1814ict/2814ict/7003ict/1011ICT:
Data Management/
Database Design/
Applied Computing

Weekly Workshop/ Lab 2.1 Activities

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Course developed by: Dr Mohammad Awrangjeb; AProf John Wang; Dr Zhe Wang

Activity Set 1: Find solutions to the following problems [Group Activity]

1. Data management

PROJECT_CODE	PROJECT_MANAGER	MANAGER_PHONE	MANAGER_ADDRESS	PROJECT_BID_PRICE
21-5Z	Holly B. Parker	904-338-3416	3334 Lee Rd., Gainesville, FL 37123	16833460.00
25-2D	Jane D. Grant	615-898-9909	218 Clark Blvd., Nashville, TN 36362	12500000.00
25-5A	George F. Dorts	615-227-1245	124 River Dr., Franklin, TN 29185	32512420.00
25-9T	Holly B. Parker	904-338-3416	3334 Lee Rd., Gainesville, FL 37123	21563234.00
27-4Q	George F. Dorts	615-227-1245	124 River Dr., Franklin, TN 29185	10314545.00
29-2D	Holly B. Parker	904-338-3416	3334 Lee Rd., Gainesville, FL 37123	25559999.00
31-7P	William K. Moor	904-445-2719	216 Morton Rd., Stetson, FL 30155	56850000.00

Given the file structure shown in the above Figure, answer the following questions:

a) How many records does the file contain? How many fields are there per record?
b) What problem would you encounter if you wanted to produce a listing by city? How would you solve this problem by altering the file structure?
c) If you wanted to produce a listing of the file contents by last name, area code, city, state, or zip code, how would you alter the file structure?
d) What data redundancies do you detect? How could those redundancies lead to anomalies?

2. Entity Relationship Diagram (ERD)

Draw an ERD for the following business rules:

- Griffith University offers several programs such as management, health, IT etc.
- Each program is uniquely identified by program id. Other attribute of a program is its name.
- Each program attracts a number of students. Each student is described by his/her student id, and name.
- Each student can take a maximum of 1 program.
- Additionally, each program has a program convenor. Program convenor is described by convenor id, name and his/her office number.
- A specific program convenor may convene more than 1 programs.

Note: Remember SIX (6) Steps to develop an ERD from Week 2 lecture

FOLLOW for PARTS 2 & 3 below

Step 1: Find all possible entities [look for *nouns*].

Step 2: Draw entities with attributes, add primary keys.

Step 3: Find & show relationships [find *verbs*] one by one between entities.

Step 4: Find & show connectivity one by one between entities.

Step 5: Find & show participation one by one between entities.

Step 6: Insert Foreign keys and Revise above Steps 1 to 5 to ensure your ERD is complete.

Note: *This ERD solution to the above case study may vary depending on the assumptions you may make. Your assumptions should not contradict any facts already given in the case study. Please write your assumptions in the ERD that you submit into your learning journals.*

Activity Set 2: Running MySQL [Individual Activity]

- Use the attached XAMPP.pdf file to run MySQL on your lab computer. [Preferred]
- Alternatively, use the attached UwAmp.pdf file to run MySQL on your lab computer.

Activity Set 3: Importing, exploring & exporting a database [Individual Activity]

Create a Database and Import its readymade script File

1) Download the following SQL script files from the course website.
   a) company_create_schema.sql
   b) company_create_data.sql
   c) company_query.sql

   Note that your data in ICT lab computers (including account settings and SQL scripts) will be lost once the computer is turned off / rebooted, unless you save them at your USB drive. So, make sure you export/copy your work in every week lab before you log off.

