

**Consolidated Final Report for the Library Database System**

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## **1. Introduction**

The following technical report will describe in detail the design along with the implementation of a new library database to store a massive amount of data retrieved from its own collection and third party databases with EBSCO being the main provider. This report is intended for the client in question, the local library and its staff, and any business ventures to satisfy the requirements.

## **2. Overview**

The local library body has a minimal, lack of storage, database system for its resources. Library officials want to update this database system with an Oracle server, branch out, and establish new business relations and a link to a wider array of information to satisfy the current growing population of researchers, old and new, who have to utilize other methods of research outside of their jurisdiction where they reside. Officials have allowed for the design, development, and implementation of a database that will allow for business relations to be established and for users to access more information than the library currently holds. Oracle database solution will act as an overhaul; the library circulation and management system will switch to oracle, to allow easier cross-checking between the databases

## **3. Literature Review**

In a frequently asked questions inquiry at Berkley College entitled “*What is a library database?*” (2020), Maria Deptula presents a simplified response to what a library database is. In it, it is said that this library database is an electronic database used for rapid search and retrieval by a computer (Deputla, 2020). Most importantly, it is a wealthy source of information with a lot of access for the signed in user to electronic mediums either created or obtained through a different or reliable source (Deptula, 2020). This definition of a library database is what this

solution is based after. Using the University of Maryland Global Campus' library as a reference, the above definition indeed fits the description and further emphasizes the importance of following this definition.

#### **4. Assumptions**

It is assumed that there may be an unlimited number of users, searches, publishers, sources, subjects, and providers. This being the fact that the number of information accessed by the library via the database is growing in number every day or so. User accounts cannot be duplicated as per the requirement to have a government issued ID information recorded as a part of the library user signup through the library management system. Searches can be made by anyone regardless of current login or no login, but to click on, request, or access the source the user has to sign-in.

#### **5. Design Decision**

##### **A. Design Reference and Layout**

The University of Maryland Global Campus' library was used as a reference to map out and model the entity relationship diagram. As a result, there are six entities: the library user entity to represent the front-end users who have full access to the database; a search entity to keep track of searches made acting as a gateway between the user and resource information; a provider entity that stores information of the third-party database the local library finally has access to and their relevant information; a publisher table storing information regarding publishers from the sources in the library database also containing two foreign keys to link the provider and source tables together; a sources entity displaying resource title and link to the main article containing a subject foreign key to link it to the subject table; and a subject entity displaying relevant subjects, geography, and language of sources in the database. A UserInfo and

SearchInfo view is provided to quickly fetch information regarding user of library database and the searches of the library database. This entity relationship diagram can be altered if requirements need changing.

### **B. Assumptions and Security Measures**

Users will provide their valid login information, which is verified and stored in the LibraryUser entity to mitigate full access to the library. As stated in the assumptions section, the search system will act as a gateway between the user and the provider, which displays all information based on the keyword entered by the user. The user will send requests and based on their eligibility to view; access will be authorized to the database. Users can access the source due to the link provided in the database that corresponds with said source. Front-end users will gain access through login and the search function as stated, back-end database administrators and systems users will have full administrative privileges and access to the database.

### **C. Database Management System**

Oracle Database 19c 12.2.0.1 64-bit running on Windows 10 with Oracle SQL developer 19.1.0.094 Build 094.2042 to design the database. This database solution is chosen due to familiarity with Oracle SQL language and the features outlined in the Statement of Work section F part d as it will satisfy the needs of the official for a reliable and stable database. The design of the database itself structured with the goal in mind of being simple for necessary data definition or manipulation languages to be utilized as seen fit to add new fields and update information in the database.

## **6. Statement of Work**

### **A. Overview**

This database will be for a public library in the local area with a wide array of information and fast information access. The municipality identified a need for a new library

database with a better server in Oracle database and more access to resources to benefit users and researchers in the area. The storage and scalability of Oracle will increase not only front-end user satisfaction but back-end user productivity. Benefits of this solution include a cost-effective server, faster retrieval, wider user access and personalization, and better organized resources.

### **B. Objective of Database Project**

The goal is to design and implement a library database to keep track of reliable resources, research materials from academic journals, newspapers, magazines, e-books, web resources, and multimedia (Deptula, 2020). It will serve as a hub of information linked to libraries and third-party databases like EBSCO and JSTOR that is a reliable source for anyone within the region. Library staff, publishers, authors, and the user online within the library network will be involved. This goal will be accomplished within 2 months as time is given to gain the skills and knowledge necessary during the current academic session to obtain said goal. With the purpose of the database established, the design process will take effect including research and organizing the required information in tables, specifying primary keys and relations, refining database and applying normalization ("Database design basics," n.d.).

### **C. Project Scope**

The scope of the system will be used as an online resource for high quality research done by public library user. Post-initial release and if it functions well, the database can be extended to be accessed by university and government libraries. Work will be done with the goal of providing a wide array of research material and information stored to be retrieved by the user. The project will not work as a library management system or library circulation system. Instead, they operate as separate entities apart of the amalgam that is the library. In-scope work will entail:

- Technical report
- Requirement definition

- Entity-Relationship Diagram
- Data Definition Language (DDL) scripts to create entities this database will use to store information in.
- A sample of the Data Manipulation Language (DML) script to understand how information is stored and in what manner.
- A sample of SQL queries to showcase the analysis and retrieval methods that can be utilized for this database.

The out-of-scope work will entail:

- Purchasing resource databases from EBSCO, JSTOR, ScienceDirect, and other resource database providers which will require millions of dollars.
- Alerting users of new login and library database and retrieving existing login information to the new system.
- Training library staff on maintenance and administration tasks.

#### **D. Database Goals, Expectations, and Deliverables**

The goal will be for information to be accessed that will provide more in-depth research. It is expected that data will be accurate, and retrieval will mean slower loading time. The relations will be mapped out using ER Assistant and developed using Oracle SQL Developer application. Deliverables will include a technical report involving a statement of work, requirements definition, ERD diagram, DDL script to create the entities in Oracle SQL Developer, DDL script output report, and example DML and SQL query scripts to showcase database functionality.

#### **E. Database Benefits**

The local public library will have an updated database of resources and content. The Oracle server is highly reliable despite licencing costs. The server allows the cutting of systems

downtime and lowering hardware expenditure. Oracle prides itself on high performance backup and recovery which is crucial for this database and its constant need for updating. Multiple databases can be supported within the same transaction. This allows an easier link between the library circulation system, management system, and resource database (“Oracle Database Advantages”, 2021).

## **F. Project Hardware / Software Tools**

The computer used in this project has the following hardware specifications:

- a.** Intel Core i5 460M @ 2.53GHz; 4GB Dual-Channel DDR3 @ 532MHz; Dell Inc. 02K3Y4; Generic PnP Monitor (1366x768@60Hz); 232GB Western Digital WDC WD2500BEKT-75A25T0

- b. Diagramming Tools Identified:**

- i.** ER-Assistant Version 2.10 in Windows within the Citrix Workspace app for HTML5 v: 20.9.0.4133 will be used as a diagramming tool.

- c. Office Productivity**

- i.** Microsoft Word on OneDrive Live, running on Windows 10.

- d. Database and Access Method Identified:**

- i.** Oracle Database 19c is utilized. Oracle SQL Developer 19.1.0.094 Build 094.2042 in Windows 10 will be used as a database development medium. After utilizing the diagramming tool, a database will be created from scratch using DDL.

- e. Client Access**

- i.** Information will be accessed via a computer on library campus or an authorized mobile app from the library. Using the search functionality, the server processes requested information and retrieves data from outside

resource database providers. Based on keywords used, information relevant to said keyword(s) will be presented to the client.

### **G. SQL Usage and Style Guide**

The back-end user will be granted privileges for working usage of DDL and DML queries.

- Spaced out, easily viewable code written in a notepad .txt editor then transferred to a SQL workspace is how the code below was written but not required post-installation.
- Usage of comments, /\*example\*/ for multi-line comments and – for single line comments, to communicate the purpose of each section of the code.
- Unique naming conventions to avoid redundancy and errors.
- Character lengths reach up to 1000 due to long urls placed in the SOURCES table.
- Minimal use of underscores.
- Capitalized DDL and DML functions with lower case table names for visual clarity.
- Utilize any DDL and DML when required in the proper formats listed above.

## **7. Requirements Definition**

### **A. Business Rules**

- a. A USER can engage in none or many SEARCH.
- b. A SEARCH can only be done by one USER only.
- c. A SEARCH retrieves information from many PROVIDER.
- d. A PROVIDER provides resource database information based on one and only one SEARCH.
- e. PROVIDER, SOURCE, PUBLISHER, and SUBJECT can only be accessed through a SEARCH by the USER via search result.
- f. A PROVIDER provides information about one or many PUBLISHER.
- g. A PUBLISHER's information comes from one PROVIDER only.
- h. A PUBLISHER publishes one or many SOURCES.
- i. A SOURCE is published by one and only one PUBLISHER.
- j. A SOURCE may have one or many SUBJECTs.
- k. A SUBJECT is assigned to one SOURCE at a time.



