Databases
Web applications in PHP to query a database- Practice n. 4

The purpose of this practice is to build a simple web application in PHP to query a database.

Preliminary steps

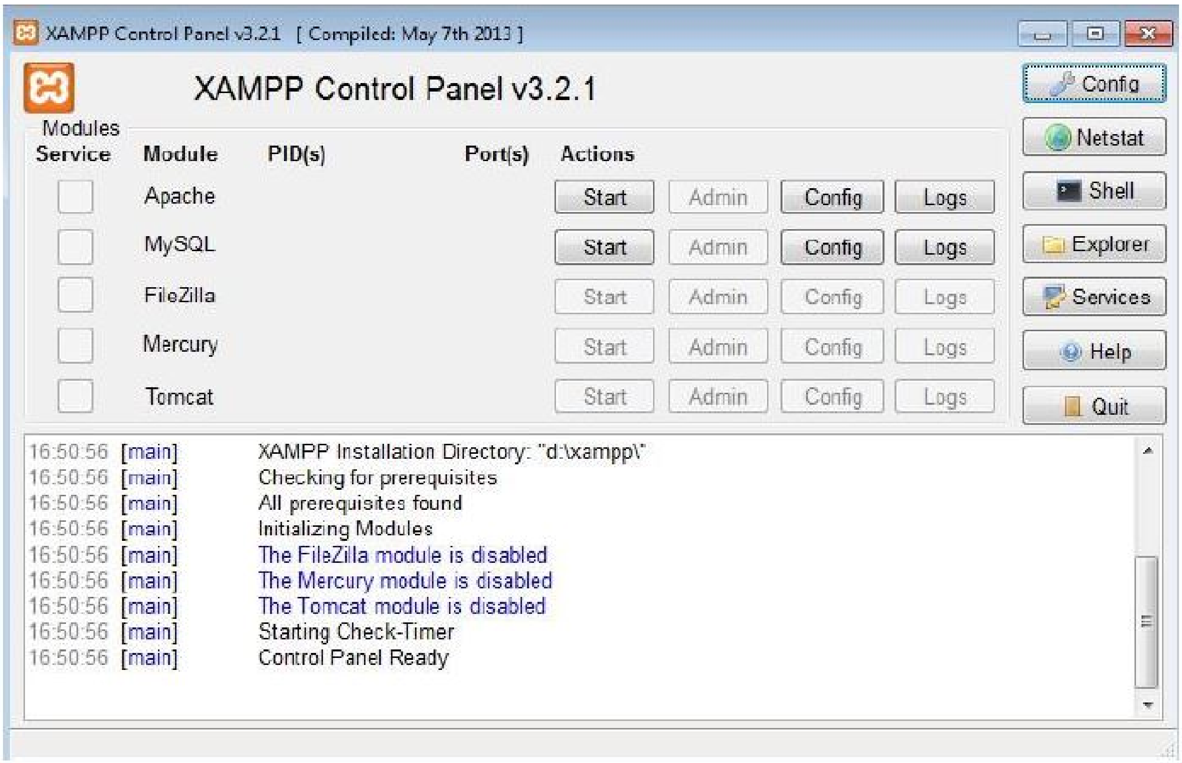
This practice is based on Apache Web server and MySQL database, in particular the versions available in XAMPP. It is necessary to boot both services in order to execute the exercises.

Boot MySQL server on localhost and start Apache

The execution of scripts with SQL commands for the creation and population of the database will be performed through the Web interface of MySQL.

