Cyber Forensics and Laws

Mini Project

Aim: Write a program to take backup of a MySQL database.

Used software:

- Python 3.10.5 (64 bit)
- XAMPP 3.3.0 (64 bit)
  - Apache 2.4.53 (64 bit)
  - MariaDB 10.2.24 (based on MySQL 15.1) (64 bit)
  - PHP 8.1.6 (64 bit)
  - phpMyAdmin 5.2.0
- Chromium 103.0.5060.114 (64 bit)

Note: Apache and PHP are internal dependencies for running phpMyAdmin and are not explicitly used in this exercise.

Description:

- **Backup**: In information technology, a **backup**, or **data backup** is a copy of computer data taken and stored elsewhere so that it may be used to restore the original after a data loss event. Backups can be used to recover data after its loss from data deletion or corruption, or to recover data from an earlier time.
- **Database**: In computing, a **database** is an organized collection of data stored and accessed electronically. Small databases can be

stored on a file system, while large databases are hosted on computer clusters or cloud storage.

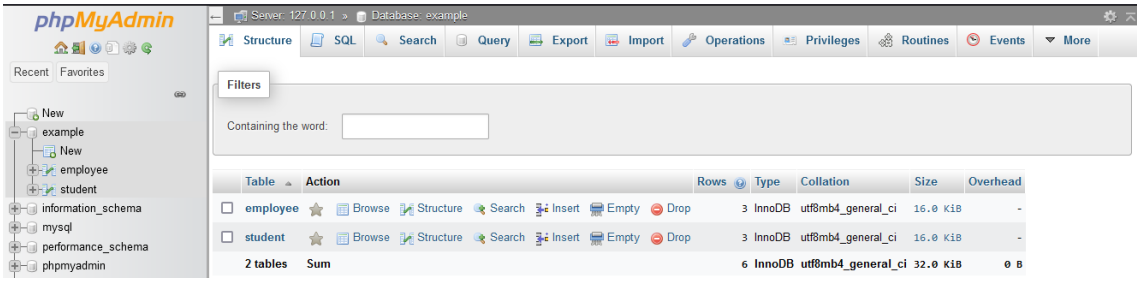
    - **Relational Database**: A **relational database** is a (most commonly digital) database based on the relational model of data. A relational model organizes data into one or more tables (or "relations") of columns and rows, with a unique key identifying each row. Rows are also called records or tuples. Columns are also called attributes. Generally, each table/relation represents one "entity type" (such as customer or product). The rows represent instances of that type of entity (such as "Lee" or "chair") and the columns representing values attributed to that instance (such as address or price).

- **Python**: **Python** is a high-level, interpreted, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-oriented and functional programming. It is often described as a "batteries included" language due to its comprehensive standard library.
- **MySQL**: **MySQL** is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses.
- **MariaDB**: **MariaDB** is a community-developed, commercially supported fork of the MySQL relational database management system (RDBMS), intended to remain free and open-source software under the GNU General Public License. Development is led by some of the original developers of MySQL, who forked it due to concerns over its acquisition by Oracle Corporation in 2009.
- **XAMPP**: **XAMPP** is a free and open-source cross-platform web server solution stack package developed by Apache Friends,

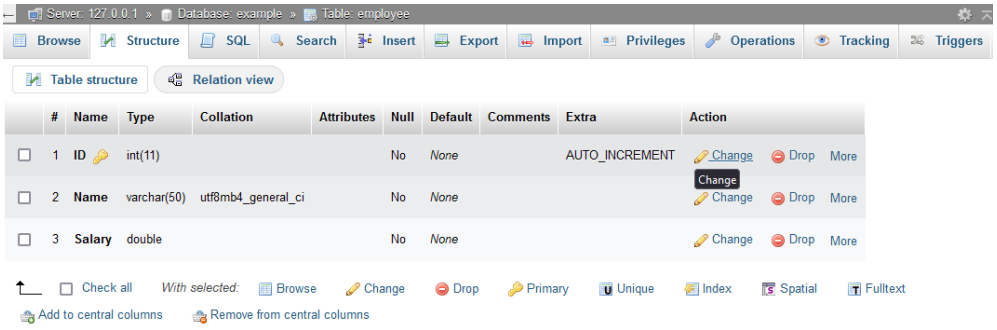
consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server possible.

