**Lab Exercise 1: Storing and Retrieving Image Data in BLOB**

**Objective:**

Learn how to insert, retrieve, and display image files stored in a BLOB column.

**Instructions:**

1. **Create a database** named blob\_lab.
2. **Create a table** named images with the following columns:
   * id (Primary Key, Auto Increment)
   * image\_name (VARCHAR(255))
   * image\_data (BLOB)
3. Insert an image into the table using LOAD\_FILE().
4. Retrieve and display image metadata.

**Schema and Queries:**

CREATE DATABASE blob\_lab;

USE blob\_lab;

CREATE TABLE images (

id INT AUTO\_INCREMENT PRIMARY KEY,

image\_name VARCHAR(255),

image\_data BLOB

);

**Insert an Image into the BLOB Column**

Replace 'C:\\path\\to\\your\\image.jpg' with the actual path to your image file.

INSERT INTO images (image\_name, image\_data)

VALUES ('Sample Image', LOAD\_FILE('C:\\path\\to\\your\\image.jpg'));

**Retrieve Image Data**

SELECT id, image\_name, OCTET\_LENGTH(image\_data) AS size\_in\_bytes

FROM images;

**Solution Explanation:**

* LOAD\_FILE() loads the binary image data into the BLOB column.
* OCTET\_LENGTH(image\_data) returns the size of the stored image in bytes.
* To retrieve the image, a programming language (such as Python or PHP) would be used to process and display the image from the BLOB.

**Lab Exercise 2: Storing and Retrieving Text Files in BLOB**

**Objective:**

Understand how to store and retrieve text files as BLOBs.

**Instructions:**

1. **Create a table** named documents with the following columns:
   * id (Primary Key, Auto Increment)
   * doc\_name (VARCHAR(255))
   * doc\_data (BLOB)
2. Insert a text file (.txt) into the table.
3. Retrieve and convert it back to readable text.

**Schema and Queries:**

CREATE TABLE documents (

id INT AUTO\_INCREMENT PRIMARY KEY,

doc\_name VARCHAR(255),

doc\_data BLOB

);

**Insert a Text File into BLOB**

Replace 'C:\\path\\to\\your\\document.txt' with the actual path to your text file.

INSERT INTO documents (doc\_name, doc\_data)

VALUES ('Sample Document', LOAD\_FILE('C:\\path\\to\\your\\document.txt'));

**Retrieve the Stored File**

SELECT id, doc\_name, OCTET\_LENGTH(doc\_data) AS size\_in\_bytes

FROM documents;

**Solution Explanation:**

* The **BLOB column** can store text data, but it is treated as binary data.
* The OCTET\_LENGTH(doc\_data) function shows the size of the stored text file in bytes.
* To retrieve and view the content, programming languages like Python, PHP, or Java can be used to read and decode the BLOB into human-readable text.

**Additional Notes:**

* **BLOB types** include TINYBLOB, BLOB, MEDIUMBLOB, and LONGBLOB based on storage size.
* LOAD\_FILE() requires the MySQL server to have **file permissions** enabled.
* When retrieving BLOBs, applications typically handle conversion back to usable formats.