2) Click on the **Databases** tab at the top of the window

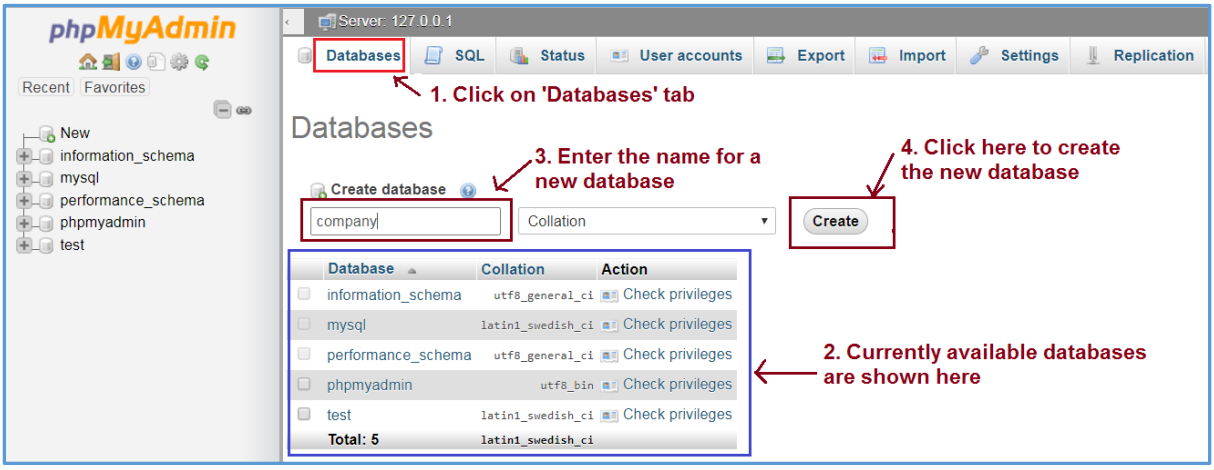


Figure: D01

3) To create a new database, enter company in the ***Create Database*** input box and click on ***Create*** button. [See Figure: D01]
4) Note that the **'company'** database is added to the list of databases on the left panel of the window.
5) Click on the newly created database **'company'** to use it. [See Figure: D02]
6) Click on the **Import** tab at the top of the window. [See Figure: D02]
7) From the ***File to import*** section click on the ***Browse*** button. Locate the file **company_create_schema.sql** that you downloaded in step 3) and click on the **Open** to select the file. [See Figure: D02]

8) Click on the ***Go*** button at the bottom of the Window.

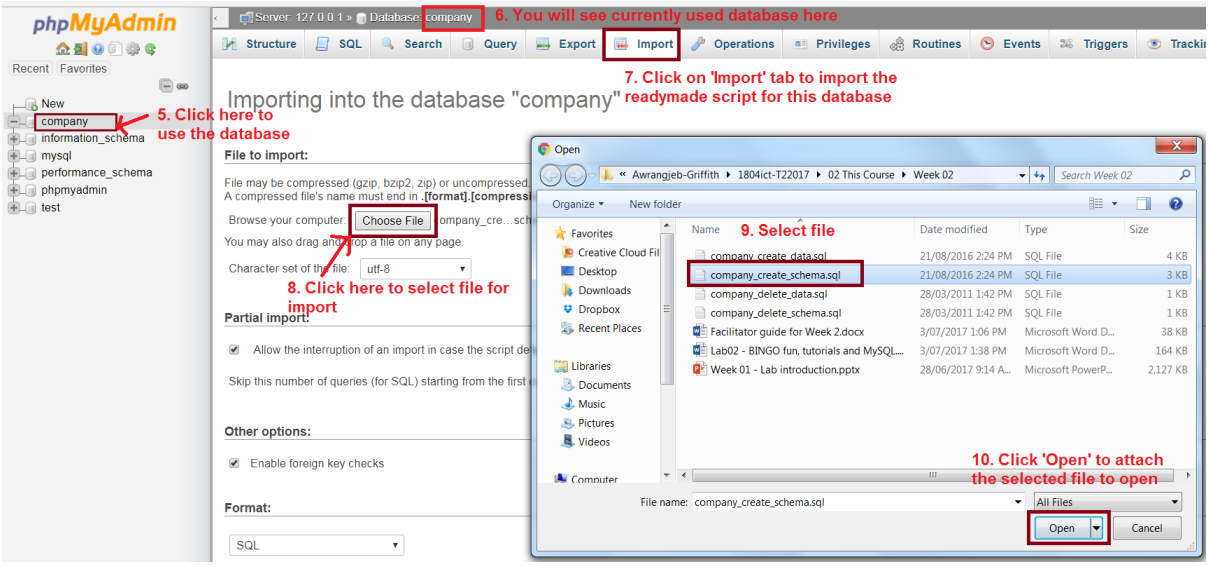
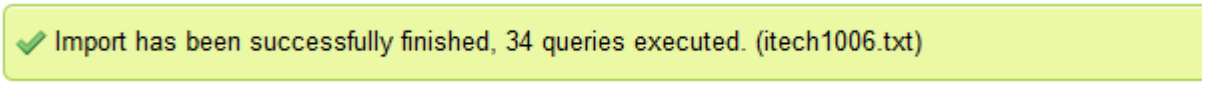


