

CS 353 Database Systems
Fall 2016
Homework 4
Programming Assignment

Due: December 2, 2016 till
23:59.

Submit to eren.bekce@bilkent.edu.tr by with subject
CS-353-HW4-YourSurname-YourName.

In this assignment, you will first write a simple Java application to connect to a MySQL database and modify it. Next, you are required to design a basic web application using PHP on top of this database.

Part 1: Connecting to the database with a Java application

For this part of the assignment, you will first connect to your database using MySQL console, and then write a simple Java application to connect and interact with this database.

- *Connecting to the database:* Connect to the dijkstra.ug.bcc.bilkent.edu.tr machine, which runs MySQL server (Use **SSH** or **PUTTY** as dijkstra allows only “secure” shell connections but not telnet!). Next, in the shell prompt, execute the command

```
shell> mysql --user=USERNAME --pass=PASSWORD;
```

To connect to the Dijkstra server and MySQL, you need a username and password, which should have been e-mailed to you by now. If you have not received it please contact Elif Eser. This MySQL account should contain a database whose name is the same as your username replacing “.” with “_”. For instance, if your username is “ahmet.cimen” then you should have a database with the name `ahmet_cimen`. Check your databases with ‘show databases;’ command in MySQL. For the user “ahmet.cimen” the output is as follows:

```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| ahmet_cimen |
| test      |
+-----+
```

If you don’t have a database named as your username create it with the command: ‘create database your_user_name;’ (create database for ahmet.cimen as `ahmet_cimen` for the above example)

Contact to the Elif Eser immediately, if you encounter any problem connecting to your database.

Next, write a Java program that does the following:

- *Connection:* Connect to your MySQL database using Java and your MySQL account information. You can easily find the JDBC driver for MySQL on the Web.
- *Table creation:* Create the following relations in your database. **REMARK:** We want to enforce referential integrity constraints (foreign key), and in MySQL this is supported by the table type **InnoDB**. Do NOT forget to set table type to InnoDB and set foreign keys for each table appropriately. (Again, see MySQL reference manual for details).

host(hid: INT, name: VARCHAR(50), nickname: VARCHAR(50), password: VARCHAR(50), title: VARCHAR(50), proffesion: VARCHAR(50))

channel(cid: INT, cname: VARCHAR(50))

show(sid: INT, pname: VARCHAR(50), time: TIME, day: VARCHAR(50), hid: INT, cid: INT)

guest(gid: INT, gname: VARCHAR(50), title: VARCHAR(50), proffesion: VARCHAR(50), short_bio: VARCHAR(1000))

guest_show(sid: INT, gid: INT, date: DATE)

- *Table population:* Insert into the newly created relations the following records.

host					
hid	name	nickname	password	title	proffesion
1	Fatih Altayli	altayli	1111	Mr.	journalist
2	Cuneyt Ozdemir	ozdemir	2222	Mr.	journalist
3	Neil deGrasse Tyson	tyson	3333	Dr.	astrophysicist

channel	
cid	cname
1	National Geographic
2	CNN TURK
3	Haberturk

show					
sid	pname	time	day	hid	cid
1	Teke Tek	23:00:00	Tuesday	1	3
2	5N1K	22:00:00	Sunday	2	2
3	Startalk	22:00:00	Monday	3	1

guest				
gid	gname	title	proffesion	short_bio
5	Celal Sengor	Prof. Dr.	geologist	Professor Sengor is a (foreign) member of The American Philosophical Society, The United States National Academy of Sciences and The Russian Academy of Sciences. Actually, he is the second Turkish prominent professor who is elected as a member by the Russian Academy of Sciences after Professor ordinarius Mehmet Fuat Koprulu.
6	Ilber Ortayli	Prof. Dr.	historian	Ilber Ortayli is heir to a bilingual Turkish family so that he obtained German from his father and Russian from his mother. As a polyglot historian he has enough competency in Italian, English, French, Persian and also in Ottoman Turkish and Latin in order to fluently employ or maintain historical research with historical documents in the archives. His published articles are mainly in Turkish, German and French and various of them are translated in English.
7	Mayim Bialik	Mrs.	actress	Mayim Chaya Bialik is an American actress and neuroscientist. From 1991 to 1995, she played the title character of NBC's <i>Blossom</i> . Since 2010, she has played Dr. Amy Farrah Fowler – like the actress, a neuroscientist – on CBS's <i>The Big Bang Theory</i> .
8	Orhan Pamuk	Mr.	novelist	Orhan Pamuk is a Turkish novelist, screenwriter, academic and recipient of the 2006 Nobel Prize in Literature. One of Turkey's most prominent novelists, his work has sold over thirteen million books in sixty-three languages, making him the country's best-selling writer.
9	Fazil Say	Mr.	pianist	Fazil Say is a virtuoso Turkish pianist and composer who was born in Ankara, described recently as "not merely a pianist of genius; but undoubtedly he will be one of the great artists of the twenty-first century".

