End-term Project

For Library

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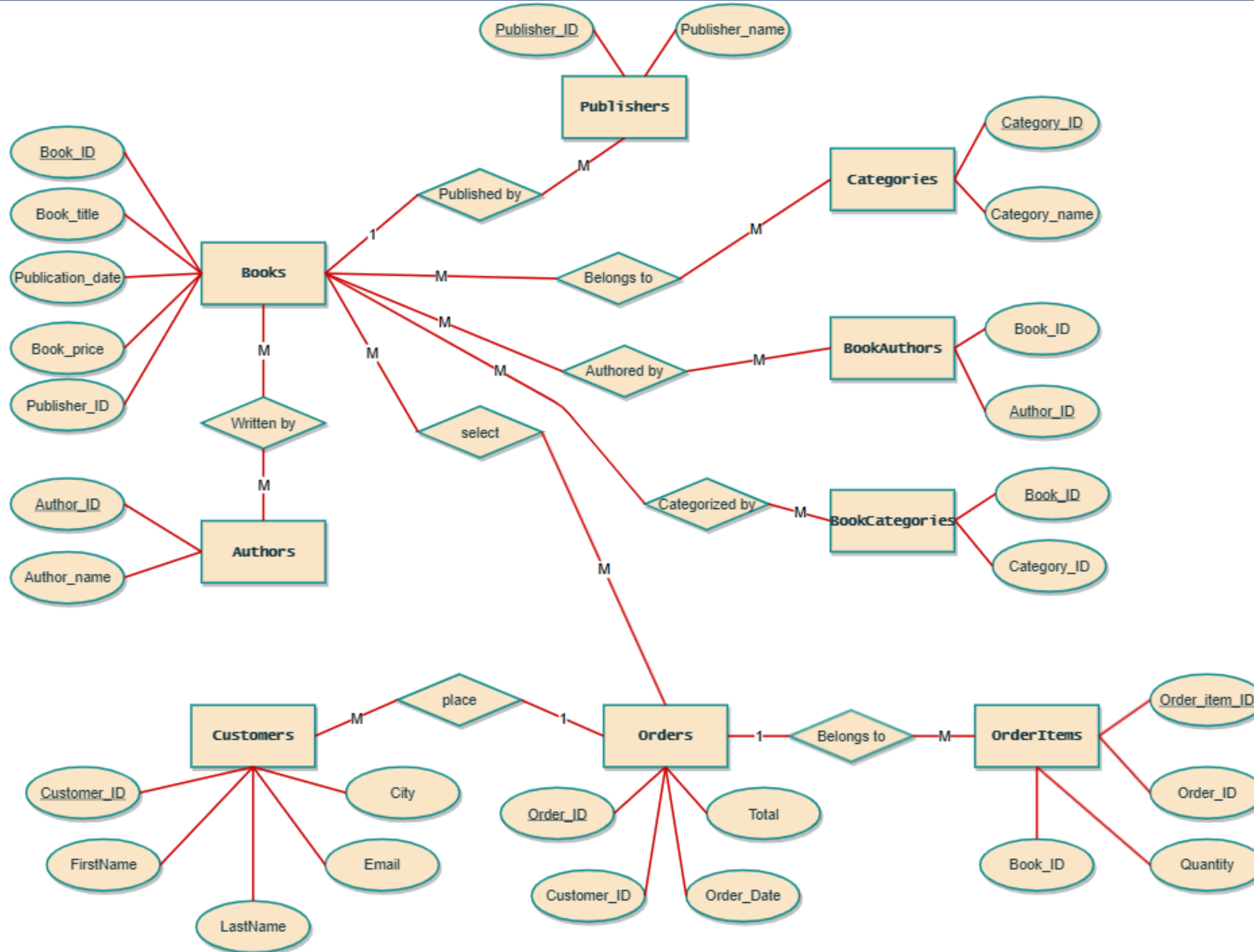