## **B. Entity and Attribute Description**

Entity Name: LIBRARYUSER

Entity Description: Users who utilize the library research database.

Main attributes of USER:

User\_ID (primary key): A unique numeric identifier for the user's account.

Password: A hidden alphanumeric identifier unique to the user for login purposes.

Username: A visible alphanumeric identifier unique to the user for login purposes.

Institution: A char attribute describing

Name: Legal name of the user.

Entity Name: SEARCHES

Entity Description: Matches keywords entered by user to all available sources. Acts a bridge to the library database for the USER. Retrieves information from the PROVIDER database.

Main attributes of SEARCH:

Search\_ID (primary key): A unique numeric identifier for the search ID in progress.

Fields: A search bar utilized by the user that uses search history algorithms to autofill when the user is making an inquiry.

Search Mode: Mode that aligns with the search type: 'Boolean', 'Find all my search terms', and 'Find any of my search terms'.

Discipline: The subject-like disciplines, if any, utilized by the user to narrow search.

Entity Name: PROVIDER

Entity Description: The external databases that provides the content seen in the library search.

Main attributes of PROVIDER:

ID (primary key): A unique numeric identifier given to the content provider.

Name: A char attribute representing the name of the external database provider.

URL: The main website of the content provider.

Subject Area: The subject area that the content provider specializes or focuses on.

Parent Company: The name of the company behind the database.

Entity Name: PUBLISHER

Entity Description: The company or person that prepares the source.

Main attributes of PROVIDER:

Publisher\_ID (primary key): A unique numeric identifier given to the publisher.

Provider\_ID (foreign key): A numeric identifier for the provider that provides information about the publisher. Matches the ID of the PROVIDER entity.

ISSN / ISBN (foreign key): A numeric identifier for the source that the publisher issues that matches the Source\_ID of the SOURCE entity.

Publication: Name of the Publisher.

Affiliation: The name of the affiliations of the authors.

Author Name: Name of the authors behind the publication.

Entity Name: SOURCES

Entity Description: The source and its types including, but not limited to, academic journal, periodical, book review, e-book, multimedia etc... seen in the library search.

Main attributes of PROVIDER:

Source\_ID (primary key): A unique numeric identifier given to the source.

URL: DOI or link of the source.

Source Type: The type of source, for example: academic journal, periodical, book review, e-book, etc...

Title: Name of the source.

Subject\_ID (foreign key): A unique numeric identifier for the subject that describes the discipline the source falls under. Matches the ID of the SUBJECT entity.

Year: The date field describing when the source was published.

Entity Name: SUBJECT

Entity Description: The discipline that describes the source and is used for narrowing library research.

Main attributes of PROVIDER:

ID (primary key): A unique numeric identifier given to the publisher.

Name: The name of the subject.

Language: Describes the language of the source.

Geography: Describes the location the source was published at.

### **C. Relationship and Cardinality**

Relationship: search between USER and SEARCHES

Cardinality: 1:M between USER and SEARCHES

Business rule: A user can do zero or many searches, a search can be done regardless of whether a user is logged in.

Relationship: retrieves between SEARCHES and PROVIDER

Cardinality: 1:M between SEARCHES and PROVIDER

Business rule: A search can retrieve information from many providers, and provider provides information from one search request.

Relationship: provides information between PROVIDER and PUBLISHER

Cardinality: 1:M between PROVIDER and PUBLISHER

Business rule: A publisher's information comes from only one provider, a provider can provide information about many publishers.

Relationship: publishes sources between PUBLISHER and SOURCES

Cardinality: 1:M between PUBLISHER and SOURCES

Business rule: A publisher issues one or many sources, a source can only be issues by one publisher.

Relationship: source has subject between SOURCES and SUBJECT

Cardinality: 1:M between SOURCES and SUBJECT

Business rule: A source has one or many subjects, a subject can only be assigned to one source at a time.

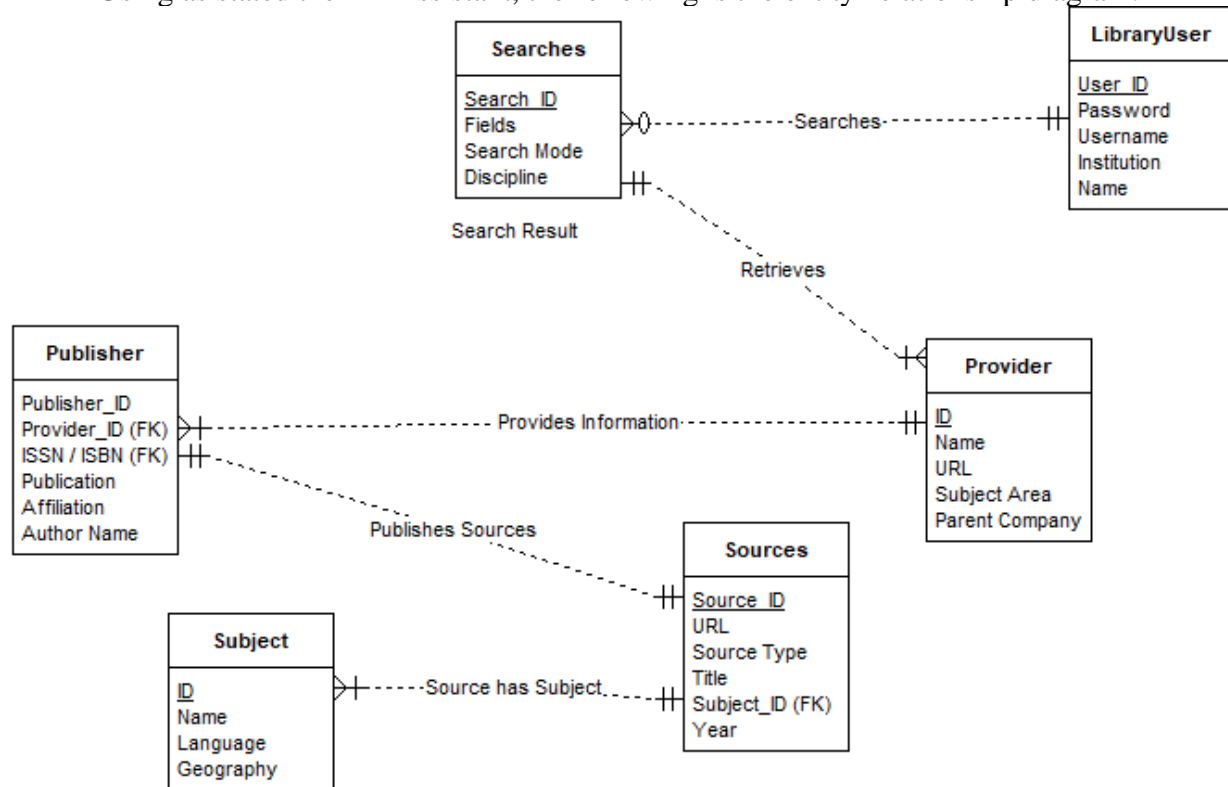
### **D. Assumptions and Special Considerations**

There may be an unlimited number of users, searches, publishers, sources, subjects, and providers. Foreign keys exist in the PUBLISHER and SOURCES entities to link the PROVIDER, PUBLISHER, SOURCES, and SUBJECT entities.

## 8. Database Design

### A. Entity-Relationship Diagram

Using as stated the ER Assistant, the following is the entity-relationship diagram.



### B. DDL Source Code

Due to the constraints of this version of Microsoft Word, the code is copied and pasted.

```
--DROP statements below
DROP TRIGGER LibraryUser;
DROP TRIGGER Searches;
DROP TRIGGER Provider;
DROP TRIGGER Subject;
DROP TRIGGER Publisher;
DROP TRIGGER Sources;

DROP SEQUENCE LibraryUser_userid;
DROP SEQUENCE Searches_searchid;
DROP SEQUENCE Provider_id;
DROP SEQUENCE Subject_id;
DROP SEQUENCE Publisher_publisherid;
DROP SEQUENCE Sources_sourceid;

DROP VIEW UserInfo;
DROP VIEW SearchInfo;

DROP INDEX Publisher_providerid_FK;
DROP INDEX Publisher_issnisbn_FK;
DROP INDEX Publisher_publication;
```

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```
DROP INDEX Publisher_author_name;

DROP INDEX Sources_subjectid_FK;
DROP INDEX Sources_title;

DROP INDEX Subject_name;

DROP INDEX Provider_name;
DROP INDEX Provider_url;

DROP INDEX Searches_fields;

DROP INDEX LibraryUser_institution;
DROP INDEX LibraryUser_username;

DROP TABLE Publisher;
DROP TABLE Sources;
DROP TABLE Subject;
DROP TABLE Provider;
DROP TABLE Searches;
DROP TABLE LibraryUser;

/* Tables are created below */

CREATE TABLE LibraryUser (
    userid          INTEGER          NOT NULL,
    name            VARCHAR2(255)    NOT NULL,
    username        VARCHAR2(30)     NOT NULL,
    password        VARCHAR2(30)     NOT NULL,
    institution      VARCHAR2(255),

    CONSTRAINT PK_LibraryUser PRIMARY KEY (userid)
);