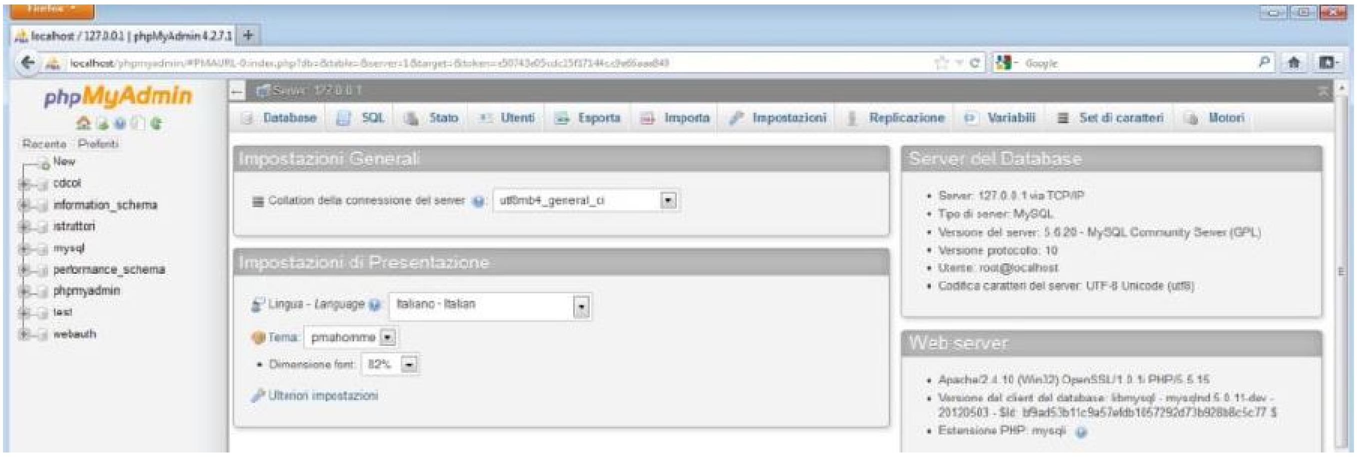
Before opening the Web interface of MySQL it is necessary to:

- Start the local Apache server



```
16:50:56  [main]   XAMPP Installation Directory: "d:\xampp\"
16:50:56  [main]   Checking for prerequisites
16:50:56  [main]   All prerequisites found
16:50:56  [main]   Initializing Modules
16:50:56  [main]   The FileZilla module is disabled
16:50:56  [main]   The Mercury module is disabled
16:50:56  [main]   The Tomcat module is disabled
16:50:56  [main]   Starting Check-Timer
16:50:56  [main]   Control Panel Ready
```

- the local MySQL server



Collation della connessione del server: utf8mb4_general_ci

Lingua - *Language*: Italiano - Italian

Tema: pmahomme

- Dimensione font: 82%

- Server: 127.0.0.1 via TCP/IP
- Tipo di server: MySQL
- Versione del server: 5.6.20 - MySQL Community Server (GPL)
- Versione protocollo: 10
- Utente: root@localhost
- Codifica caratteri del server: UTF-8 Unicode (utf8)

- Apache/2.4.10 (Win32) OpenSSL/1.0.1i PHP/5.5.15
- Versione del client del database: libmysql - mysqlnd 5.0.11-dev - 20120503 - $Id: b9ad53b11c9a57efdb1657292d73b928b8c5c77 $
- Estensione PHP: mysqli

Specifically, execute the following steps:

1. Start “XAMPP Control Panel”
2. Start Apache clicking the Start button in the row of “Apache” module.
3. Start MySQL clicking the Start button in the row of “MySQL” module.
4. Open the MySQL Web interface clicking the Admin button in the row of “MySQL” module (the browser will automatically open the URL associated to the page of administration and SQL querying, i.e., phpMyAdmin).
5. To execute a SQL script from the Web interface of MySQL:
    - Select the “Import” panel
    - Select the file with the script you want to execute and click on “Go” button.
6. To execute the creation/population script more than once, you need to cancel any existing instance of the database, either directly from the “Database” panel or by including at the beginning of the script the commands for deleting the existing tables.

Creation and population of the database used for the practice

The database used for this practice is the same of LAB3. It is called Gym and is used to record the activities of a gym. It’s characterized by the following logical schema (primary keys are underlined, optional attributes are marked with asterisk):

TRAINER (SSN, Name, Surname, DateOfBirth, Email, PhoneNo*)
COURSE (CId, Name, CType, CLevel)
SCHEDULE (SSN, WeekDay, StartTime, Duration, CId, GymRoom)

1. Create the Gym database and populate it using the createDB.sql and populateDB.sql scripts available on the webpage of the course.