Figure: D02

9) If your file has been successfully imported you will see the following **similar** message at the top of the window:



And you will see the following 6 (six) tables listed in the left hand column: [See Figure: D03]

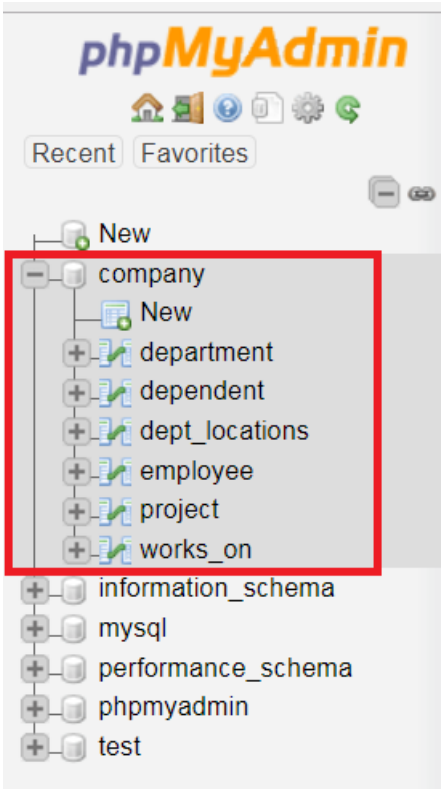


Figure: D03

10) Take the time now to explore the database and see what is available in myPhpAdmin. For example, [See Figure: D04]