CREATE TABLE Searches (
    searchid        INTEGER          NOT NULL,
    fields          VARCHAR2(512)    NOT NULL,
    discipline      VARCHAR2(200),
    search_mode     CHAR(1),

    CONSTRAINT PK_Searches PRIMARY KEY (searchid)
);

CREATE TABLE Provider (
    id              INTEGER          NOT NULL,
    name            VARCHAR2(512)    NOT NULL,
    subject_area    VARCHAR2(512)    NOT NULL,
    parent_company  VARCHAR2(512)    NOT NULL,
    url             VARCHAR2(1024)   NOT NULL,

    CONSTRAINT PK_Provider PRIMARY KEY (id)
);

CREATE TABLE Subject (
    id              INTEGER          NOT NULL,
    name            VARCHAR2(512)    NOT NULL,
    language        VARCHAR2(512)    NOT NULL,
    geography       VARCHAR2(512)    NOT NULL,

    CONSTRAINT PK_Subject PRIMARY KEY (id)
);

CREATE TABLE Sources (
```

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```

        sourceid          INTEGER          NOT NULL,
        subjectid         INTEGER          NOT NULL,
        source_type       VARCHAR2(512)    NOT NULL,
        title              VARCHAR2(1024)   NOT NULL,
        year               INTEGER,
        url                VARCHAR2(1024)   NOT NULL,

        CONSTRAINT PK_Sources PRIMARY KEY (sourceid),
        CONSTRAINT FK_Sources_subjectid FOREIGN KEY (subjectid) REFERENCES Subject(id)

);

CREATE TABLE Publisher (
    publisherid           INTEGER          NOT NULL,
    providerid            INTEGER          NOT NULL,
    issnisbn              INTEGER          NOT NULL,
    publication            VARCHAR2(512)    NOT NULL,
    affiliation            VARCHAR2(512),
    author_name            VARCHAR2(512),

    CONSTRAINT PK_Publisher PRIMARY KEY (publisherid),
    CONSTRAINT FK_Publisher_providerid FOREIGN KEY (providerid) REFERENCES
Provider(id),
    CONSTRAINT FK_Publisher_issnisbn FOREIGN KEY (issnisbn) REFERENCES
Sources(sourceid)

);

/*Indices are created below*/

--NK for User
CREATE INDEX LibraryUser_username ON LibraryUser (username);
--FQC for User
CREATE INDEX LibraryUser_institution ON LibraryUser (institution);

--NK for Search
CREATE INDEX Searches_fields ON Searches (fields);

--NK for Provider
CREATE UNIQUE INDEX Provider_url ON Provider (url);
--FQC for Provider
CREATE INDEX Provider_name ON Provider (name);

--FQC for Subject
CREATE INDEX Subject_name ON Subject (name);

--FK for Source
CREATE INDEX Sources_subjectid_FK ON Sources (subjectid);
--FQC for Source
CREATE INDEX Sources_title ON Sources (title);

--FK for Publisher
CREATE INDEX Publisher_providerid_FK ON Publisher (providerid);
CREATE INDEX Publisher_issnisbn_FK ON Publisher (issnisbn);
--FQC for Publisher
CREATE INDEX Publisher_publication ON Publisher (publication);
CREATE INDEX Publisher_author_name ON Publisher (author_name);

/*Alters tables*/

ALTER TABLE LibraryUser ADD (
    created_by            VARCHAR2(50),
    date_created          DATE,
```

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```
        modified_by    VARCHAR2(50),
        date_modified   DATE
    );

ALTER TABLE Searches ADD (
    created_by    VARCHAR2(50),
    date_created   DATE,
    modified_by    VARCHAR2(50),
    date_modified   DATE
);

ALTER TABLE Provider ADD (
    created_by    VARCHAR2(50),
    date_created   DATE,
    modified_by    VARCHAR2(50),
    date_modified   DATE
);

ALTER TABLE Subject ADD (
    created_by    VARCHAR2(50),
    date_created   DATE,
    modified_by    VARCHAR2(50),
    date_modified   DATE
);

ALTER TABLE Sources ADD (
    created_by    VARCHAR2(50),
    date_created   DATE,
    modified_by    VARCHAR2(50),
    date_modified   DATE
);

ALTER TABLE Publisher ADD (
    created_by    VARCHAR2(50),
    date_created   DATE,
    modified_by    VARCHAR2(50),
    date_modified   DATE
);

/*Views*/
--Business requirement: To fetch information quickly regarding user of library
database
CREATE OR REPLACE VIEW UserInfo AS
SELECT userid, name, institution
FROM LibraryUser;

--Business requirement: To fetch information quickly regarding search of library
engaged via user
CREATE OR REPLACE VIEW SearchInfo AS
SELECT searchid, fields, search_mode
FROM Searches;

/*Creates Sequence*/
CREATE SEQUENCE LibraryUser_userid
    INCREMENT BY 1
    START WITH 0
    NOMAXVALUE
    MINVALUE 0
    NOCACHE;

CREATE SEQUENCE Searches_searchid
    INCREMENT BY 1
```

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```
START WITH 0
NOMAXVALUE
MINVALUE 0
NOCACHE;

CREATE SEQUENCE Provider_id
  INCREMENT BY 1
  START WITH 0
  NOMAXVALUE
  MINVALUE 0
  NOCACHE;

CREATE SEQUENCE Subject_id
  INCREMENT BY 1
  START WITH 0
  NOMAXVALUE
  MINVALUE 0
  NOCACHE;

CREATE SEQUENCE Sources_sourceid
  INCREMENT BY 1
  START WITH 0
  NOMAXVALUE
  MINVALUE 0
  NOCACHE;

CREATE SEQUENCE Publisher_publisherid
  INCREMENT BY 1
  START WITH 0
  NOMAXVALUE
  MINVALUE 0
  NOCACHE;

/*Create Triggers*/
--The modified by, date modified, created by, date created, values will be updated in
a newly inserted row in the User schema when a new user is inserted.
CREATE OR REPLACE TRIGGER LibraryUser
  BEFORE INSERT OR UPDATE ON LibraryUser
  FOR EACH ROW
  BEGIN
    IF INSERTING THEN
      IF :NEW.userid IS NULL THEN
        :NEW.userid := LibraryUser_userid.NEXTVAL;
      END IF;
      IF :NEW.created_by IS NULL THEN
        :NEW.created_by := USER;
      END IF;
      IF :NEW.date_created IS NULL THEN
        :NEW.date_created := SYSDATE;
      END IF;
    END IF;
    IF INSERTING OR UPDATING THEN
      :NEW.modified_by := USER;
      :NEW.date_modified := SYSDATE;
    END IF;
  END;

/
--When a new search is added, the modified by, date modified, created by, date
created, values will be updated in a newly inserted row.
CREATE OR REPLACE TRIGGER Searches
  BEFORE INSERT OR UPDATE ON Searches
  FOR EACH ROW
  BEGIN
```

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```
        IF INSERTING THEN
            IF :NEW.searchid IS NULL THEN
                :NEW.searchid := Searches_searchid.NEXTVAL;
            END IF;
            IF :NEW.created_by IS NULL THEN
                :NEW.created_by := USER;
            END IF;
            IF :NEW.date_created IS NULL THEN
                :NEW.date_created := SYSDATE;
            END IF;
        END IF;
        IF INSERTING OR UPDATING THEN
            :NEW.modified_by := USER;
            :NEW.date_modified := SYSDATE;
        END IF;
    END;
/
--The modified by, date modified, created by, date created, values will be updated in
a newly inserted row.
CREATE OR REPLACE TRIGGER Provider
    BEFORE INSERT OR UPDATE ON Provider
    FOR EACH ROW
    BEGIN
        IF INSERTING THEN
            IF :NEW.id IS NULL THEN
                :NEW.id := Provider_id.NEXTVAL;
            END IF;
            IF :NEW.created_by IS NULL THEN
                :NEW.created_by := USER;
            END IF;
            IF :NEW.date_created IS NULL THEN
                :NEW.date_created := SYSDATE;
            END IF;
        END IF;
        IF INSERTING OR UPDATING THEN
            :NEW.modified_by := USER;
            :NEW.date_modified := SYSDATE;
        END IF;
    END;
/
--The modified by, date modified, created by, date created, values will be updated in
a newly inserted row.
CREATE OR REPLACE TRIGGER Subject
    BEFORE INSERT OR UPDATE ON Subject
    FOR EACH ROW
    BEGIN
        IF INSERTING THEN
            IF :NEW.id IS NULL THEN
                :NEW.id := Subject_id.NEXTVAL;
            END IF;
            IF :NEW.created_by IS NULL THEN
                :NEW.created_by := USER;
            END IF;
            IF :NEW.date_created IS NULL THEN
                :NEW.date_created := SYSDATE;
            END IF;
        END IF;
        IF INSERTING OR UPDATING THEN
            :NEW.modified_by := USER;
            :NEW.date_modified := SYSDATE;
        END IF;
    END;
/
```



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```
--The modified by, date modified, created by, date created, values will be updated in
a newly inserted row.
CREATE OR REPLACE TRIGGER Publisher
BEFORE INSERT OR UPDATE ON Publisher
FOR EACH ROW
BEGIN
    IF INSERTING THEN
        IF :NEW.publisherid IS NULL THEN
            :NEW.publisherid := Publisher_publisherid.NEXTVAL;
        END IF;
        IF :NEW.created_by IS NULL THEN
            :NEW.created_by := USER;
        END IF;
        IF :NEW.date_created IS NULL THEN
            :NEW.date_created := SYSDATE;
        END IF;
    END IF;
    IF INSERTING OR UPDATING THEN
        :NEW.modified_by := USER;
        :NEW.date_modified := SYSDATE;
    END IF;
END;
/
--The modified by, date modified, created by, date created, values will be updated in
a newly inserted row.
CREATE OR REPLACE TRIGGER Sources
BEFORE INSERT OR UPDATE ON Sources
FOR EACH ROW
BEGIN
    IF INSERTING THEN
        IF :NEW.sourceid IS NULL THEN
            :NEW.sourceid := Sources_sourceid.NEXTVAL;
        END IF;
        IF :NEW.created_by IS NULL THEN
            :NEW.created_by := USER;
        END IF;
        IF :NEW.date_created IS NULL THEN
            :NEW.date_created := SYSDATE;
        END IF;
    END IF;
    IF INSERTING OR UPDATING THEN
        :NEW.modified_by := USER;
        :NEW.date_modified := SYSDATE;
    END IF;
END;
/
```