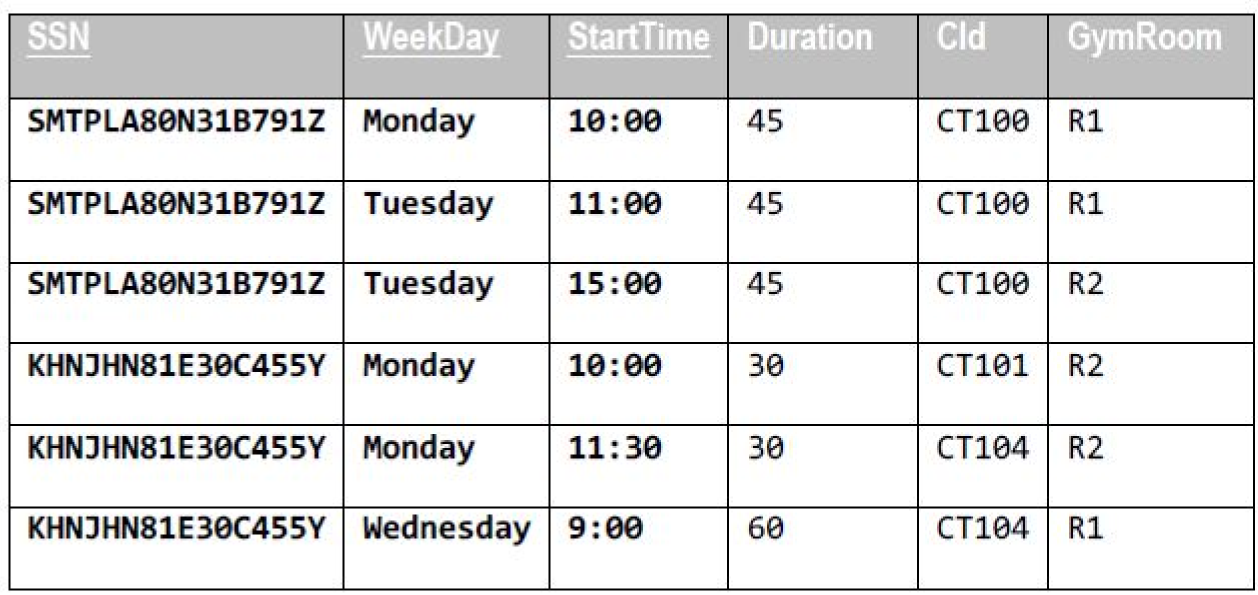
Afterwards, the tables will contain the following data:
TRAINER table

SSN	Name	Surname	DateOfBirth	Email	PhoneNo
SMTPLA80N31B791Z	Paul Smith	*Smith*	31/12/1980	p.smith@gym.it	NULL
KHNJHN81E30C455Y	John	*Johnson*	30/5/1981	j.johnson@gym.it	+2300110303444
AAAGGG83E30C445A	Peter	*Johnson*	30/5/1981	p.johnson@gym.it	+2300110303444

COURSE table

CId	Name	CType	CLevel
CT100	Spinning for beginners	*Spinning*	1
CT101	Fitdancing	*Music*	2
CT104	Advanced spinning	*Spinning*	4

SCHEDULE TABLE



SSN	WeekDay	StartTime	Duration	CId	GymRoom
SMTPLA80N31B791Z	Monday	10:00	45	CT100	R1
SMTPLA80N31B791Z	Tuesday	11:00	45	CT100	R1
SMTPLA80N31B791Z	Tuesday	15:00	45	CT100	R2
KHNJHN81E30C455Y	Monday	10:00	30	CT101	R2
KHNJHN81E30C455Y	Monday	11:30	30	CT104	R2
KHNJHN81E30C455Y	Wednesday	9:00	60	CT104	R1

Publish/upload a PHP page in XAMPP

To publish a PHP page with XAMPP you need to copy the PHP file in the htdocs folder of XAMPP (`C:\XAMPP\htdocs`).

Once the file (for instance `filename.php`) has been copied, it will be accessible through the browser at the local address `http://localhost/filename.php`.

1 Exercises

Run the scripts *createDB.sql* and *populateDB.sql*, created during last practice, related to creation and population of the database.

1. Create a form with two text boxes where it is required to enter the name and the surname of a trainer. Show the content sent by the client using the form by showing the message "NAME SURNAME is a *trainer*", where NAME and SURNAME correspond to the ones entered by the user.