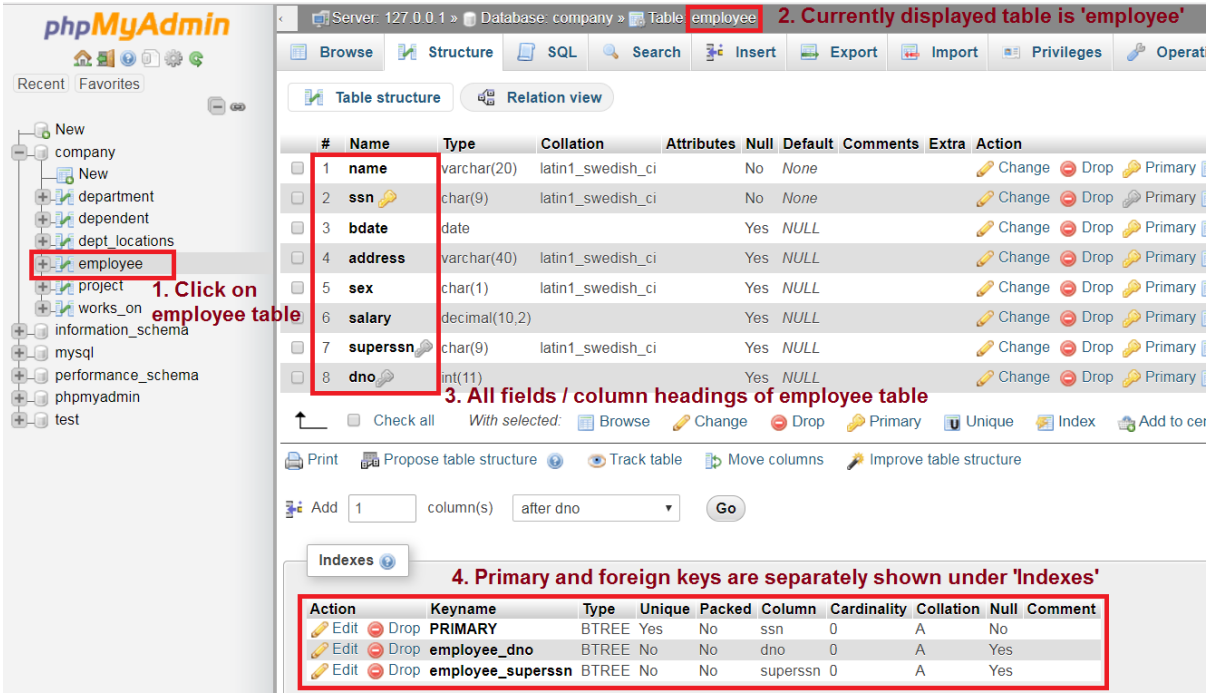


Figure: D04

11) In order to import data for this database, follow **Steps 5 to 9** for the file **company_create_data.sql**.

12) Now, again take time to have a look at the data in different tables. For example, for Employee table: [See Figure: D05]

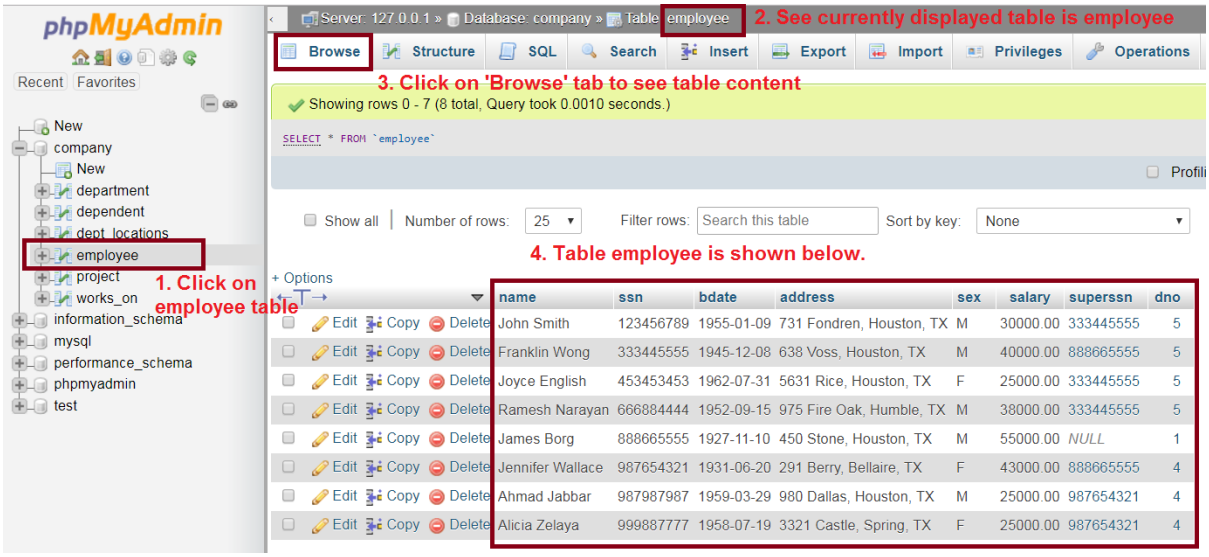


Figure: D05

13) Continue looking at the other tables.

