2 książki' followed by an UPDATE statement to set fk_publisher_id to 1 for book_id 1 and 2. The second query, starting at line 6, is a comment '-- Pozostałe 3' followed by an UPDATE statement to set fk_publisher_id to 2 for book_id 3, 4, and 5. The cursor is at the end of line 10.

Server: 127.0.0.1 » Database: testdb » Table: book

Browse Structure SQL Search Insert

Run SQL query/queries on table testdb.book: ?

```
1  -- Pierwsze 2 książki
2  UPDATE book
3  SET fk_publisher_id = 1
4  WHERE book_id IN (1, 2);
5
6  -- Pozostałe 3
7  UPDATE book
8  SET fk_publisher_id = 2
9  WHERE book_id IN (3, 4, 5);
10 |
```

book_id	title	isbn	fk_publisher_id
1	The Diary of a Young Girl	6199535566	1
2	Pride and Prejudice	9780307594006	1
3	To Kill a Mockingbird	6446310786	2
4	War and Peace	1788886526	2
5	The Book of Gutsy Women: Favorite Stories of Coura...	1561178415	2

book_id	title	isbn	fk_publisher_id
1	The Diary of a Young Girl	6199535566	1
2	Pride and Prejudice	9780307594006	1
3	To Kill a Mockingbird	6446310786	2
4	War and Peace	1788886526	2
5	The Book of Gutsy Women: Favorite Stories of Coura...	1561178415	2

Relacja 1 do 1

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Person				Passport			
id	first_name	last_name		serial_number	registration	fk_person_id	
1	John	Snow		123456	Winterfell	1	
2	Ned	Stark		789012	Winterfell	2	
3	Rob	Baratheon		345678	King's Landing	3	
Полная выборка из объединённых таблиц							
		id	first_name	last_name	serial_number	registration	
		1	John	Snow	123456	Winterfell	
		2	Ned	Stark	789012	Winterfell	
		3	Rob	Baratheon	345678	King's Landing	

Person & Passport

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Server: 127.0.0.1 » Database: testdb

Structure SQL Search Query Export Import

Run SQL query/queries on database testdb: ?

```
1 -- Tworzenie tabeli person
2 CREATE TABLE person (
3     person_id INT PRIMARY KEY,
4     first_name VARCHAR(64) NOT NULL,
5     last_name VARCHAR(64) NOT NULL
6 );
7
8 -- Tworzenie tabeli passport
9 CREATE TABLE passport (
10    passport_id INT PRIMARY KEY,
11    serial_number INT NOT NULL,
12    fk_person_id INT,
13    FOREIGN KEY (fk_person_id) REFERENCES person(person_id)
14 );
```

Server: 127.0.0.1 » Database: testdb

Structure SQL Search Query Export

Run SQL query/queries on database testdb: ?

