Database I – SCS1103

Assignment

Abstract descriptions of three database systems are given below. Each group has assigned to one scenario and develop a simple web based database system for that scenario. You may also extend its features according to your own wish of development.

Database System 1

A Hospital consists of a number of specialized wards (such as Maternity, Pediatrics, Oncology, etc.). Each ward has a number of patients, who are admitted on the recommendation of external physicians (may be their family doctors) and confirmed by a consultant employed by the Hospital. On admission, the personal details of every patient are recorded. A separate register is to be held to store information of tests undertaken and results of a prescribed treatment. A number of tests may be conducted for each patient. Each patient is assigned to one leading consultant, but may be examined by another doctor, if required. Doctors are specialists in some branch of medicine and may be leading consultants for a number of patients, not necessarily from the same ward.

Database System 2

A database is to be designed for a computer diploma institute to monitor its students' progress throughout their course of study. The students are following a particular diploma within the framework of a semester based and modular system. The institute provides a number of modules, each being characterized by its code, title, credit value, module coordinator, teaching staff, diploma and the department that they come from. A module is coordinated by a module coordinator who shares teaching duties with one or more lecturers. A lecturer may teach (and be a module coordinator for) more than one module. The database should also contain some information about students including their numbers, names, addresses, diplomas that they are following, and their past performance
(i.e. modules taken and exam results).

Database System 3

A furniture manufacturing company has its showrooms in multiple districts. Manufacturing of furniture takes place in Moratuwa and finished goods are delivered from the factory directly to the customer's site. The head office is also in Moratuwa on the same site as the factory. The customers visit showrooms and go through the available furniture. In order to purchase, the customer has to order furniture which will then be delivered from the factory. Furniture available on stock is delivered within three days and others are manufactured and delivered within one month. The company is to design a database to keep track of all these functions such as sales at each showroom, company stock details, manufacturing orders and their delivery status up to date.

At least following sections must be covered in your implementation to achieve good grades for the assignment.

1) **A consistent database design** should be achieved for the system based on a good ER (or EER) Diagram followed by a mapping process.

2) **Implement the database** using your knowledge of SQL Data Definition with **appropriate constraints** where necessary.

Hint: Download and install XAMPP (https://www.apachefriends.org/download.html) in your machines to setup a local web server. Run XAMPP control panel as administrator. Start Apache and MySQL. This is the first step needed to create a database using XAMPP.