14) Now run some example queries to retrieve data from the database. Open **company_query.sql** and copy & paste Query 1 as shown below: [See Figure: D06]

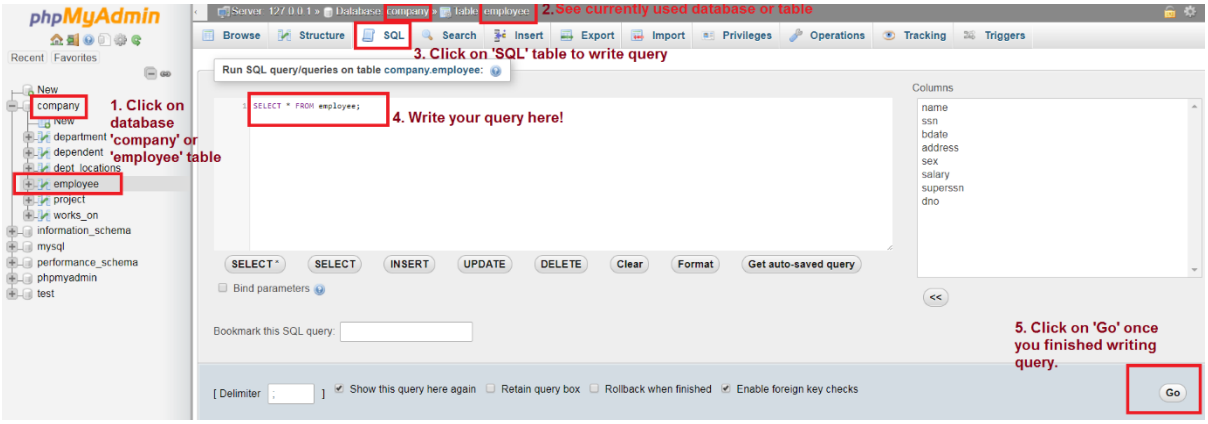


Figure: D06

15) Once you click on Go button (in Step 14 above), you will see the table content shown in Step 12 above. [as shown in Figure: D05]
16) Now you repeat Step 14 above, with Query 2. So, you see the table with male employees only! [See Figure: D07]

name	ssn	bdate	address	sex	salary	superssn	dno
John Smith	123456789	1955-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
Franklin Wong	333445555	1945-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
Ramesh Narayan	666884444	1952-09-15	975 Fire Oak, Humble, TX	M	38000.00	333445555	5
James Borg	888665555	1927-11-10	450 Stone, Houston, TX	M	55000.00	*NULL*	1
Ahmad Jabbar	987987987	1959-03-29	980 Dallas, Houston, TX	M	25000.00	987654321	4

Figure: D07

17) Now, you repeat Step 14 above, with Query 3. So, you see only the selected columns only from the table (with male employees only)! [See Figure: D07]

+ Options

name	bdate	salary
John Smith	1955-01-09	30000.00
Franklin Wong	1945-12-08	40000.00
Ramesh Narayan	1952-09-15	38000.00
James Borg	1927-11-10	55000.00
Ahmad Jabbar	1959-03-29	25000.00

