Database Lab 1 : Part 1

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If you want screen shots I have them on Dropbox (As it was really annoying to upload them to the wiki,

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Database 3

LAB TASK LOG SUBMISSION

Student Name: _____ Student No: _____ Class_____

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Student statement

I hereby certify that I have read the plagiarism guidelines for this module and that this material which I now submit for assessment, is entirely my(our) own work and has not been taken from the work of others, save and to the extent, that such work has been cited and acknowledged within the text of my work

I also confirm that I have completed by myself all of the material required in each of the database labs

Signed _____ Date:_____

Details of lab tasks not completed :_____

WEEK 2 ,LAB 1 : 26/9/2014

What are the MySQL installation paths for the server and data ?

They were installed here

Install Path : C:\progargmFiles\mySQL
Data Path : C:\programdata\MySQL\MYSQLSERVER5.6\

Describe why there are 2 client utilities

- CMD line more advanced, beginner users may struggle to .
- GUI is more user friendly with graphics allowing mouse clicks.
- CMD line uses less computer resources due to being a simple command line so has its advantages over GUI.
- GUI hogs more computer resources due to graphics etc.

SQL for finding countries in the world :

SELECT count(*) FROM country;

How many countries are in the world database ?

There where 239 Counties

What commands did you use to display the current Processlist?

SHOW DATABASES;
USE information_schema;
SHOW TABLES;
SELECT * FROM processlist;

What commands did you use to display the first 3 columns of User?

USER
CURRENT_CONNECTIONS
TOTOAL_CONNECTIONS

Are all Mysql log visible in the MySQL Workbench untility ?
MySQL Workbench can only view logs if your log destination is set to TABLE.

What is the MySql data dictionary made of how can it be processed ?
The mapping between variables and their corresponding data is stored by MySQL Workbench in what is known as a data dictionary.
It can be processed though

What is MySQL My.ini file ?

- Its the settings file for MySql (there is other terms for it too)
- Default Character set - Utf8
- Sever Type Number Server_type=3
- Sql mode : sql-mode ="STRICT_TRANS_TABLES, NO_AUTOcREATE_USER,NO ENGINE_SUBSTITUTION"

Why are some MySql files hidden ?

So the general user doesn't delete them by mistake and for safe keeping.

How did you display the hidden files ?

I had to go to folder options in windows explorer settings and allow hidden folders to be shown.

Why do we use roles in database management ?

A role can be thought of as either a database user, or a group of database users, depending on how the role is set up. Roles can own database objects (for example, tables) and can assign privileges on those objects to other roles to control who has access to which objects. Furthermore, it is possible to grant membership in a role to another role, thus allowing the member role use of privileges assigned to the role it is a member of. Makes it easier to manage then having to manage every user (set up included) each time.

What are the difference between the different server types ?

Developer Machine : a typical desktop workstation where MySQL is intended only for personal use.The MySQL server is configured to use minimal system resources.
Server Machine : Where the MySQL server is running alongside other server applications such as FTP, email, and Web servers. The MySQL server is configured to use a medium level system resources.
Dedicated Machine : only the MySQL server. It is assumed that no other applications are running. The MySQL server is configured to use all available system resources.

What the different log types and what are they ?

Bin Log

The binary log contains “events” that describe database changes such as table creation operations or changes to table data.

Gernial Log

The general query log is a general record of what mysql is doing. The server writes information to this log when clients connect or disconnect, and it logs each SQL statement received.

Slow Query Log

The slow query log consists of SQL statements that took more than long_query_time (in the ini file) seconds to execute. The minimum and default values are 1 and 10.

http://dev.mysql.com/doc/refman/5.1/en/server-logs.html for the definitions used :)

WEEK 3 - LAB 2 - 03/10/14

What command can you use to create a database in Ingres

createdb Collegedb

Compare Ingrues and SQl

Ingres
Ingres begins installation by offering 4 different types of system configuration based on concurrency
Allows for multiple instances on the same machine.
Multiple Instances: yes
Transaction Log size: 256 MB(default), changeable
Prompt for dual log's different physical location: yes
Different data locations: Database, Backup, Journal, Dump, Temporary
SQL-92 compliance: yes