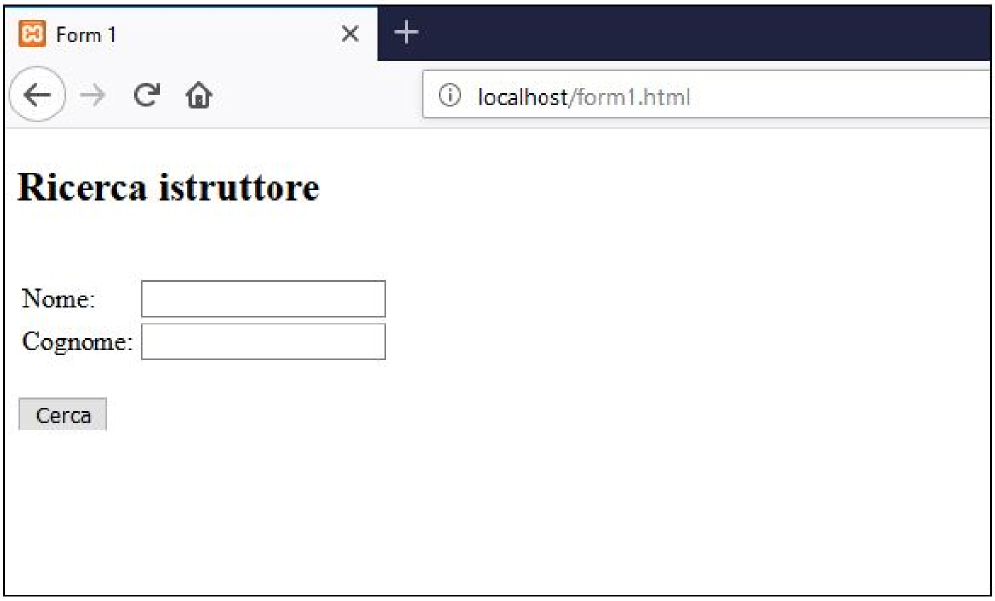
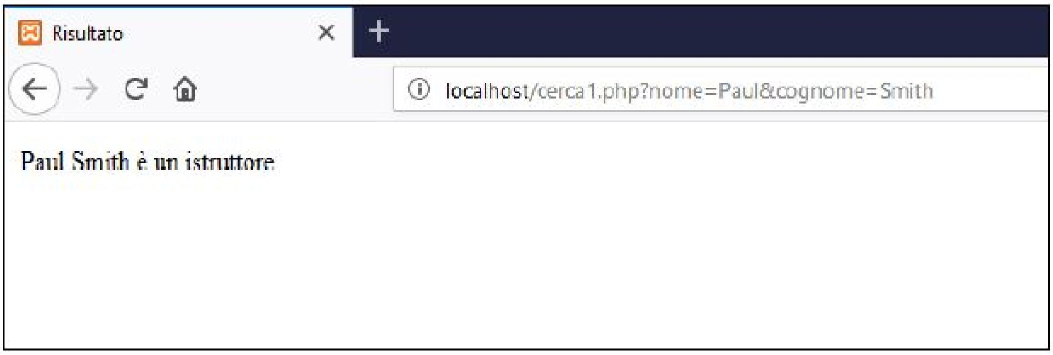


Figure 1: Form example for point 1.

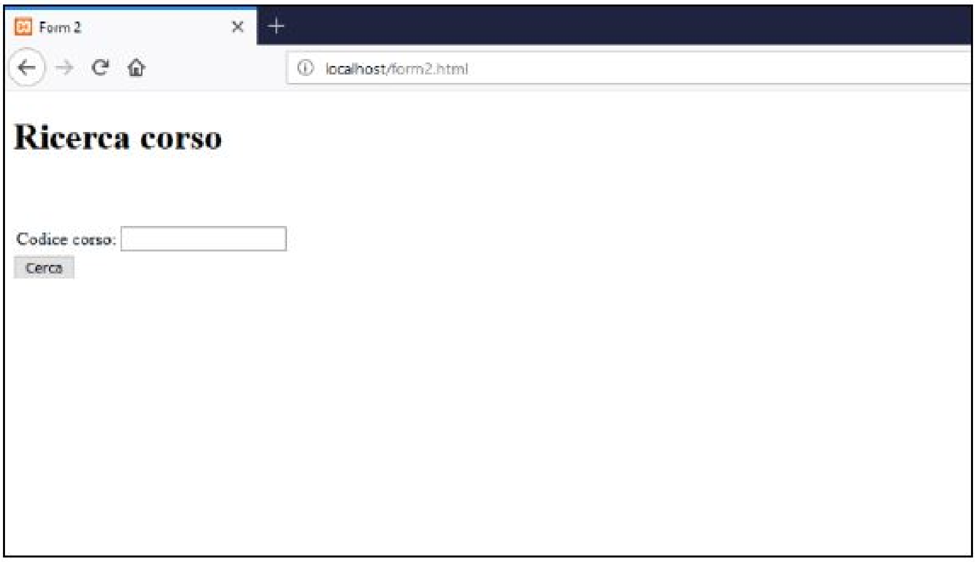


localhost/cerca1.php?nome=Paul&cognome=Smith

Paul Smith è un istruttore

Figure 2: Outcome example for point 1.