Database structure and contents:

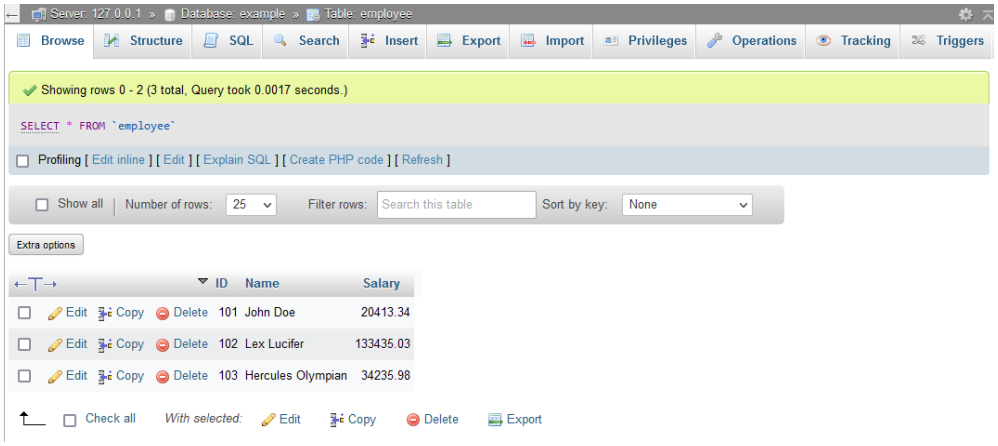
- **Name**: *example*



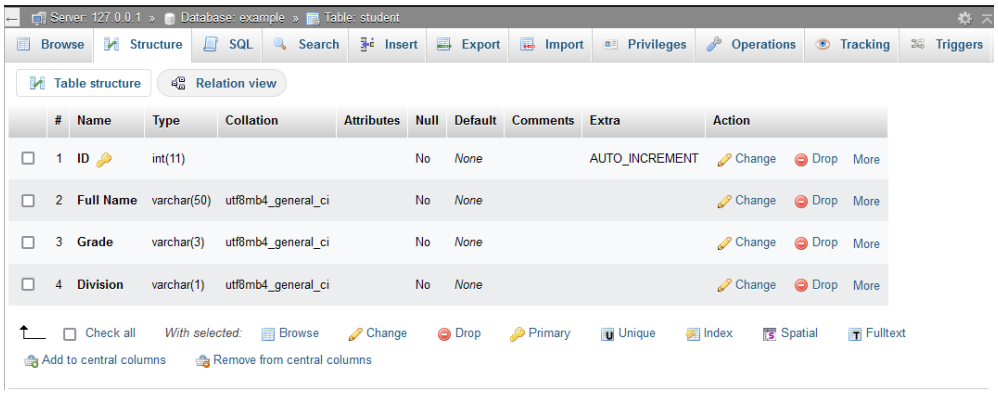
- **Database contents:**
  - **Tables**:
    - *employee*
      - **Structure**:



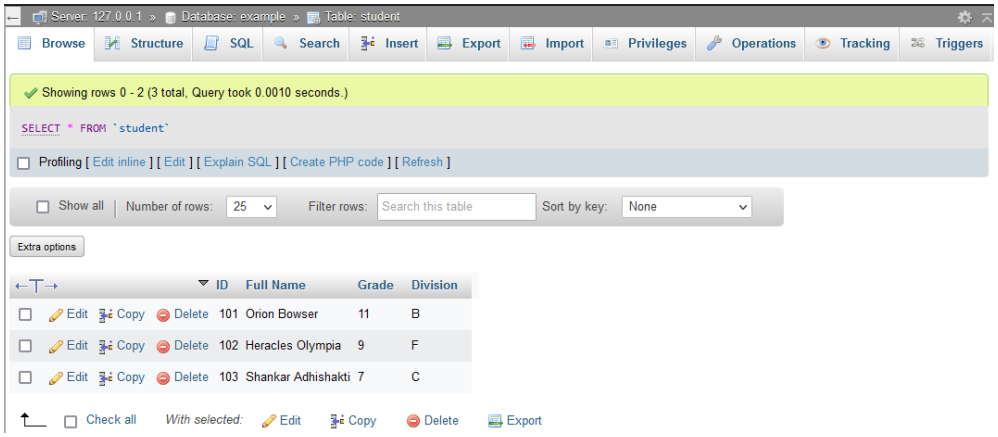
      - **Contents**:



- *student*
  - **Structure**:



  - **Contents**:



Program:

```
import mysql.connector as connector
from sys import exit

if __name__ == "__main__":
      hostname = input("Enter host name [localhost]>")
      hostname = hostname if hostname != "" else "localhost"
      username = input("Enter your username > ")
      if username == "":
            exit("Please input the correct username")
      print("If password is not set, just press [Enter] on the
following prompt")
      password = input("Enter your password > ")
      database_name = input("Enter the name of the database you want
to backup > ")
      if database_name == "":
            exit("Please input the correct database name")

      print("Trying connection...")
      try:
            connection = connector.connect(host = hostname, user =
username, password = password, database = database_name)
            cursor = connection.cursor()
            print("Connection successful")

            cursor.execute("show tables;")
            table_names : list[str] = []
            for record in cursor.fetchall():
                  table_names.append(record[0])

            backup_database_name = database_name + "_backup"
            cursor.execute(f"create database
{backup_database_name};")
            cursor.execute(f"use {backup_database_name};")

            for table_name in table_names:
                  cursor.execute(f"create table {table_name} select *
from {database_name}.{table_name}")
            print("Backup successful")
```

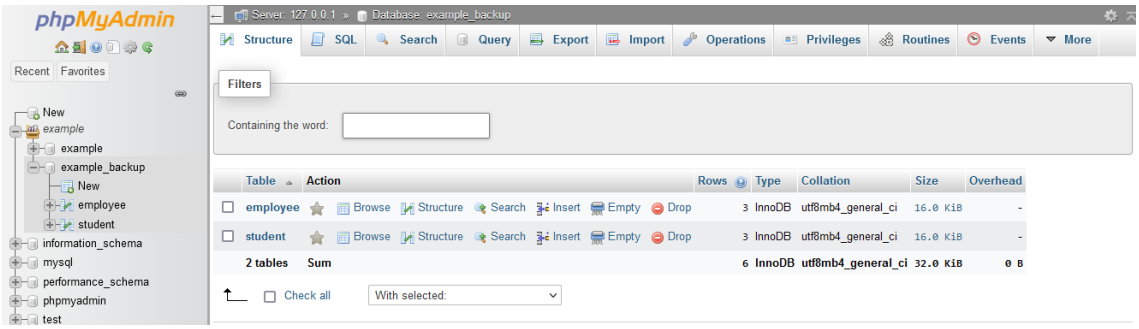
```
except:
    exit("Connection unsuccessful")
```

Output:

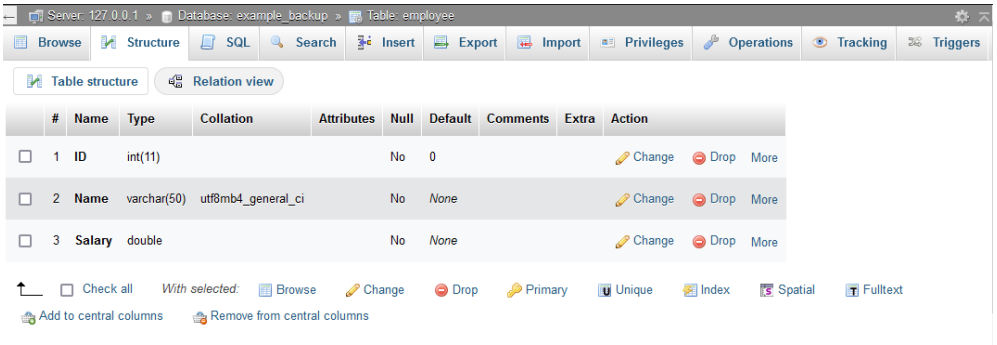
```
PowerShell 7 (x64)
(mysql-directory) PS C:\Temp> python backup_generator.py
Enter host name [localhost]>
Enter your username > root
If password is not set, just press [Enter] on the following prompt
Enter your password >
Enter the name of the database you want to backup > example
Trying connection...
Connection successful
Backup successful
(mysql-directory) PS C:\Temp>
```

Database structure and contents:

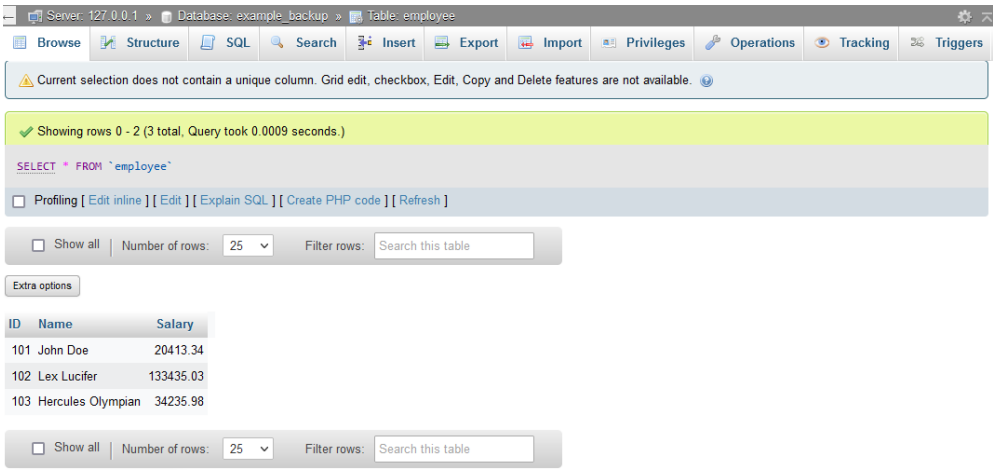
- **Name**: *example_backup*



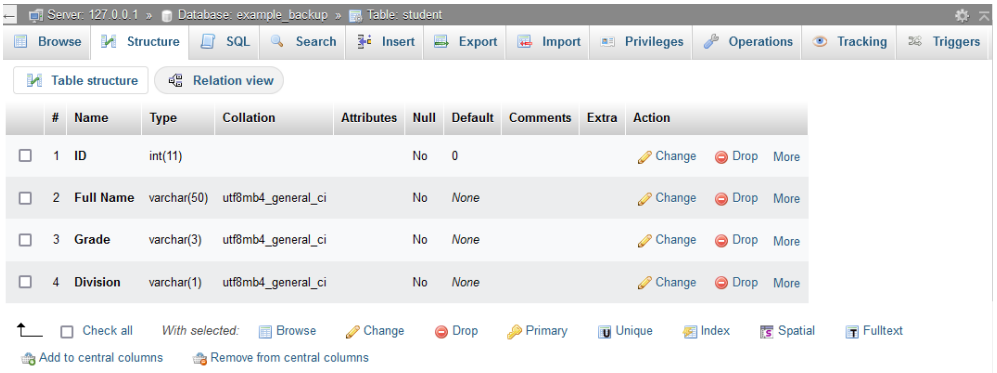
- **Database contents:**
  - **Tables:**
    - *employee*
      - **Structure:**



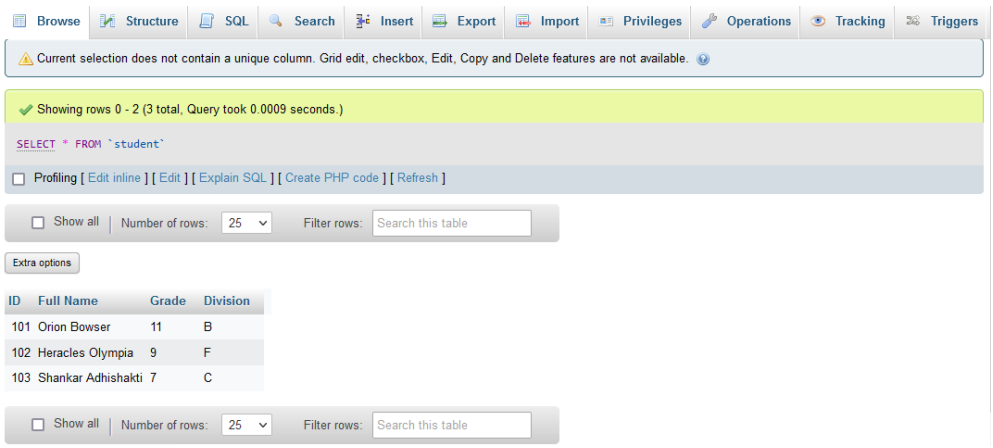
- **Contents:**



- *student*
  - **Structure:**



- **Contents:**


Browse
Structure
SQL
Search
Insert
Export
Import
Privileges
Operations
Tracking
Triggers
Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.
Showing rows 0 - 2 (3 total, Query took 0.0009 seconds.)
SELECT * FROM `student`
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
Show all
Number of rows: 25
Filter rows: Search this table
Extra options
ID Full Name Grade Division
101 Orion Bowser 11 B
102 Heracles Olympia 9 F
103 Shankar Adhishakti 7 C
Show all
Number of rows: 25
Filter rows: Search this table