## C. DML and Query Source Code

```
Set define off;
/*The following will populate all tables with at least 10 rows*/
--10 Tables
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Hanif lumsden', 'HanifLumsden1', 'CarsRock1', 'University of Maryland Global
Campus');
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Iylah Rhodes', 'IRoad', 'Genisis304', NULL);
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Ffion Vickers', 'VicksTM', 'DoYouEvenMath131', 'University of Higher Math');
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Lillie-May Stamp', 'LMSsystem', 'LibrariesRCool4', 'University of Particular
Librarians');
```

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```
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Lucinda Cummings', 'LeafyPlant', 'ExtraView2', NULL);
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Nyle Marks', 'NyleMarx', 'MarxistsX0X0', 'Stonehedge College');
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Beulah Hebert', 'Nebula134', 'OINoise3', NULL);
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Zac Knapp', 'KnappNaps', 'Sleep424', 'Sleep & Relaxation University');
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Suraj McCullough', 'RayofSunshine', 'DarbRock1', NULL);
INSERT INTO LibraryUser (name, username, password, institution)
VALUES ('Luisa Arnold', 'SocksSocky', 'Socks4Ever33', 'School of Hard Socks');
```

### --18 Tables

```
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('SDLC Methodology', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Hilbert Space Derivation', 'Mathematics', 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Pternonophobia', 'Psychology', 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('SQL vs. NoSQL', NULL, 'A');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Project Authorization', 'Library & Information Science', 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Moose Psychology', 'Anthropology', 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Neural Networks', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Cerebral Cortex', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Socks', NULL, 'B');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('History of Socks', 'History', 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Neural Activity Sleep', 'Anatomy & Physiology', 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Chicken Exports', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Marxism', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Data Definition Language', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Capital', 'History', 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Library', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Library Card Generator', NULL, 'F');
INSERT INTO Searches (fields, discipline, search_mode)
VALUES ('Physical & Logical ERD', NULL, 'A');
```

### --12 Tables

```
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('ScienceDirect', 'Science', 'Elsevier', 'https://www.sciencedirect.com/');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('JSTOR Journal', 'All', 'Ithaka Harbors, Inc', 'https://www.jstor.org/');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('Newspaper Source Plus', 'News & Events', 'EBSCO Industries',
'https://www.ebsco.com/products/research-databases/newspaper-source-plus');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('EBSCO Discovery Service', 'General', 'EBSCO Industries',
'https://www.ebsco.com/products/ebsco-discovery-service');
INSERT INTO Provider (name, subject_area, parent_company, url)
```

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```
VALUES ('Regional Business News', 'Business & Economics', 'EBSCO Industries',
'https://www.ebsco.com/products/research-databases/regional-business-news');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('Business Source Ultimate', 'Business & Economics', 'EBSCO Industries',
'https://www.ebsco.com/products/research-databases/business-source-ultimate');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('Academic Search Ultimate', 'All', 'EBSCO Industries',
'https://www.ebsco.com/products/research-databases/academic-search-ultimate');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('Applied Science & Technology Source Ultimate', 'Engineering & Technology',
'EBSCO Industries', 'https://www.ebsco.com/products/research-databases/applied-
science-technology-source-ultimate');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('Humanities Source Ultimate', 'Humanities', 'EBSCO Industries',
'https://www.ebsco.com/products/research-databases/humanities-source-ultimate');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('Sociology Source Ultimate', 'Sociology', 'EBSCO Industries',
'https://www.ebsco.com/products/research-databases/sociology-source-ultimate');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('IEEE Xplore Digital Library', 'Engineering & Technology', 'IEEE',
'https://ieeexplore.ieee.org/');
INSERT INTO Provider (name, subject_area, parent_company, url)
VALUES ('Cambridge University Press', 'All', 'University of Cambridge',
'https://www.cambridge.org/');
```

--19 Tables

```
INSERT INTO Subject (name, language, geography)
VALUES ('statistics', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('industry', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('industry', 'Spanish', 'South America');
INSERT INTO Subject (name, language, geography)
VALUES ('computing and processing', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('conferences & conventions', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('devices and systems', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('communications', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('education', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('therapeutics', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('history', 'English', 'Europe');
INSERT INTO Subject (name, language, geography)
VALUES ('history', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('finance', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('health & medicine', 'Dutch', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('language arts & disciplines', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('psychology', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('book reviews', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('mathematics', 'English', 'All');
INSERT INTO Subject (name, language, geography)
VALUES ('technology', 'English', 'All');
INSERT INTO Subject (name, language, geography)
```

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```
VALUES ('philosophy', 'English', 'All');
```

```
--17 Tables
```

```
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (4, 'Conference', 'Impact of development methodology on cost & risk for
development projects', 2017, 'https://doi.org/10.1109/ICRITO.2017.8342436');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (16, 'eBook', 'Hilbert Space Methods in Signal Processing', 2013,
'https://doi.org/10.1017/CBO9780511844515');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (14, 'News', 'Phobia of the week: Pteronophobia', 2002,
'https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=n5h&AN=7EH338
7720717&site=eds-live&scope=site&custid=gsul');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (4, 'Conference', 'A survey on RDBMS and NoSQL Databases MySQL vs MongoDB',
2020, 'https://doi.org/10.1109/ICCCI48352.2020.9104047');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (10, 'Academic Journal', 'Aboriginal Harvesting in the Moose River Basin: A
Historical and Contemporary Analysis', 1995, 'https://doi.org/10.1111/j.1755-
618X.1995.tb00835.x');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (12, 'Academic Journal', 'Application of convolutional neural networks towards
nuclei segmentation in localization-based super-resolution fluorescence microscopy
images', 2021, 'https://doi.org/10.1186/s12859-021-04245-x');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (12, 'Academic Journal', 'Functional Parcellation of Individual Cerebral Cortex
Based on Functional MRI', 2020, 'https://doi.org/10.1017/CBO9780511844515');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (18, 'eBook', 'Sock', 2017,
'https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=nlebk&AN=1717
187&site=eds-live&scope=site&custid=gsul');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (10, 'Academic Journal', 'Socks at War: American Hand Knitters and Military
Footwear Production for the World Wars', 2019, 'https://doi.org/10.2478/sho-2019-
0005');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (8, 'Academic Journal', 'Novel concepts in sleep regulation', 2018,
'https://doi.org/10.1111/apha.13017');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (16, 'Periodical', 'China is now top destination for US chicken exports: U.S.
poultry and egg products saw impressive year-over-year increases thanks to new Chinese
demand.', 2020,
'https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bth&AN=145229
935&site=eds-live&scope=site');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (9, 'Book', 'Marxism : with and beyond Marx', 2014,
'https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=cat06552a&AN=
gsu.9925394533402952&site=eds-live&scope=site');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (17, 'Academic Journal', 'The Development of SQL Language Skills in Data
Definition and Data Manipulation Languages Using Exercises with Quizizz for Students
Learning Engagement', 2018, 'https://doi.org/10.20961/ijie.v2i2.24430');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (10, 'eBook', 'Democracy's Capital : Black Political Power in Washington, D.C.,
1960s-1970s', 2019, 'https://doi.org/10.1017/CBO9780511844515');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (13, 'eBook', 'Libraries: A Design Manual', 2018,
'https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=nlebk&AN=1221
897&site=eds-live&scope=site');
INSERT INTO Sources (subjectid, source_type, title, year, url)
VALUES (4, 'Conference', 'Template library for multi-GPU pseudorandom number
recursion-based generators', 2013, 'https://ieeexplore.ieee.org/document/6644049');
INSERT INTO Sources (subjectid, source_type, title, year, url)
```

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```
VALUES (17, 'eBook', 'Usage-Driven Database Design : From Logical Data Modeling
through Physical Schema Definition', 2017,
'http://www.books24x7.com/marc.asp?bookid=128150');

INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 0, 'IEEE', NULL, 'Bishan Dayal Chauhan');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 0, 'IEEE', NULL, 'Ajay Rana');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 0, 'IEEE', NULL, 'Neeraj Kumar Sharma');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (11, 1, 'Cambridge University Press', NULL, 'Rodney A. Kennedy');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (11, 1, 'Cambridge University Press', NULL, 'Parastoo Sadeghi');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (2, 2, 'Times Magazine UK', 'Times', NULL);
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 3, 'IEEE', NULL, 'Sowndarya Palanisamy');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 3, 'IEEE', NULL, 'P. SuvithaVani');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (9, 4, 'Canadian Review of Sociology', 'Canadian Sociological Association',
'Peter George');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (9, 4, 'Canadian Review of Sociology', 'Canadian Sociological Association',
'Fikret Berkes');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (9, 4, 'Canadian Review of Sociology', 'Canadian Sociological Association',
'Richard J. Preston');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 5, 'BMC Bioinformatics', 'Springer Nature', 'Christopher A. Mela');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 5, 'BMC Bioinformatics', 'Springer Nature', 'Yang Liu');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (7, 6, 'Neuroinformatics', 'Springer Link', 'Jiajia Zhao');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (7, 6, 'Neuroinformatics', 'Springer Link', 'Chao Tang');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (7, 6, 'Neuroinformatics', 'Springer Link', 'Jingxin Nie');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (6, 7, 'Bloomsbury', 'Bloomsbury Academic', 'Kim Adrian');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (6, 8, 'Studia Historiae Oeconomicae', 'De Gruyter Foundation', 'Rachel
Maines');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (6, 9, 'Acta Physiologica', 'Scandinavian Physiological Society', 'H.-K.
Wigren');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (6, 9, 'Acta Physiologica', 'Scandinavian Physiological Society', 'T. Porkka-
Heiskanen');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (4, 10, 'Watt Poultry', NULL, 'Austin Alonzo');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (3, 11, 'Routledge India', 'Routledge', 'Amiya Bagchi');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (7, 12, 'Indonesian Journal of Informal Education', 'Universitas Sebelas
Maret', 'Ratchadaporn Amornchewin');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (3, 13, 'University of North Carolina Press, The', 'University of North
Carolina System', 'Lauren Pearlman');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (4, 14, 'Birkhäuser', NULL, 'Nolan Lushington');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
```