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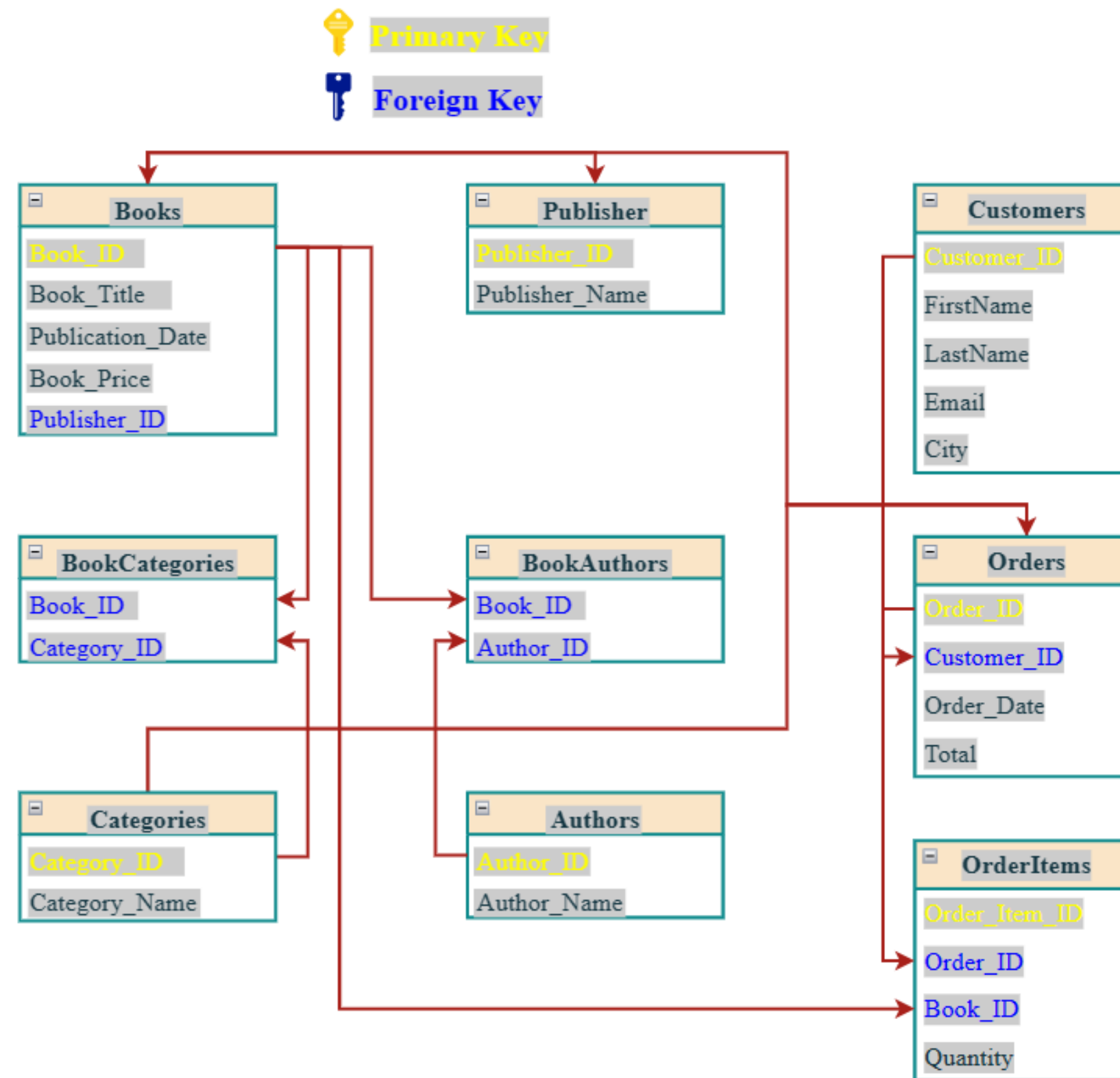**Auesbay Didar**