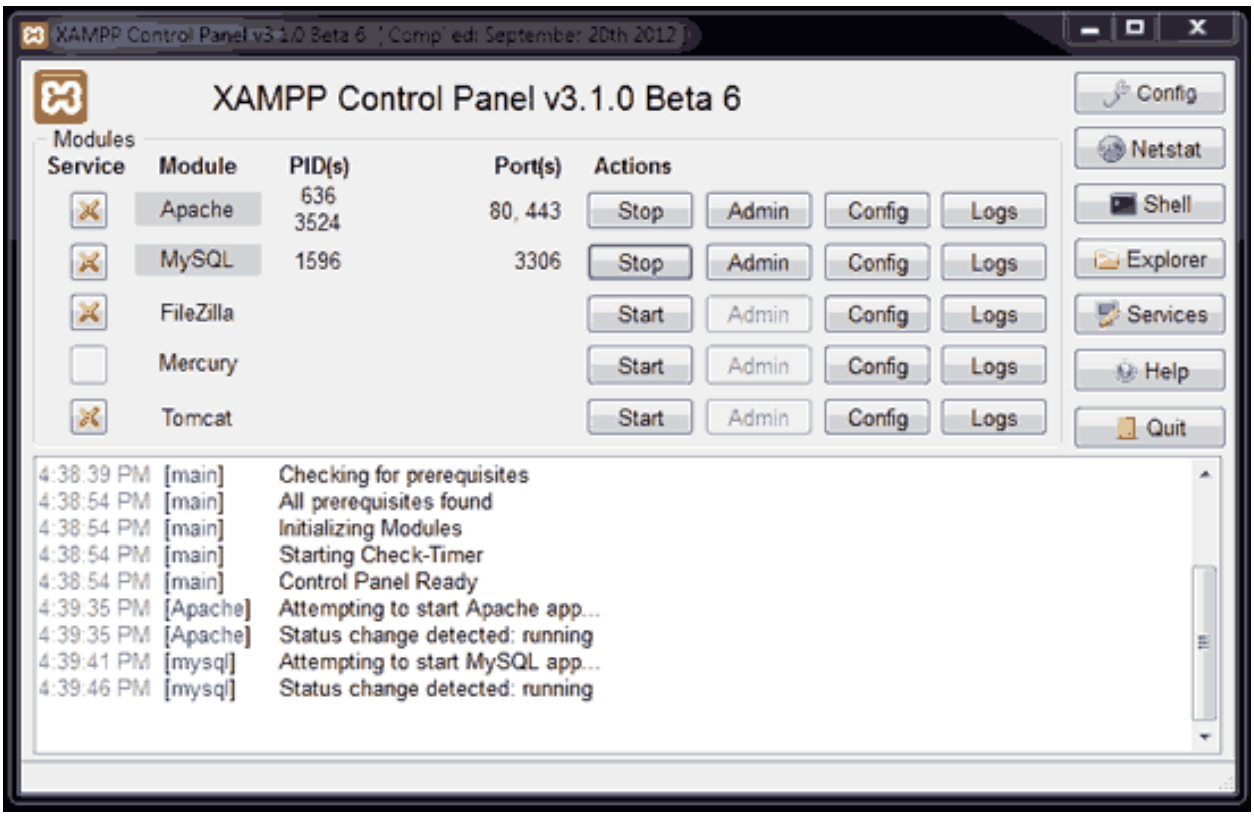

Figure 1: XAMPP Control Panel

After that, visit "**localhost/xampp/index.php**" from a Browser. Click on "**phpMyAdmin**" under the "Tools" Section