MySQL

MySQL offers specific features to be installed.
Multiple users :No
Multiple Instances: No
Not specified. Allows for 3 types of logs to be included
none
Only two locations: one for server, one for data
None

What is the SQL to create a table in Ingure and SQL

```
Create table student
(
Cao_no Integer,
Cit_no Integer,
Dept_code Varchar(10),
Dept_name Varchar(52),
Entry_date Varchar(8),
Course_code Varchar(15),
Course_type (13),
Year Varchar (6),
Status Varchar(16)
);
```

WEEK 4 - LAB 2(CONTINUED) - 10/10/14

What is the command to create an index in Ingrus and Sql

CREATE INDEX index_name ON table_name (column_name)

Create index of non key column and see which different queries involving that column actually use the index if any.
Did use on the index on the heap.
Get 2 values from index
Values Picked

- SELECT * from STUDENT WHERE Course_code = ''Ev_BARRTN';
- Exec = 31ms
- Cost 127 io
- Rows Returned : 128
- Index Used used
- SELECT * from STUDENT WHERE Course_code="BS1"
- Exec = 31ms
- Cost 196 io
- Rows retruend : 1540
- Index used.

IMPORT . CSV FILE INTO THE TABLE

load data infile 'C:\Databases\Student.csv' into table student fields terminated by ',';

Explain why SQL dialect and portability are linked.
Having different dialects of SQL hinders portability in an effort to have customers use a specific database. aka vender locking.

WEEK 5 - LAB 3 - 17/10/14

What was the load statement used

load data infile 'C:\Databases\Student.csv' into tabel student fields terminated by ',';

Explain Mysql export issues

- MySQL has added specific things to their sql to vendor lock the user.
- like engine=MyISAM in the Create Table sections
- Also the LOCK TABLES command is specific to MySQL

Note 2 of the data type transforms that can be used to handle data type variations in SQL dialects.

- MySQL offers Data Type Mapping tool to help with different data types from when importing . This helps change the structre of the files to match what is needed.
- int2 can be handled as SMALLINT
- int8 can be handled as BIGINT

Explain the difference between .sql vs csv

- CSV won't let you create indexes for fast searching.
- If you always need all data from a single table (like for application settings), CSV is faster, otherwise not.
- if you use a CSV, you need to be really careful to handle multiple threads / processes correctly, otherwise you'll get bad data or corrupt your file.
- Using a CSV is a very bad idea if you ever need UPDATEs, DELETEs, ALTER TABLE or to access the file from more than one process at once.
- Csv file contains string data values that are delimited with ',' symbol
- File containing SQL code to represent data values and its structure

Inserting

- insert into orders (idorders,product,qty)
- Values (86,'toys',1);

Trigger

```
Delimiter $$
 Create trigger sale_bi_trg
 before insert on orders
 for each row
 begin
 insert into logs
 values('insert',now());
 END $$
Delimiter ;
```

Trigger result: Row inserted into logs table containing 'insert' string and datetime stamp when the trigger was activated.

Tables

order -> orderids (int) -> project(varchar 255) -> qty (int)
logs -> PRODUCT -> DATE

```
CREATE TABLE logs (
inserts varchar(10),
dateandtime datetime
);

CREATE TABLE orders (
idorders int,
product varchar(10),
qty int
);
```

WEEK 6 - NO LAB - 24/10/14

No Lab

WEEK 7 - LAB 4 - 31/10/14

You'll need to find if MySQL uses an 'autocommit' setting and find what it defaults to.

Show variable like '%autocommit%'
The default setting for auto commit is "ON"

FInd default Engine

Show Engines
The default storage engine is InnoDB

FInd default setting for isolation level

Repeatble-Read. What command did you use to find it Show variable like '%isolation%';

READ UNCOMMITTED

Specifies that statements can read rows that have been modified by other transactions but not yet committed.

READ COMMITTED

Specifies that statements cannot read data that has been modified but not committed by other transactions. This prevents dirty reads. Data can be changed by other transactions between individual statements within the current transaction, resulting in nonrepeatable reads or phantom data. This option is the SQL Server default.

REPEATABLE READ

- Specifies that statements cannot read data that has been modified but not yet committed by other transactions and that no other transactions can modify data that has been read by the current transaction until the current transaction completes.