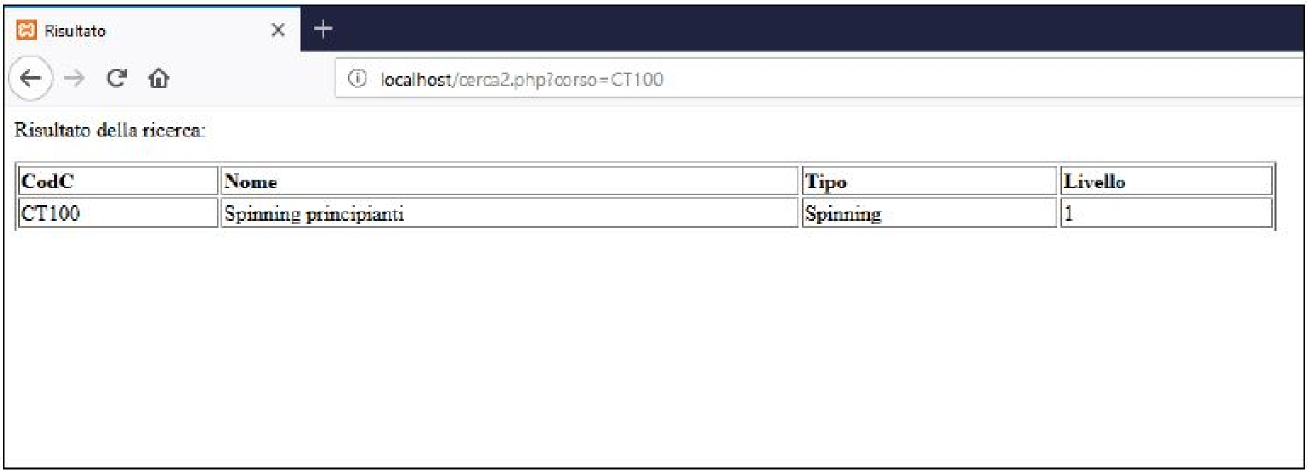
2. Create a form with a text box where it is required to enter the code of a course. Show all the information contained in the COURSE table related to that course.



Ricerca corso

Codice corso:

Figure 3: Form example for point 2.

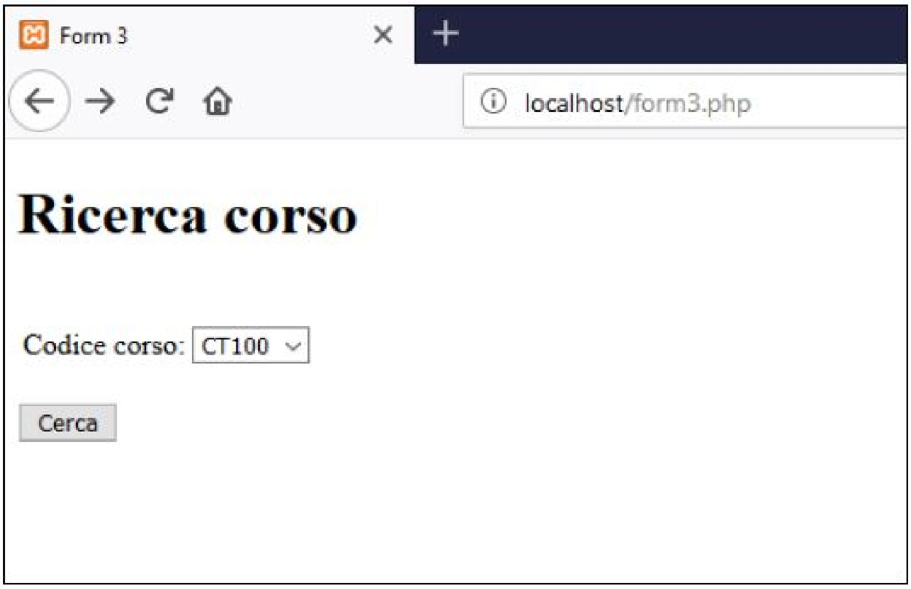


Risultato della ricerca:

CodC	Nome	Tipo	Livello
CT100	Spinning principianti	Spinning	1

Figure 4: Outcome example for point 2.