,

guest_show		
gid	sid	date
5	1	22.11.2016
6	1	22.11.2016
7	3	21.11.2016
8	2	27.11.2016
9	2	27.11.2016

- Execute the command “SELECT * FROM program” and print the results on screen.
- While doing the above tasks, give meaningful error messages when necessary. For instance, login information (e.g., password) may be wrong, etc..
- Recall that your program may be executed several times during your code development and during the grading process. So, you should check whether the database and/or tables actually exist before trying to create them to prevent MySQL errors. If they exist, first drop them and then re-create them.

Part 2: A simple Web based application using PHP

For this part of the assignment, you are required to design a web application on top of the TV guide database you created above. In particular, you will design and implement a website that involves the middle and presentation tiers of a web application and makes use of the TV database at the data management tier. The website should include the following pages:

1. *Index page:*

This is the welcome page in which anyone can see the all content. You will show the evening schedule of the week with the shows: put all the days as the column names, and put the hours from 20:00 to 23:00 with 1-hour intervals. Assume you show the weekly program of the week starting with 21.11.2016 and ending with 27.11.2016. In each cell, put the clickable show name with its channel and host (Here there is no congestion.) After clicking the show name, open a section in the page (or you can direct to another page) and show the show detail: host, date, guests with details, e.g.:

Habertürk

Teke Tek by Mr. Fatih Altayli on Tuesdays 23:00

Guests:

Prof. Dr. Celal Sengor

Proffesion: Geologist

Short Biography: Professor Sengor is a (foreign) member of The American Philosophical Society, The United States National Academy of Sciences and The Russian Academy of Sciences. Actually, he is the second Turkish prominent professor who is elected as a member by the Russian Academy of Sciences after Professor ordinarius Mehmet Fuat Koprulu.

Prof. Dr. İlber Ortayli

Proffesion: Historian

Short Biography: İlber Ortayli is heir to a bilingual Turkish family so that he obtained German from his father and Russian from his mother. As a polyglot historian he has enough competency in Italian, English, French, Persian and also in Ottoman Turkish and Latin in order to fluently employ or maintain historical research with historical documents in the archives. His published articles are mainly in Turkish, German and French and various of them are translated in English.

Note that: Do not fill the pages manually, they all need to be retrieved from the database.

Another thing in the index page is to put a login button. After that, please redirect to the login page.

2. *Login Page*

All hosts can login to their accounts with their usernames and passwords. Show an appropriate error message if the log-in operation fails. In addition, show an error message if one or both of the input fields left blank and “login” button is clicked (i.e., use a simple Java Script code to check).

3. *Host page:*

You will prepare a page for hosts to arrange their guests. Hosts can pick a day and select guests. If the host chooses a day on which there is no show of his/hers, warn him/her by a dialog window etc. and do not open sections for selecting guests. If s/he properly chooses a day, show the screen to arrange guests. To do it, put a combo box keeping all guests registered to the system. The first item of the combo box should be “Select”. There will be an “Add” button to pick a guest. If the cursor still shows “Select”, warn him/her to pick a guest. The chosen guest will be listed on the screen for the show for the day. Update the list while a new guest is added. There will be another button named “Add New”. If the guest is not listed in the combo box, the host can add a guest by entering the information about him/her. After clicking the “Add New” button, in the same screen, you will open another part, including text boxes for title, name, profession, and short biography. After adding a new guest, close the screen and add the new guest to both combo box and the selected guest list. You are supposed to warn the user and avoid reentering a guest, when a guest is already in the guest list (for the same show and the same day). It is already not possible to add the guest to the database as you are aware of the primary key arrangements on `guest_show` table.

IMPLEMENTATION You should use PHP to implement the application logic (except the JavaScript codes used to check blank form fields at the client side). Your application should connect to your MySQL database prepared in the first part of this assignment.

Test your web pages under your public html directory (at *dijkstra*) in a folder called *surname_name* (if the public_html directory does not exist, create it at your home directory and set its r-w-x permissions appropriately). You will copy and submit this folder as described below, and we will copy it under our own public_html and execute there. To allow this, please use *relative links* in your web pages (i.e., if you include links to an absolute page like `http://.../~ahmet/can_ahmet /index.php`, it would not work under our public html folder. If this happens, **you won’t get any points** from this part of the assignment).

What to submit?

You will submit a RAR file including two folders, part1 and part2. Folders must be **exactly** named as *surname_name_p1* and *surname_name_p2* (please do not use Turkish characters). The RAR file must be named as *surname_name*. Each folder should include the following:

- part1 folder: In this folder, provide the Java source code file(s).
- part2 folder: This folder should include all your PHP files. We will copy them to our public_html and then execute there.

For both parts, grading will be based on the **execution** of your code.