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```
VALUES (4, 14, 'Birkhäuser', NULL, 'Wolfgang Rudolf');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (4, 14, 'Birkhäuser', NULL, 'Liliane Wong');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 15, 'IEEE', NULL, 'Dominik Szałkowski');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 15, 'IEEE', NULL, 'Przemysław Stpiczyński');
INSERT INTO Publisher (providerid, issnisbn, publication, affiliation, author_name)
VALUES (10, 16, 'Business Media New York', 'Springer Science', 'George Tillman');

/*The following are 20 queries using the newly formed database*/

--Query 1: Select all columns and all rows from one table
SELECT * FROM LibraryUser;

--Query 2: Select five columns and all rows from one table
SELECT sourceid,
       source_type,
       title,
       year,
       url
FROM Sources;

--Query 3: Select all columns from all rows from one view
SELECT * FROM UserInfo;

--Query 4: Using a join on 2 tables, select all columns and all rows from the tables
without the use of a Cartesian product
SELECT *
FROM Sources S
LEFT OUTER JOIN Subject Su
ON S.subjectid = Su.id;

--Query 5: Select and order data retrieved from one table
SELECT *
FROM Sources
ORDER BY year;

--Query 6: Using a join on 3 tables, select 5 columns from the 3 tables. Use syntax
that would limit the output to 10 rows
SELECT S.source_type,
       S.title,
       Pu.publication,
       Pu.affiliation,
       Pr.name
FROM Sources S
INNER JOIN Publisher Pu
ON S.sourceid = Pu.issnisbn
INNER JOIN Provider Pr
ON Pu.providerid = Pr.id
ORDER BY Pr.name
FETCH FIRST 10 ROWS ONLY;

--Query 7: Select distinct rows using joins on 3 tables
SELECT DISTINCT *
FROM Sources S
INNER JOIN Publisher Pu
ON S.sourceid = Pu.issnisbn
INNER JOIN Provider Pr
ON Pu.providerid = Pr.id
ORDER BY S.sourceid;

--Query 8: Use GROUP BY and HAVING in a select statement using one or more tables
```

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```
SELECT COUNT(author_name) AS Num_of_Authors,  
       publication  
FROM Publisher  
GROUP BY publication  
HAVING COUNT(author_name) > 2;
```

--Query 9: Use IN clause to select data from one or more tables

```
SELECT * FROM LibraryUser  
WHERE userid IN (0, 2);
```

--Query 10: Select length of one column from one table (use LENGTH function)

```
SELECT searchid, LENGTH(fields) AS Search_Char_Length  
FROM Searches  
ORDER BY Search_Char_Length
```

--Query 11: Delete one record from one table. Use select statements to demonstrate the table contents before and after the DELETE statement. Make sure you use ROLLBACK afterwards so that the data will not be physically removed

```
SELECT * From LibraryUser;  
DELETE FROM LibraryUser  
       WHERE name = 'Luisa Arnold';  
SELECT * FROM LibraryUser;  
ROLLBACK;
```

--Query 12: Update one record from one table. Use select statements to demonstrate the table contents before and after the UPDATE statement. Make sure you use ROLLBACK afterwards so that the data will not be physically removed

```
SELECT userid, password FROM LibraryUser;  
UPDATE LibraryUser  
SET password = 'CarsRock1234'  
WHERE userid = 0;  
SELECT userid, password FROM LibraryUser;  
ROLLBACK;
```

--Advanced Query 1: Listing all source titles with three or more authors.

```
SELECT COUNT(pu.author_name) AS NUM_Authors,  
       s.title  
FROM Sources s  
INNER JOIN Publisher pu  
ON s.sourceid = pu.issnisbn  
GROUP BY s.title, pu.issnisbn  
ORDER BY NUM_Authors DESC;
```

--Advanced Query 2: Finding the first 4 and last 4 records added to the "Publisher" table.

```
SELECT * FROM Publisher  
       WHERE rownum <= 4  
UNION  
SELECT * FROM  
       (SELECT * FROM  
        Publisher ORDER BY  
        rowid DESC)  
WHERE rownum <= 4;
```

--Advanced Query 3: Return the search fields where the discipline field is not null

```
SELECT fields  
FROM Searches  
WHERE discipline IS NOT NULL;
```

--Advanced Query 4: Fetch subjects that aren't assigned to a source.

```
SELECT DISTINCT su.name  
FROM Subject su  
LEFT OUTER JOIN Sources s
```

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```
ON su.id = s.subjectid
WHERE s.subjectid IS NULL;
```

--Advanced Query 5: Fetch author's article / source by stating what their article / source is.

```
SELECT CONCAT(
    CONCAT(pu.author_name, ''s work or contribution is '),
    s.title) AS Work
FROM Publisher pu
JOIN Sources s
ON s.sourceid = pu.issnisbn
ORDER BY DBMS_RANDOM.RANDOM;
```

--Advanced Query 6: These providers have the following affiliation that has been noted.

```
SELECT DISTINCT pr.id,
    pr.name,
    NVL(pu.affiliation, 'No Noted Affiliation') AS Affiliation
FROM Provider pr
LEFT OUTER JOIN Publisher pu
ON pr.id = pu.providerid
ORDER BY pr.id;
```

--Advanced Query 7: Fetch source titles with three or more authors.

```
SELECT s.sourceid,
    s.title,
    COUNT(*)
FROM Sources s
JOIN publisher pu
ON s.sourceid = pu.issnisbn
WHERE pu.affiliation IS NULL
GROUP BY s.sourceid, s.title
HAVING COUNT(*) > 2
ORDER BY s.sourceid;
```

--Advanced Query 8: This query returns the source id and their respective provider.