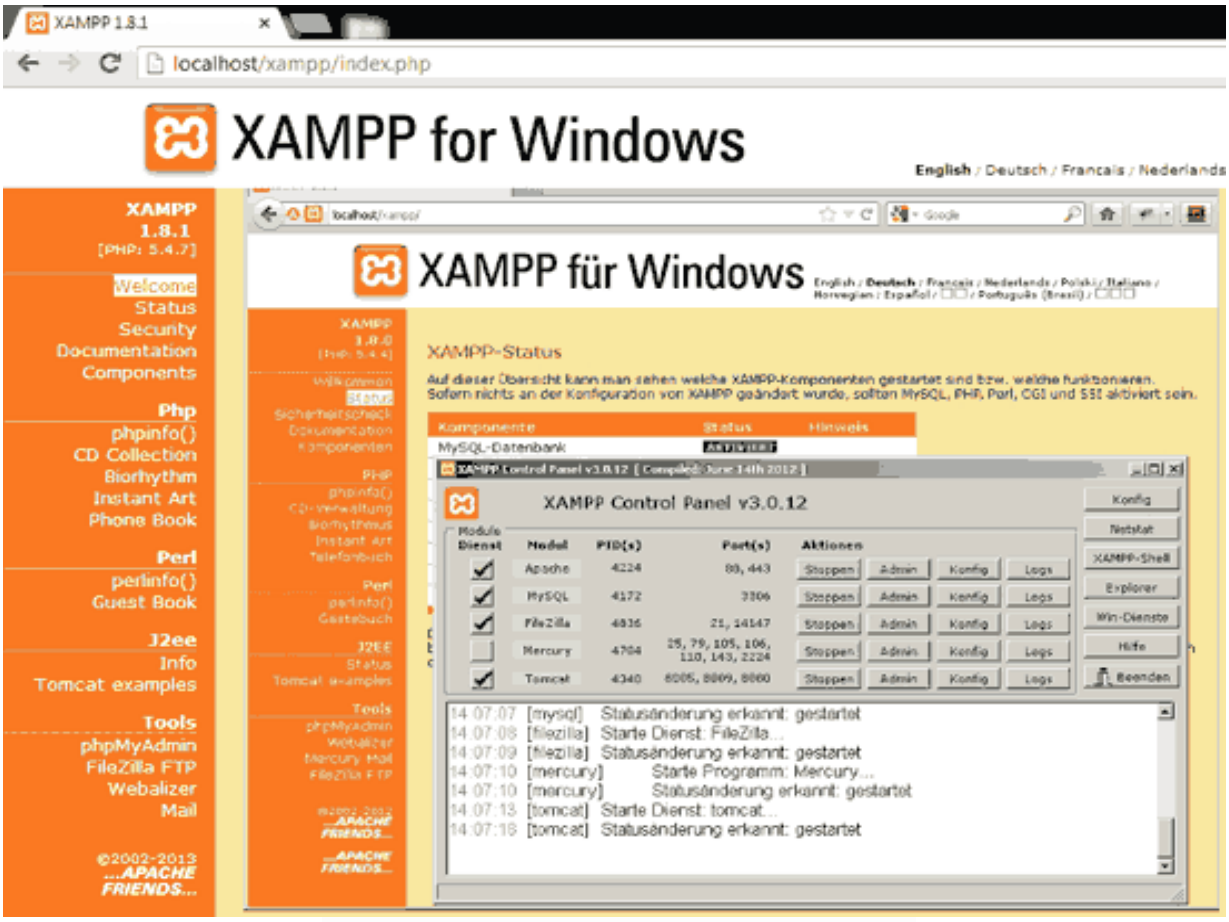

Figure 2: localhost/xampp/index.php Interface

You will see phpMyAdmin page as shown below. Click on Databases.

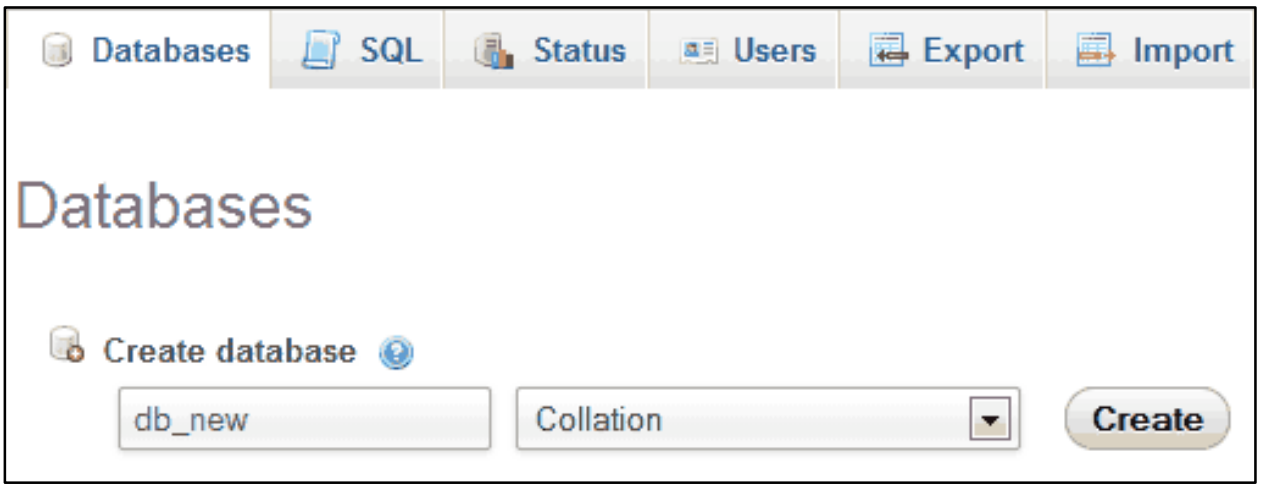

Figure 3: Sample Database Interface

Write a database name in the "Create database" textfield, and click on Create button. A database will be created.