SERIALIZABLE

- Specifies the following:
- Statements cannot read data that has been modified but not yet committed by other transactions.
- No other transactions can modify data that has been read by the current transaction until the current transaction completes.
- Other transactions cannot insert new rows with key values that would fall in the range of keys read by any statements in the current transaction until the current transaction completes.

Errors

- Error message from deadlock was 1213
- Deadlock found when trying to get lock try restarting transactions.

http://msdn.microsoft.com/en-ie/library/ms173763.aspx for the definitions :)

Database Lab 1 : Part 2

Prepared for: Byron Tracey
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1 December 2014

WEEK 9 - 14/ 11 / 2014

MySQL recovery using GUI

For this lab , I worked with the world database.
In the sheet I was told to do two different types of backup (One backing up all tables, another backing up just a single table).

"Export to Dump Project Folder" and "Export to Self-Contained File".

I first did a full Dump of the database , using the Gui interfaces.
I then dropped the database using the following sql command

- DROP DATABASE world;

I then checked to see if the database was useable.

- Use world;

I got an error saying it couldn't be used. :(

I then used the import facility in Workbench to import the backup.
I then ran **SELECT * FROM city** to make sure everything was restored.

I then used the second export option to back up a single table.
I backed up the table called city.
I then deleted this table and imported the backup to restore it.

I ran **SELECT * FROM city** to make sure it was restored, just in case.

The naming conventions of the backups were as follows: **Dump20141121**.
It uses the year, month and day to create the name.

This is important as if you were making different backups week and at some point needed to use one of these backups and would be able to choose the relevant one.

INGRES BACKUP AND RESTORE

For this lab we looked at back up and restore but in ingures. it was harder then sql.

Section 1

Create database ‘recovery'

- CREATEDB recovery;

Then I created the table orders in the database.

Create table 'orders'

```
CREATE TABLE orders (
order_no Int,
issued timestamp
);
```

Create Backup

Then created a backup of the database using the command ckpdb recovery.

Begin transaction/insert two rows into 'orders'

```
BEGIN TRANSACTION
INSERT INTO orders
VALUES (1, CURRENT_TIMESTAMP);
INSERT INTO orders
VALUES (2, CURRENT_TIMESTAMP);
commit;
```

Backup the database again and restoring

I first deleted the first backup I had created using the command: **ckpdb recovery**.
Then I created another backup.
I then displayed all information from the table again using the code below.

SELECT *
FROM orders;

This returned the two rows.

I then deleted the two rows from the table
I tried to display the table again, it didn't display as it had been deleted.

I then restored the database with the backup.

- **rollforwarddb recovery.**

I then ran **SELECT * FROM orders** and the two rows were restored.

Section 2

First I had to enable journaling for the database. I got this to work by creating a backup of the database first. Make sure the spelling is correct.

- **ckpdb +j recovery.**

I ran the following to make use logs were working, Which it was :)

- **Infodb recovery**

I then added another row into the table. Using the code below.

```
BEGIN TRANSACTION
    INSERT INTO orders VALUES(3, CURRENT_TIMESTAMP)
    commit;
```

I checked all the information in the table again. I then created another transaction using the commands below.

```
    BEGIN TRANSACTION
    SELECT * FROM orders
    DELETE FROM orders
    SELECT * FROM orders
    commit;
```

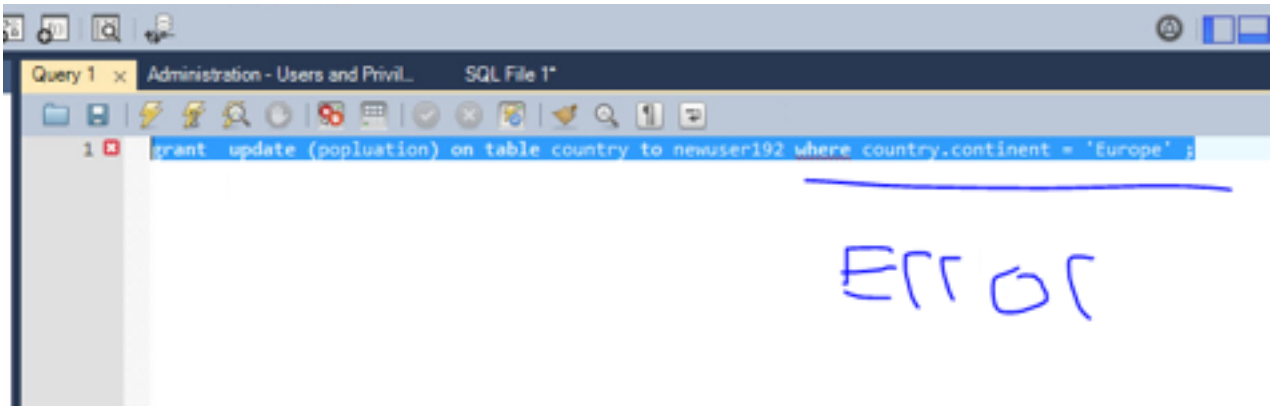
The table was empty .