```
SELECT DISTINCT s.sourceid,
    pr.name,
    DENSE_RANK() OVER (PARTITION BY pu.publisherid ORDER BY s.sourceid) AS Numbering
FROM Sources s
JOIN Publisher pu
ON s.sourceid = pu.issnisbn
JOIN Provider pr
ON pu.providerid = pr.id
ORDER BY s.sourceid;
```

### **D. DDL, DML, and Query Output**

--DDL Output

Trigger LIBRARYUSER dropped.

Trigger SEARCHES dropped.

Trigger PROVIDER dropped.

Trigger SUBJECT dropped.

Trigger PUBLISHER dropped.



## Final Report

Trigger SOURCES dropped.

Sequence LIBRARYUSER\_USERID dropped.

Sequence SEARCHES\_SEARCHID dropped.

Sequence PROVIDER\_ID dropped.

Sequence SUBJECT\_ID dropped.

Sequence PUBLISHER\_PUBLISHERID dropped.

Sequence SOURCES\_SOURCEID dropped.

View USERINFO dropped.

View SEARCHINFO dropped.

Index PUBLISHER\_PROVIDERID\_FK dropped.

Index PUBLISHER\_ISSNISBN\_FK dropped.

Index PUBLISHER\_PUBLICATION dropped.

Index PUBLISHER\_AUTHOR\_NAME dropped.

Index SOURCES\_SUBJECTID\_FK dropped.

Index SOURCES\_TITLE dropped.

Index SUBJECT\_NAME dropped.

Index PROVIDER\_NAME dropped.

Index PROVIDER\_URL dropped.

Index SEARCHES\_FIELDS dropped.

Index LIBRARYUSER\_INSTITUTION dropped.

Index LIBRARYUSER\_USERNAME dropped.

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Table PUBLISHER dropped.

Table SOURCES dropped.

Table SUBJECT dropped.

Table PROVIDER dropped.

Table SEARCHES dropped.

Table LIBRARYUSER dropped.

Table LIBRARYUSER created.

Table SEARCHES created.

Table PROVIDER created.

Table SUBJECT created.

Table SOURCES created.

Table PUBLISHER created.

Index LIBRARYUSER\_USERNAME created.

Index LIBRARYUSER\_INSTITUTION created.

Index SEARCHES\_FIELDS created.

INDEX PROVIDER\_URL created.

Index PROVIDER\_NAME created.

Index SUBJECT\_NAME created.

Index SOURCES\_SUBJECTID\_FK created.

Index SOURCES\_TITLE created.

Index PUBLISHER\_PROVIDERID\_FK created.

## Final Report

Index PUBLISHER\_ISSNISBN\_FK created.

Index PUBLISHER\_PUBLICATION created.

Index PUBLISHER\_AUTHOR\_NAME created.

Table LIBRARYUSER altered.

Table SEARCHES altered.

Table PROVIDER altered.

Table SUBJECT altered.

Table SOURCES altered.

Table PUBLISHER altered.

View USERINFO created.

View SEARCHINFO created.

Sequence LIBRARYUSER\_USERID created.

Sequence SEARCHES\_SEARCHID created.

Sequence PROVIDER\_ID created.

Sequence SUBJECT\_ID created.

Sequence SOURCES\_SOURCEID created.

Sequence PUBLISHER\_PUBLISHERID created.

Trigger LIBRARYUSER compiled

Trigger SEARCHES compiled

Trigger PROVIDER compiled

Trigger SUBJECT compiled

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Trigger PUBLISHER compiled

Trigger SOURCES compiled

--DML Output

1 row inserted.

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## Final Report

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## Hanif Lumsden

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## Final Report

1 row inserted.

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1 row inserted.

/\*Query  
Results\*/

--Query 1

USERID	NAME	USERNAME	PASSWORD
0	Hanif lumsden	HanifLumsden1	CarsRock1
1	Iylah Rhodes	IRoad	Genesis304
2	Ffion Vickers	VicksTM	DoYouEvenMath131
3	Lillie-May Stamp	LMSsystem	LibrariesRCOOL4
4	Lucinda Cummings	LeafyPlant	ExtraView2
5	Nyle Marks	NyleMarx	MarxistsX0X0
6	Beulah Hebert	Nebula134	OINoise3
7	Zac Knapp	KnappNaps	Sleep424
8	Suraj McCullough	RayofSunshine	DarbRock1
9	Luisa Arnold	SocksSocky	Socks4Ever33

10 rows selected.

--Query 2

SOURCEID	SOURCE_TYPE	TITLE
0	Conference	Impact of development methodology on cost & risk for development projects
2017	https://doi.org/10.1109/ICRITO.2017.8342436	
1	eBook	Hilbert Space Methods in Signal Processing
2013	https://doi.org/10.1017/CBO9780511844515	
2	News	Phobia of the week: Pteronophobia
2002	https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=n5h&AN=7EH3387720717&site=eds-live&scope=site&custid=gsul	
3	Conference	A survey on RDBMS and NoSQL Databases MySQL vs MongoDB
2020	https://doi.org/10.1109/ICCCI48352.2020.9104047	
4	Academic Journal	Aboriginal Harvesting in the Moose River Basin: A Historical and Contemporary Analysis
1995	https://doi.org/10.1111/j.1755-618X.1995.tb00835.x	
5	Academic Journal	Application of convolutional neural networks towards nuclei segmentation in localization-based super-resolution fluorescence microscopy images
2021	https://doi.org/10.1186/s12859-021-04245-x	

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6 Academic Journal Functional Parcellation of Individual Cerebral Cortex Based on Functional MRI  
2020 <https://doi.org/10.1017/CBO9780511844515>

7 eBook Sock  
2017  
<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=nlebk&AN=1717187&site=eds-live&scope=site&custid=gsul>

8 Academic Journal Socks at War: American Hand Knitters and Military Footwear Production for the World Wars  
2019 <https://doi.org/10.2478/sho-2019-0005>

9 Academic Journal Novel concepts in sleep regulation  
2018 <https://doi.org/10.1111/apha.13017>

10 Periodical China is now top destination for US chicken exports: U.S. poultry and egg products saw impressive year-over-year increases thanks to new Chinese demand. 2020  
<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bth&AN=145229935&site=eds-live&scope=site>

11 Book Marxism : with and beyond Marx  
2014  
<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=cat06552a&AN=gsu.9925394533402952&site=eds-live&scope=site>

12 Academic Journal The Development of SQL Language Skills in Data Definition and Data Manipulation Languages Using Exercises with Quizizz for Students Learning Engagement 2018 <https://doi.org/10.20961/ijie.v2i2.24430>

13 eBook Democracy's Capital : Black Political Power in Washington, D.C., 1960s-1970s  
2019 <https://doi.org/10.1017/CBO9780511844515>

14 eBook Libraries: A Design Manual  
2018  
<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=nlebk&AN=1221897&site=eds-live&scope=site>

15 Conference Template library for multi-GPU pseudorandom number recursion-based generators  
2013 <https://ieeexplore.ieee.org/document/6644049>

16 eBook Usage-Driven Database Design : From Logical Data Modeling through Physical Schema Definition  
2017 <http://www.books24x7.com/marc.asp?bookid=128150>

17 rows selected.

--Query 3

USERID	NAME	INSTITUTION
0	Hanif lumsden	University of Maryland Global Campus
1	Iylah Rhodes	
2	Ffion Vickers	University of Higher Math
3	Lillie-May Stamp	University of Particular Librarians
4	Lucinda Cummings	
5	Nyle Marks	Stonehedge College
6	Beulah Hebert	
7	Zac Knapp	Sleep & Relaxation University
8	Suraj McCullough	
9	Luisa Arnold	chool of Hard Socks

10 rows selected.

--Query 4

SOURCEID	SUBJECTID	SOURCE_TYPE	LANGUAGE	GEOGRAPHY
0	4	Conference	English	All
m3	4	Conference	English	All

## Final Report

15	4	Conference	English	All
4	10	Academic Journal	English	All
8	10	Academic Journal	English	All
13	10	eBook	English	All
5	12	Academic Journal	Dutch	All
6	12	Academic Journal	Dutch	All
14	13	eBook	English	All
2	14	News	English	All
1	16	eBook	English	All
10	16	Periodical	English	All
12	17	Academic Journal	English	All
16	17	eBook	English	All
7	18	eBook	English	All

17 rows selected.

--Query 5

SOURCEID	SUBJECTID	SOURCE_TYPE	TITLE
YEAR	URL		
4	10	Academic Journal	Aboriginal Harvesting in the Moose River Basin: A Historical and Contemporary Analysis 1995 <a href="https://doi.org/10.1111/j.1755-618X.1995.tb00835.x">https://doi.org/10.1111/j.1755-618X.1995.tb00835.x</a>
2	14	News	Phobia of the week: Pteronophobia 2002 <a href="https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=n5h&amp;AN=7EH3387720717&amp;site=eds-live&amp;scope=site&amp;custid=gsul">https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=n5h&amp;AN=7EH3387720717&amp;site=eds-live&amp;scope=site&amp;custid=gsul</a>
1	16	eBook	Hilbert Space Methods in Signal Processing 2013 <a href="https://doi.org/10.1017/CBO9780511844515">https://doi.org/10.1017/CBO9780511844515</a>
15	4	Conference	Template library for multi-GPU pseudorandom number recursion-based generators 2013 <a href="https://ieeexplore.ieee.org/document/6644049">https://ieeexplore.ieee.org/document/6644049</a>
11	9	Book	Marxism : with and beyond Marx 2014 <a href="https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=cat06552a&amp;AN=gsu.9925394533402952&amp;site=eds-live&amp;scope=site">https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=cat06552a&amp;AN=gsu.9925394533402952&amp;site=eds-live&amp;scope=site</a>
0	4	Conference	Impact of development methodology on cost & risk for development projects 2017 <a href="https://doi.org/10.1109/ICRITO.2017.8342436">https://doi.org/10.1109/ICRITO.2017.8342436</a>
7	18	eBook	Sock 2017 <a href="https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=nlebk&amp;AN=1717187&amp;site=eds-live&amp;scope=site&amp;custid=gsul">https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=nlebk&amp;AN=1717187&amp;site=eds-live&amp;scope=site&amp;custid=gsul</a>
16	17	eBook	Usage-Driven Database Design : From Logical Data Modeling through Physical Schema Definition 2017 <a href="http://www.books24x7.com/marc.asp?bookid=128150">http://www.books24x7.com/marc.asp?bookid=128150</a>
14	13	eBook	Libraries: A Design Manual 2018 <a href="https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=nlebk&amp;AN=1221897&amp;site=eds-live&amp;scope=site">https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=ip,shib&amp;db=nlebk&amp;AN=1221897&amp;site=eds-live&amp;scope=site</a>
12	17	Academic Journal	The Development of SQL Language Skills in Data Definition and Data Manipulation Languages Using Exercises with Quizizz for Students Learning Engagement 2018 <a href="https://doi.org/10.20961/ijie.v2i2.24430">https://doi.org/10.20961/ijie.v2i2.24430</a>
9	8	Academic Journal	Novel concepts in sleep regulation 2018 <a href="https://doi.org/10.1111/apha.13017">https://doi.org/10.1111/apha.13017</a>
13	10	eBook	Democracy's Capital : Black Political Power in Washington, D.C., 1960s-1970s 2019 <a href="https://doi.org/10.1017/CBO9780511844515">https://doi.org/10.1017/CBO9780511844515</a>

## Hanif Lumsden

8 10 Academic Journal Socks at War: American Hand Knitters and  
Military Footwear Production for the World Wars 2019 <https://doi.org/10.2478/sho-2019-0005>

6 12 Academic Journal Functional Parcellation of Individual  
Cerebral Cortex Based on Functional MRI 2020  
<https://doi.org/10.1017/CBO9780511844515>

10 16 Periodical China is now top destination for US chicken  
exports: U.S. poultry and egg products saw impressive year-over-year increases thanks  
to new Chinese demand.2020  
<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bth&AN=145229935&site=eds-live&scope=site>

3 4 Conference A survey on RDBMS and NoSQL Databases MySQL  
vs MongoDB 2020  
<https://doi.org/10.1109/ICCCI48352.2020.9104047>

5 12 Academic Journal Application of convolutional neural networks  
towards nuclei segmentation in localization-based super-resolution fluorescence  
microscopy images 2021 <https://doi.org/10.1186/s12859-021-04245-x>

17 rows selected.

--Query 6

SOURCE_TYPE	TITLE	AFFILIATION
PUBLICATION		
NAME		
eBook	Sock	
Bloomsbury		Bloomsbury Academic
Academic Search Ultimate		
Academic Journal	Novel concepts in sleep regulation	
Acta Physiologica		Scandinavian Physiological Society
Academic Search Ultimate		
Academic Journal	Novel concepts in sleep regulation	
Acta Physiologica		Scandinavian Physiological Society
Academic Search Ultimate		
Academic Journal	Socks at War: American Hand Knitters and Military Footwear	
Production for the World Wars		Studia Historiae Oeconomicae
De Gruyter Foundation		Academic Search Ultimate
Academic Journal	Functional Parcellation of Individual Cerebral Cortex Based on	
Functional MRI		Neuroinformatics
Springer Link		Applied Science & Technology Source Ultimate
Academic Journal	Functional Parcellation of Individual Cerebral Cortex Based on	
Functional MRI		Neuroinformatics
Springer Link		Applied Science & Technology Source Ultimate
Academic Journal	Functional Parcellation of Individual Cerebral Cortex Based on	
Functional MRI		Neuroinformatics
Springer Link		Applied Science & Technology Source Ultimate
Academic Journal	The Development of SQL Language Skills in Data Definition and Data	
Manipulation Languages Using Exercises with Quizizz for Students Learning Engagement		
Indonesian Journal of Informal Education		Universitas Sebelas Maret Applied Science &
Technology Source Ultimate		
eBook	Hilbert Space Methods in Signal Processing	
Cambridge University Press		
Cambridge University Press		
eBook	Hilbert Space Methods in Signal Processing	
Cambridge University Press		
Cambridge University Press		

10 rows selected.

## Final Report

--Query 7

Rows will be truncated for "TITLE"  
Rows will be truncated for "YEAR"  
Rows will be truncated for "URL"  
Rows will be truncated for "CREATED\_BY"  
Rows will be truncated for "DATE\_CREATED"  
Rows will be truncated for "MODIFIED\_BY"  
Rows will be truncated for "DATE\_MODIFIED"  
Rows will be truncated for "PUBLISHERID"  
Rows will be truncated for "PROVIDERID"  
Rows will be truncated for "ISSNISBN"  
Rows will be truncated for "PUBLICATION"  
Rows will be truncated for "AFFILIATION"  
Rows will be truncated for "AUTHOR\_NAME"  
Rows will be truncated for "CREATED\_BY"  
Rows will be truncated for "DATE\_CREATED"  
Rows will be truncated for "MODIFIED\_BY"  
Rows will be truncated for "DATE\_MODIFIED"  
Rows will be truncated for "ID"  
Rows will be truncated for "NAME"  
Rows will be truncated for "SUBJECT\_AREA"  
Rows will be truncated for "PARENT\_COMPANY"  
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Rows will be truncated for "CREATED\_BY"  
Rows will be truncated for "DATE\_CREATED"  
Rows will be truncated for "MODIFIED\_BY"  
Rows will be truncated for "DATE\_MODIFIED"

SOURCEID	SUBJECTID	SOURCE_TYPE
0	4	Conference
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0	4	Conference
1	16	eBook
1	16	eBook
2	14	News
3	4	Conference
3	4	Conference
4	10	Academic Journal
4	10	Academic Journal
4	10	Academic Journal
5	12	Academic Journal
5	12	Academic Journal
6	12	Academic Journal
6	12	Academic Journal
6	12	Academic Journal
7	18	eBook
8	10	Academic Journal
9	8	Academic Journal
9	8	Academic Journal
10	16	Periodical
11	9	Book
12	17	Academic Journal
13	10	eBook
14	13	eBook
14	13	eBook
14	13	eBook
15	4	Conference
15	4	Conference

## Hanif Lumsden

16 17 eBook  
30 rows selected.

--Query 8

NUM\_OF\_AUTHORS PUBLICATION