3) Having implemented the database, system should demonstrate its **ability or inability to manipulate** (select, insert, update and delete) specific records from the database (SQL Data Manipulation) **based on an appropriate privilege assignment scheme** assigned for **various user levels** (SQL Data Security). Use of an Authorization Diagram for your demonstration is highly recommended.

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Hint: After identifying an appropriate set of user levels (not individual users, but user levels, i.e. for example: Doctor, Nurse, Attendant, Patient and Public if it is for a health care system) within your system domain, create separate user accounts for each, using the same SQL interface of phpMyAdmin. Use the same SQL interface for granting privileges as well.

Manipulation of database records: Implement a simple web interface (PHP+MySQL) to perform manipulation. You should be able to select a particular user level from your program and to demonstrate the execution of an example set of SELECT|INSERT|UPDATE and DELETE operations on request. (See Figure 4)

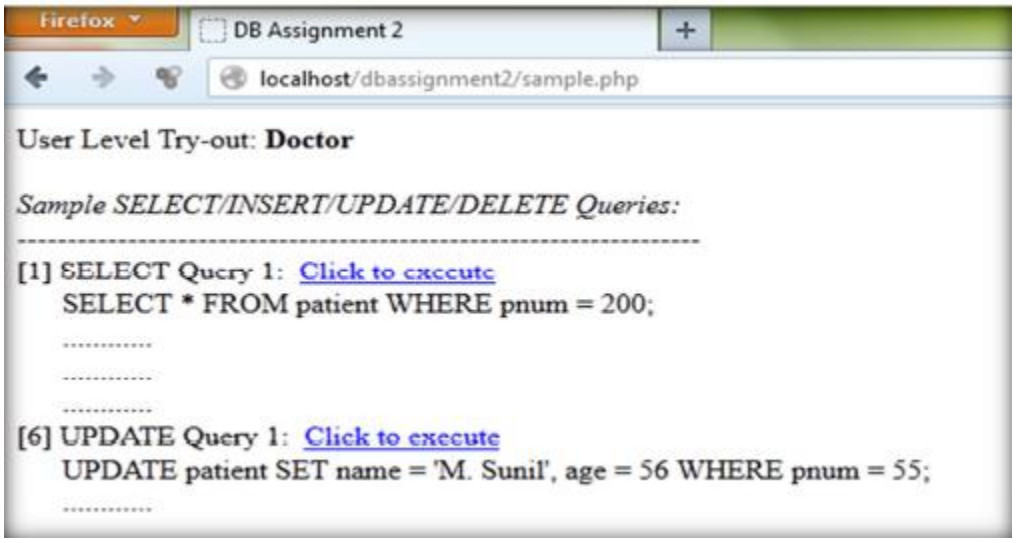

Figure 4: Sample Web Interface

Ability or inability to execute these queries should be based on the restrictions imposed by privileges assigned to a selected user level which should be supported by an appropriate response from the server side.

Reference materials for the development are as follows.

- Tutorial : http://www.w3schools.com/sql/default.asp
- HTML Tutorial : http://www.w3schools.com/html/default.asp
- PHP Tutorials : http://www.w3schools.com/php/default.asp
  http://php.net/manual/en/tutorial.php

4) A reasonable number of **appropriate views** (SQL Views) to output valuable information from the system as reports **for various user levels** are also essential. Use the same approach described in section 3 to implement user views.

5) A suitable **project documentation** (i.e. a soft copy) **covering all your implementation details** must be provided with **a soft copy of your implementation** on or before the following deadline. Make sure you upload all the necessary files associated with your implementation as you are expected to sit for a **Viva** and a **Demonstration** based on that

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Assignment Deadline: On or before 4.00pm of 31st May, 2017