I used the **auditdb recovery** command to find all transaction times.

- End time for the insert row translation : 21-Nov-2014 11:41:10.01
- Begining time for the delete transaction : 21-Nov-2014 11:46:54.50

I then went and restored the database to before the start of the delete transaction using the sql command below.

- **rollforwarddb *j -e21-Nove-2014:11:41:10 recovery**



After this I used a select all command to see if the data is back. Everything has been restored, yeah.

WEEK 10 - 28/ 11 / 2014

1. First I used Mysql workbench using the Root DBA connection.

2. Then I selected the USER & Privileges panel on the left.

3. Then I added a new user (connection) called **newuser192** with the password **Test**

4. Then I went to the Schema Privileges tab, Added a new entry to give newuser192 access to the world database. I click apply.

5. Then I went to the home tab, created a new connection to test newuser192 and password worked.

6. I then connected using Newuser192. I then checked if the privileges were correct. using update city set name = "s" where id = 1; I got an error saying **error Code :1142 . UPDATE command denied to user 'newuser192'@'localhost' for table ‘city'**

7. I switched back to the Root connection in a new tab i gave newuser192 access to update the population of the table country in the world database. This was the sql grant update (Population) on table country to newuser192; Not originally the where because was wrong so I removed it. The error is on the bottom.

8. Then I tested that the new privilege works. I switched back to the newuser192 connection. I tested it by trying to update the ireland popluation. **update Europe set population = 99 where code = 'IRL';** It worked perfectly

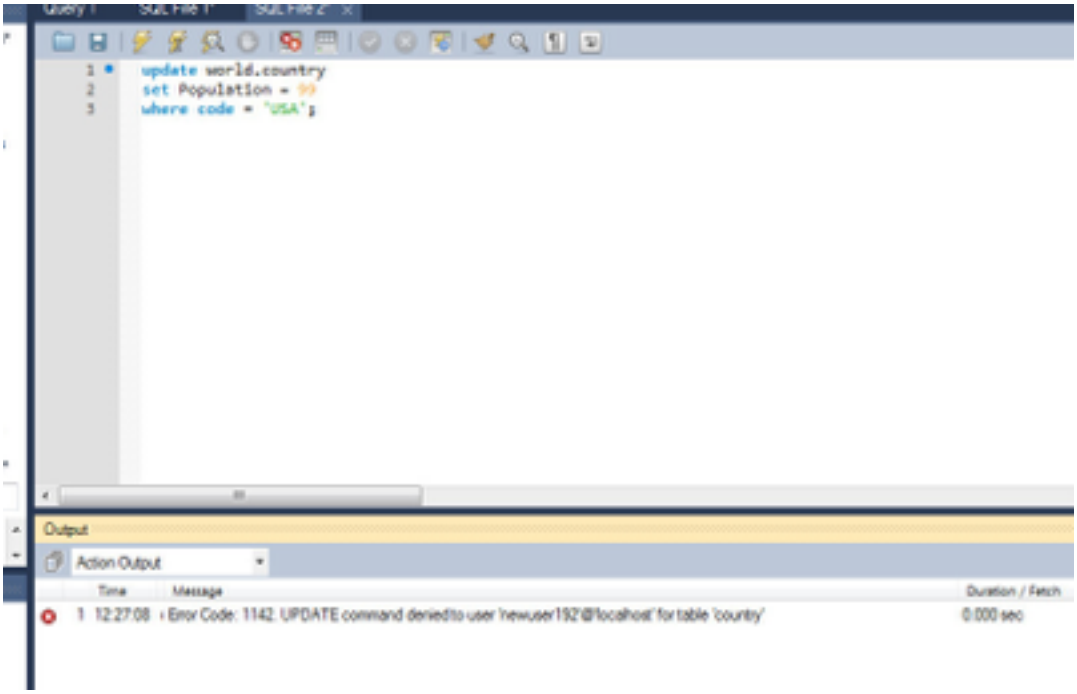
9. I then went back to the main root connection and revoked the privillege of newuser192. The code is here **revoke update(Population) on table country form newuser192.**