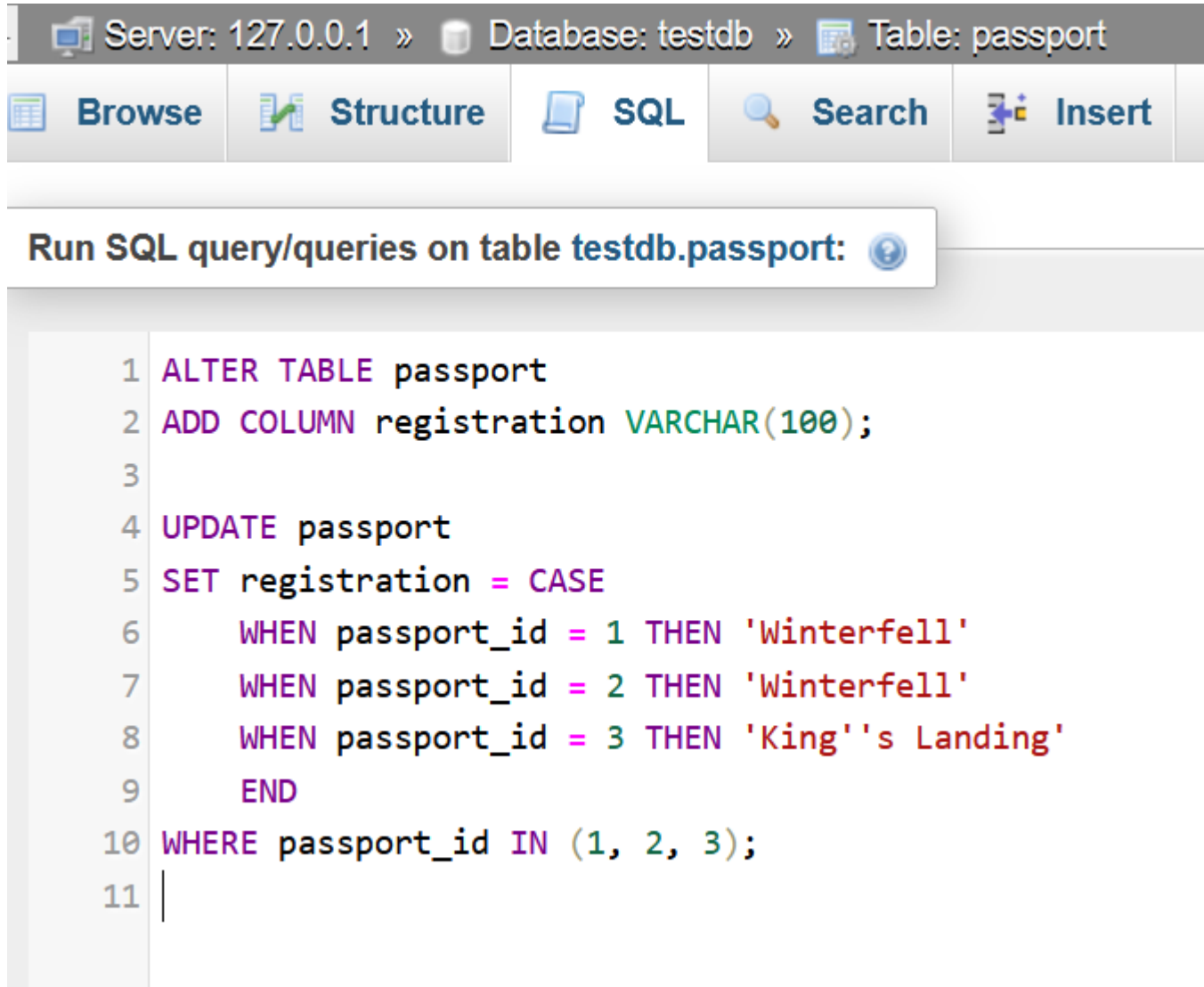
```
1 INSERT INTO person VALUES (1, 'John', 'Snow');
2 INSERT INTO person VALUES (2, 'Ned', 'Stark');
3 INSERT INTO person VALUES (3, 'Rob', 'Baratheon');
4
```

Server: 127.0.0.1 » Database: testdb

Structure SQL Search Query

Run SQL query/queries on database testdb: ?

```
1 INSERT INTO passport VALUES (1, 123456, 1);
2 INSERT INTO passport VALUES (2, 789012, 2);
3 INSERT INTO passport VALUES (3, 345678, 3);
```



The screenshot shows a database management tool interface. At the top, there is a breadcrumb navigation: "Server: 127.0.0.1 » Database: testdb » Table: passport". Below this is a toolbar with icons and labels for "Browse", "Structure", "SQL", "Search", and "Insert". A dropdown menu is open under the "SQL" button, showing the text "Run SQL query/queries on table testdb.passport:". The main area displays a SQL query with line numbers 1 through 11. The query is an UPDATE statement that adds a new column and updates its values based on the passport_id.

```
1 ALTER TABLE passport
2 ADD COLUMN registration VARCHAR(100);
3
4 UPDATE passport
5 SET registration = CASE
6     WHEN passport_id = 1 THEN 'Winterfell'
7     WHEN passport_id = 2 THEN 'Winterfell'
8     WHEN passport_id = 3 THEN 'King''s Landing'
9     END
10 WHERE passport_id IN (1, 2, 3);
11 |
```

- W tym zapytaniu **SET registration = CASE** pozwala określić różne wartości dla rejestracji w zależności od **passport_id**.
- Warunek **WHERE passport_id IN (1, 2, 3)** gwarantuje, że aktualizacja zostanie zastosowana tylko do określonych rekordów.

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[illegible]