Figure: D08

Exporting the Database

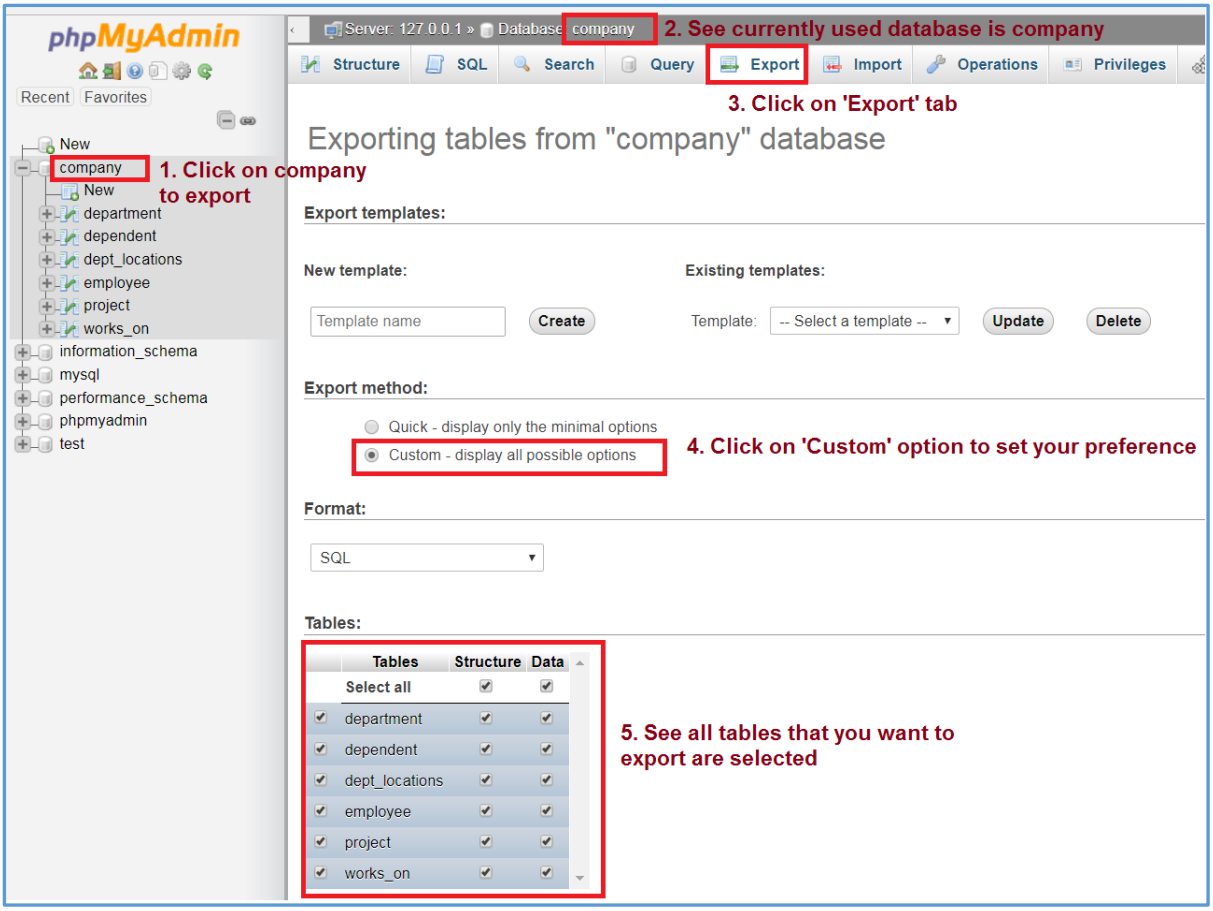


Figure: D09

1) For exporting, make sure you are using the database. In this case the **company** database and its tables are displayed at both left and right columns of the window. [See Figure: D09]
2) Click on the **Export** tab at the top of the window. [See Figure: D09]
3) Ensure that under the **Table(s)** section all of the tables are selected (this is normally done by default). [See Figure: D09]
4) Also, make sure that 'Add `CREATE DATABASE / USE` statement' option is ticked under 'Object creation options': [See Figure: D10]