```
-----  
          3 Birkhäuser  
          3 Canadian Review of Sociology  
          7 IEEE  
          3 Neuroinformatics
```

--Query 9

USERID NAME

```
-----  
          0 Hanif lumsden  
          2 Ffion Vickers
```

--Query 10

SEARCHID SEARCH\_CHAR\_LENGTH

```
-----  
          8 5  
         12 7  
         15 7  
         14 7  
          3 13  
          2 14  
          6 15  
         11 15  
          7 15  
          9 16  
          0 16  
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         10 21  
          4 21  
         16 22  
         17 22  
          1 24  
         13 24
```

18 rows selected.

--Query 11

```
          USERID NAME          USERNAME          PASSWORD  
INSTITUTION  
-----  
          0 Hanif lumsden    HanifLumsden1    CarsRock1  
University of Maryland Global Campus  
          1 Iylah Rhodes      IRoad            Genesis304  
          2 Ffion Vickers      VicksTM          DoYouEvenMath131  
University of Higher Math  
          3 Lillie-May Stamp    LMSystem         LibrariesRCOOL4  
University of Particular Librarians  
          4 Lucinda Cummings    LeafyPlant        ExtraView2  
          5 Nyle Marks          NyleMarx          MarxistsX0X0  
Stonehedge College  
          6 Beulah Hebert      Nebula134         OINoise3
```

## Final Report

7	Zac Knapp	KnappNaps	Sleep424
Sleep & Relaxation University			
8	Suraj McCullough	RayofSunshine	DarbRock1
9	Luisa Arnold	SocksSocky	Socks4Ever33
School of Hard Socks			

10 rows selected.

1 row deleted.

USERID	NAME	USERNAME	PASSWORD
-----			
0	Hanif lumsden	HanifLumsden1	CarsRock1
University of Maryland Global Campus			
1	Iylah Rhodes	IRoad	Genesis304
2	Ffion Vickers	VicksTM	DoYouEvenMath131
University of Higher Math			
3	Lillie-May Stamp	LMSsystem	LibrariesRCOOL4
University of Particular Librarians			
4	Lucinda Cummings	LeafyPlant	ExtraView2
5	Nyle Marks	NyleMarx	MarxistsX0X0
Stonehedge College			
6	Beulah Hebert	Nebula134	OINoise3
7	Zac Knapp	KnappNaps	Sleep424
Sleep & Relaxation University			
8	Suraj McCullough	RayofSunshine	DarbRock1

9 rows selected.

Rollback complete.

--Query 12

USERID	PASSWORD
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0	CarsRock1
1	Genesis304
2	DoYouEvenMath131
3	LibrariesRCOOL4
4	ExtraView2
5	MarxistsX0X0
6	OINoise3
7	Sleep424
8	DarbRock1
9	Socks4Ever33

10 rows selected.

1 row updated.

USERID	PASSWORD
-----	
0	CarsRock1234
1	Genesis304
2	DoYouEvenMath131

## Hanif Lumsden

```
3 LibrariesRCOOL4
4 ExtraView2
5 MarxistsX0X0
6 OINoise3
7 Sleep424
8 DarbRock1
9 Socks4Ever33
```

10 rows selected.

Rollback complete.

--Query 13

NUM\_AUTHORS TITLE