APRIL 26, 2023

Introduction

Some information about our project

ER diagram for our database

UML Diagram

Class diagram for our database

Normalization Rules

⊙ **1st Normal Form**

Each cell table should have only one value.

There should be no duplicate lines.

⊙ **1st Normal Form**

Table in 1NF

Has a primary key

All attributes depend on the primary key as a whole,
and not on some part of it

⊙ **3rd Normal Form**

Table in 2 NF

Has a primary key

All attributes depend only on the primary key, not on other attributes

Procedure Group by

```sql
CREATE OR REPLACE PROCEDURE GroupBooksByPublication_Date IS
    publication_date Date;
    num_books INTEGER;
BEGIN
    FOR r IN (
        SELECT Publication_Date, COUNT(*) AS NumBooks
        FROM Books
        GROUP BY Publication_Date
    ) LOOP
        publication_date := r.Publication_Date;
        num_books := r.NumBooks;
        DBMS_OUTPUT.PUT_LINE('Publication Date: ' || publication_date || ', Number of Books: ' || num_books);
    END LOOP;
END;


BEGIN
    GroupBooksByPublication_Date;
END;
```

```
Publication Date: 08/09/1988, Number of Books: 1
Publication Date: 04/01/1997, Number of Books: 1
Publication Date: 06/20/1990, Number of Books: 1
Publication Date: 07/24/1994, Number of Books: 1
Publication Date: 09/30/2000, Number of Books: 1
Publication Date: 03/24/1986, Number of Books: 1
Publication Date: 09/27/1977, Number of Books: 1
Publication Date: 07/26/1975, Number of Books: 1
Publication Date: 03/23/1979, Number of Books: 1
Publication Date: 09/11/1990, Number of Books: 1
Publication Date: 03/03/2004, Number of Books: 1
Publication Date: 03/25/1992, Number of Books: 1
Publication Date: 07/30/1993, Number of Books: 1
Publication Date: 05/22/1994, Number of Books: 1
Publication Date: 08/23/1994, Number of Books: 1
Publication Date: 11/05/2001, Number of Books: 1
Publication Date: 08/07/1983, Number of Books: 1
Publication Date: 06/14/1988, Number of Books: 1
Publication Date: 09/24/1978, Number of Books: 1
Publication Date: 02/11/1989, Number of Books: 1
Publication Date: 01/04/1988, Number of Books: 1
Publication Date: 11/12/1993, Number of Books: 1
Publication Date: 08/24/1985, Number of Books: 1
Publication Date: 11/30/1978, Number of Books: 1
Publication Date: 07/04/1998, Number of Books: 1
Publication Date: 01/02/1992, Number of Books: 1

Statement processed.

0.08 seconds
```

Function

```sql
1  CREATE OR REPLACE FUNCTION GetNumBooks RETURN INTEGER IS
2      NumBooks INTEGER;
3  BEGIN
4      SELECT COUNT(*) INTO NumBooks
5      FROM Books;
6      RETURN NumBooks;
7  END;
8
9
10 DECLARE
11     num_records INteger;
12 BEGIN
13     num_records := GetNumBooks();
14     dbms_output.put_line('Number of records: ' || num_records);
15 END;
```

```
Number of records: 101

Statement processed.
```

Procedure SQL%ROWCOUNT

```sql
1  CREATE OR REPLACE PROCEDURE UpdateBookPrice(BookID IN Number, NewPrice IN NUmber) AS
2      v_count NUMBER;
3  BEGIN
4      UPDATE Books
5      SET book_Price = NewPrice
6      WHERE Book_ID = BookID;
7
8      v_count := SQL%ROWCOUNT;
9
10     IF v_count = 1 THEN
11         DBMS_OUTPUT.PUT_LINE('Book updated successfully.');
12     ELSE
13         DBMS_OUTPUT.PUT_LINE('Error updating book.');
14     END IF;
15 END;
16
17
18 BEGIN
19     UpdateBookPrice(102, 900000);
20 END;
21
22 select * from books where book_id = 102
```

Results Explain Describe Saved SQL History

BOOK_ID	BOOK_TITLE	PUBLICATION_DATE	BOOK_PRICE	PUBLISHER_ID
102	Jay-Z: Made in America	12/19/2002	900000	13

1 rows returned in 0.00 seconds   Download

Procedure with Exeption

```sql
1  CREATE OR REPLACE PROCEDURE SearchBook(title IN VARCHAR2) IS
2      searchError exception;
3      price number;
4      pub_date date;
5  BEGIN
6      IF LENGTH(title) < 5 THEN
7          RAISE searchError;
8      Else
9          select book_price, publication_date into price, pub_date
10         from books
11         where book_title = title;
12
13         dbms_output.put_line(' Title: ' || title || ' Price: ' || price || ' Publication date: ' || pub_date);
14
15     END IF;
16
17     exception
18         when searchError then
19             dbms_output.put_line('The length of book would be greater than 5 characters');
20         when others then
21             dbms_output.put_line('Ондай кітап жоқ!');
22
23 END;
```

```sql
31  begin
32      SearchBook('ыап');
33  end;
```

Results Explain Describe Saved SQL History

The length of book would be greater than 5 characters

Statement processed.

```sql
27  begin
28      SearchBook('ыгттгрытргфап');
29  end;
30
```

Results Explain Describe Saved SQL History

Ондай кітап жоқ!

Statement processed.

Trigger

```sql
CREATE OR REPLACE TRIGGER DisplayNumBooksBeforeInsert
BEFORE INSERT ON Books
FOR EACH ROW
DECLARE
    NumBooks INTEGER;
BEGIN
    SELECT COUNT(*) INTO NumBooks FROM Books;
    DBMS_OUTPUT.PUT_LINE('Current number of books: ' || NumBooks);
END;


insert into Books(Book_id, BOOK_TITLE, PUBLICATION_DATE, BOOK_PRICE, PUBLISHER_ID) values(203, 'Дәукенді қуған Арай', '03/03/2003', 300000, 19);
```

```
Current number of books: 101


1 row(s) inserted.
```

Thank you for your attention!