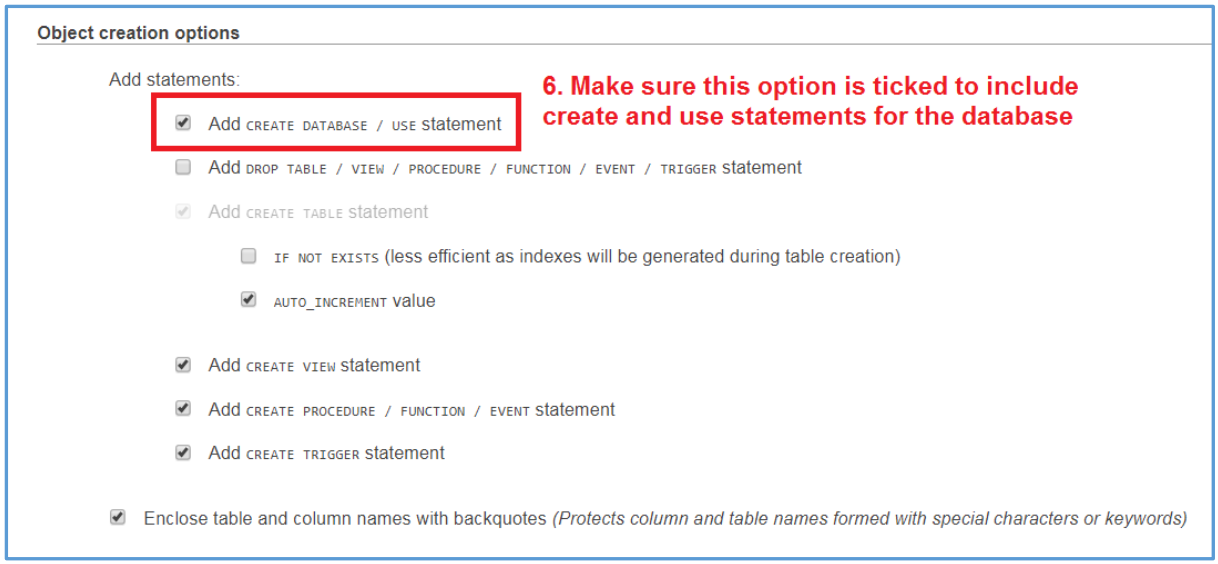


Figure: D10

5) Set output file name: [See Figure: D11]

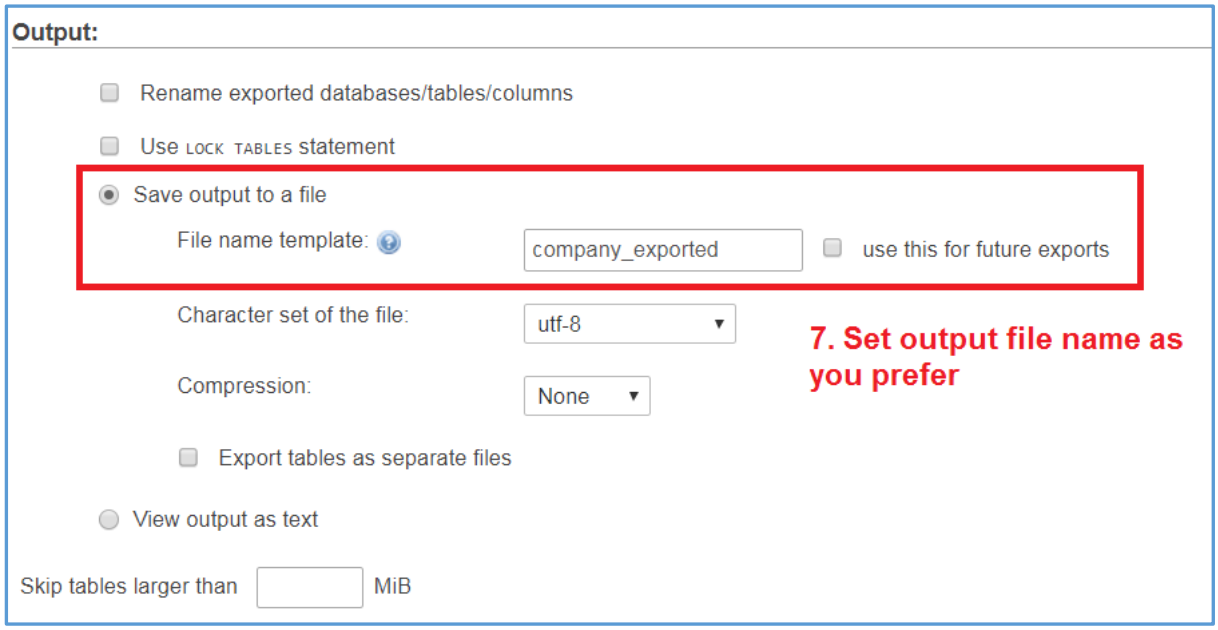


Figure: D11

6) Click on the ***Go*** button at the bottom of the window.
7) Locate the file where it is saved and copy to your USB drive to use later.

Notes:

1) Each week you will need to do a number of these steps so ensure that you have been able to successfully complete all of them.
2) Using the export function allows you to back up your work and take it home with you.