```
-----
-----
3 Aboriginal Harvesting in the Moose River Basin: A Historical and
Contemporary Analysis
3 Impact of development methodology on cost & risk for development projects
3 Libraries: A Design Manual
3 Functional Parcellation of Individual Cerebral Cortex Based on
Functional MRI
2 Novel concepts in sleep regulation
2 A survey on RDBMS and NoSQL Databases MySQL vs MongoDB
2 Hilbert Space Methods in Signal Processing
2 Application of convolutional neural networks towards nuclei segmentation in
localization-based super-resolution fluorescence microscopy images
2 Template library for multi-GPU pseudorandom number recursion-based generators
1 Democracy's Capital : Black Political Power in Washington, D.C., 1960s-
1970s
1 Marxism : with and beyond Marx
1 Usage-Driven Database Design : From Logical Data Modeling through Physical
Schema Definition
1 Socks at War: American Hand Knitters and Military Footwear Production for
the World Wars
1 The Development of SQL Language Skills in Data Definition and Data
Manipulation Languages Using Exercises with Quizizz for Students Learning Engagement
1 China is now top destination for US chicken exports: U.S. poultry and egg products
saw impressive year-over-year increases thanks to new Chinese demand.
1 Sock
0 Phobia of the week: Pteronophobia
```

17 rows selected.

--Query 14

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Rows will be truncated for "AUTHOR_NAME"
Rows will be truncated for "CREATED_BY"
Rows will be truncated for "DATE_CREATED"
Rows will be truncated for "MODIFIED_BY"
Rows will be truncated for "DATE_MODIFIED"
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```
PUBLISHERID PROVIDERID  ISSNISBN PUBLICATION
-----
0 10 0 IEEE
1 10 0 IEEE
2 10 0 IEEE
3 11 1 Cambridge University Press
26 4 14 Birkhäuser
27 10 15 IEEE
```



## Final Report

28	10	15 IEEE
29	10	16 Business Media New York

8 rows selected.

--Query 15

FIELDS

-----  
Hilbert Space Derivation  
Pternonophobia  
Project Authorization  
Moose Psychology  
History of Socks  
Neural Activity Sleep  
Capital

7 rows selected.

--Query 16

NAME

-----  
finance  
education  
computing and processing  
statistics  
industry  
devices and systems  
communications  
book reviews

8 rows selected.

--Query 17

WORK

-----  
-----  
Ajay Rana's work or contribution is Impact of development methodology on cost & risk for development projects  
Rachel Maines's work or contribution is Socks at War: American Hand Knitters and Military Footwear Production for the World Wars  
George Tillman's work or contribution is Usage-Driven Database Design : From Logical Data Modeling through Physical Schema Definition  
Parastoo Sadeghi's work or contribution is Hilbert Space Methods in Signal Processing  
Rodney A. Kennedy's work or contribution is Hilbert Space Methods in Signal Processing  
Przemysław Stpiczny's work or contribution is Template library for multi-GPU pseudorandom number recursion-based generators  
Jingxin Nie's work or contribution is Functional Parcellation of Individual Cerebral Cortex Based on Functional MRI  
Dominik Sza?kowski's work or contribution is Template library for multi-GPU pseudorandom number recursion-based generators  
Lauren Pearlman's work or contribution is Democracy's Capital : Black Political Power in Washington, D.C., 1960s-1970s  
Liliane Wong's work or contribution is Libraries: A Design Manual  
Amiya Bagchi's work or contribution is Marxism : with and beyond Marx  
Nolan Lushington's work or contribution is Libraries: A Design Manual  
Christopher A. Mela's work or contribution is Application of convolutional neural networks towards nuclei segmentation in localization-based super-resolution fluorescence microscopy images  
Wolfgang Rudorf's work or contribution is Libraries: A Design Manual

## Hanif Lumsden

Austin Alonzo's work or contribution is China is now top destination for US chicken exports: U.S. poultry and egg products saw impressive year-over-year increases thanks to new Chinese demand.

Neeraj Kumar Sharma's work or contribution is Impact of development methodology on cost & risk for development projects

Sowndarya Palanisamy's work or contribution is A survey on RDBMS and NoSQL Databases MySQL vs MongoDB

P. SuivithaVani's work or contribution is A survey on RDBMS and NoSQL Databases MySQL vs MongoDB

Richard J. Preston's work or contribution is Aboriginal Harvesting in the Moose River Basin: A Historical and Contemporary Analysis

Chao Tang's work or contribution is Functional Parcellation of Individual Cerebral Cortex Based on Functional MRI

Bishan Dayal Chauhan's work or contribution is Impact of development methodology on cost & risk for development projects

Yang Liu's work or contribution is Application of convolutional neural networks towards nuclei segmentation in localization-based super-resolution fluorescence microscopy images

T. Porkka-Heiskanen's work or contribution is Novel concepts in sleep regulation

Ratchadaporn Amornchewin's work or contribution is The Development of SQL Language Skills in Data Definition and Data Manipulation Languages Using Exercises with Quizizz for Students Learning Engagement

Kim Adrian's work or contribution is Sock

H.-K. Wigren's work or contribution is Novel concepts in sleep regulation

Jiajia Zhao's work or contribution is Functional Parcellation of Individual Cerebral Cortex Based on Functional MRI

Fikret Berkes's work or contribution is Aboriginal Harvesting in the Moose River Basin: A Historical and Contemporary Analysis

's work or contribution is Phobia of the week: Pteronophobia

Peter George's work or contribution is Aboriginal Harvesting in the Moose River Basin: A Historical and Contemporary Analysis

30 rows selected.

--Query 18

	ID NAME	AFFILIATION
	0 ScienceDirect	No Noted Affiliation
	1 JSTOR Journal	No Noted Affiliation
	2 Newspaper Source Plus	Times
	3 EBSCO Discovery Service	Routledge
System	3 EBSCO Discovery Service	University of North Carolina
	4 Regional Business News	No Noted Affiliation
	5 Business Source Ultimate	No Noted Affiliation
	6 Academic Search Ultimate	Bloomsbury Academic
	6 Academic Search Ultimate	De Gruyter Foundation
Society	6 Academic Search Ultimate	Scandinavian Physiological
	7 Applied Science & Technology Source Ultimate	Springer Link
	7 Applied Science & Technology Source Ultimate	Universitas Sebelas Maret
	8 Humanities Source Ultimate	No Noted Affiliation
	9 Sociology Source Ultimate	Canadian Sociological
Association	10 IEEE Xplore Digital Library	No Noted Affiliation
	10 IEEE Xplore Digital Library	Springer Nature
	10 IEEE Xplore Digital Library	Springer Science
	11 Cambridge University Press	No Noted Affiliation

18 rows selected.

--Query 19

## Final Report

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SOURCEID TITLE
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0 Impact of development methodology on cost & risk for development projects 3
14 Libraries: A Design Manual 3
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--Query 20:

```

SOURCEID NAME
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0 IEEE Xplore Digital Library
1 Cambridge University Press
2 Newspaper Source Plus
3 IEEE Xplore Digital Library
4 Sociology Source Ultimate
5 IEEE Xplore Digital Library
6 Applied Science & Technology Source Ultimate
7 Academic Search Ultimate
8 Academic Search Ultimate
9 Academic Search Ultimate
10 Regional Business News
11 EBSCO Discovery Service
12 Applied Science & Technology Source Ultimate
13 EBSCO Discovery Service
14 Regional Business News
15 IEEE Xplore Digital Library
16 IEEE Xplore Digital Library
```

17 rows selected.

## 9. Database Administration and Modeling

### A. Performance Monitoring

The library labor divisions that handle the library systems and database administration will both monitor database server performance. Database administration is in charge of maintenance, monitoring, utilizing their admin privilege to make any changes to the database as more information comes in. Library systems will handle cloud server availability and performance and other supporting software. This is a task unlike any the library has undertaken, so given training will benefit both collectives.

### B. Data Formats

Data formats as it pertains to the newly formed library database are present in three formats: string, boolean, and integer. This solution saw no need to utilize time and date data as that information is utilized by the library management and circulation systems, not the resource

information system itself. Data is stored directly on the database management system. The database contains urls and dois in varchar for outside access to particular fields stored in the database

### **C. Backup and Recovery**

There will be a large volume of changes made to the database as new information and sources are added everyday provided by third party databases. As a result, delta backups are performed three times a day every 8 hour. Full backups are performed three times a week, Sunday, Wednesday, and Friday, during library downtime at 10 P.M. EST.

### **References**

Database design basics. (n.d.). Microsoft Support. <https://support.microsoft.com/en-us/office/database-design-basics-eb2159cf-1e30-401a-8084-bd4f9c9ca1f5>

Deptula, M. (2020). What is a library database? - LibAnswers. LibAnswers. <https://chat.library.berkeleycollege.edu/faq/89790>

Oracle database advantages, disadvantages and features [Guide 2021]. (2021, June 22). The NineHertz. [https://theninehertz.com/blog/advantages-of-using-oracle-database#Major\\_Advantages\\_of\\_Oracle\\_Database](https://theninehertz.com/blog/advantages-of-using-oracle-database#Major_Advantages_of_Oracle_Database)