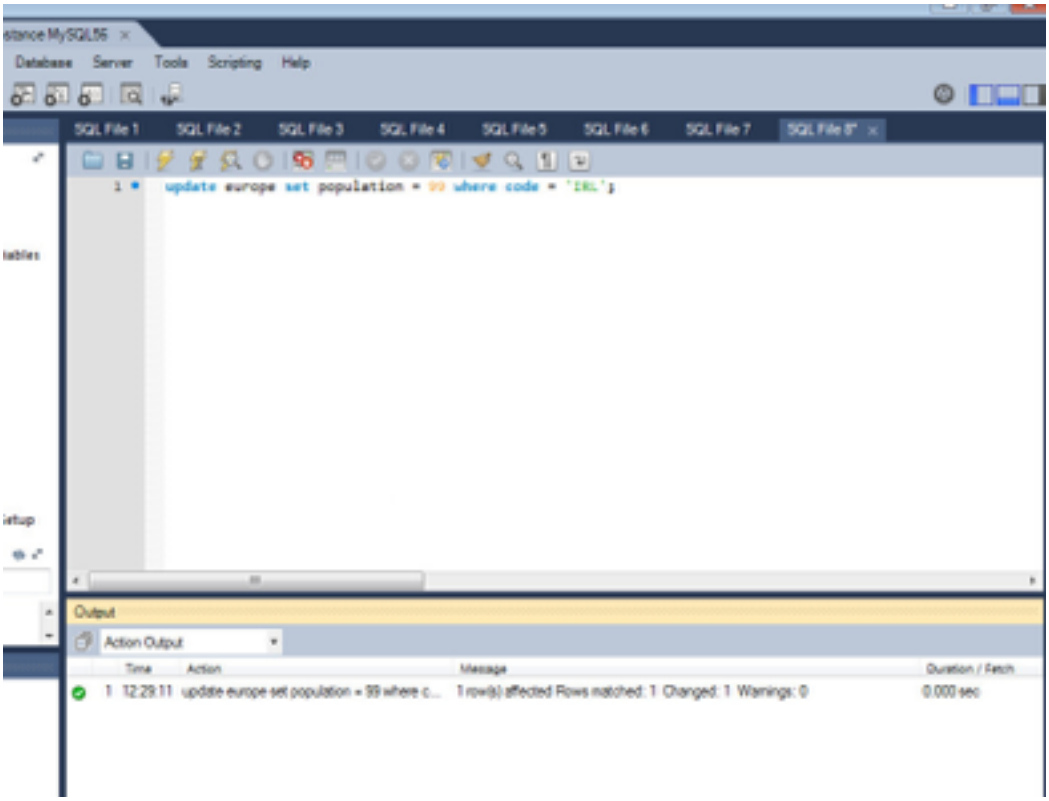
10. I then switch back to the new user connection to test the revoke worked. The sql I used update country set country.Population = 1 where name = 'USA'; The response was **errorCode :1142 . UPDATE command denied to user 'newuser192'@'localhost' for table ‘city'**

11. I then went back to the ROOT connection and created a view. The sql used was **create view Europe (Code, Population) as (select c.code,c.population from country as c where Contient = 'Europe');**

12. I gave the user select and update privileges the SQL is "**grant update (Population) on table world.country to newuser192"**

13.




Database Server Tools Scripting Help
SQL File 1 SQL File 2 SQL File 3 SQL File 4 SQL File 5 SQL File 6 SQL File 7
update europe set population = 99 where code = 'IRL';
Output
Action Output
Time Action Message Duration / Fetch
1 12:29:11 update europe set population = 99 where c... 1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0 0.000 sec