3. Create a form with a dropdown menu to select the code of one of the courses available in the database. Show all the information contained in the COURSE table related to that course.



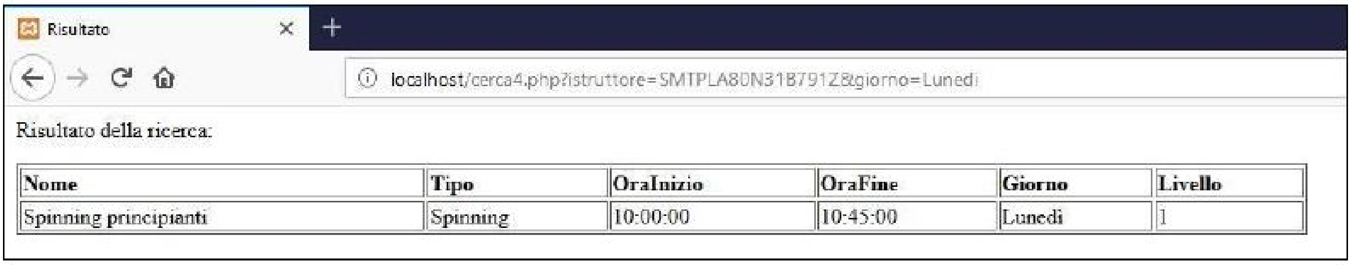
Ricerca corso

Codice corso: CT100

Cerca

Figure 5: Form example for point 3.

4. Create a form to select the surname of a trainer (from a dropdown menu generated from the content of the table of the database) and a day of the week (from a dropdown menu containing fixed values, independent from the content of the database). Pass the selected data to a PHP page that must be able to show all the activities held by the trainer in the selected day of the week. For each activity show day of the week, start and end hour, name, type and level. Sort the activities in increasing order of level and alphabetical order of names.



Risultato
localhost/cerca4.php?istruttore=SMTPLA80N31B791Z&giorno=Lunedi

Risultato della ricerca:

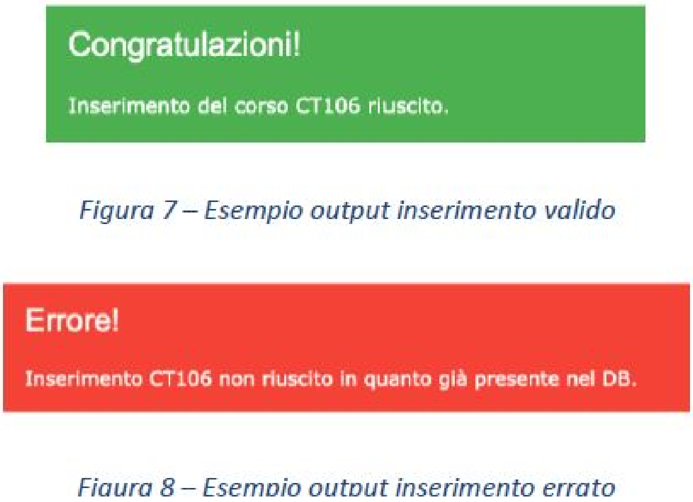
Nome	Tipo	OraInizio	OraFine	Giorno	Livello
Spinning principianti	Spinning	10:00:00	10:45:00	Lunedi	1

Figure 6: Outcome example for point 4.

5. Create a form which requires all the necessary data to insert a new course in the database. The result page must evaluate the correct inserting of data by the user by checking:

    - if all fields have been inserted;
    - if the inserted course is not already present;
    - if the data types are coherent (for example if the level is alphanumeric instead of numeric).

    These checks are to be done through the usage of dedicated functions. If the insert ends correctly, a success message must be shown, otherwise the error must be notified.



Congratulazioni!

Inserimento del corso CT106 riuscito.

Figura 7 – Esempio output inserimento valido

Errore!

Inserimento CT106 non riuscito in quanto già presente nel DB.

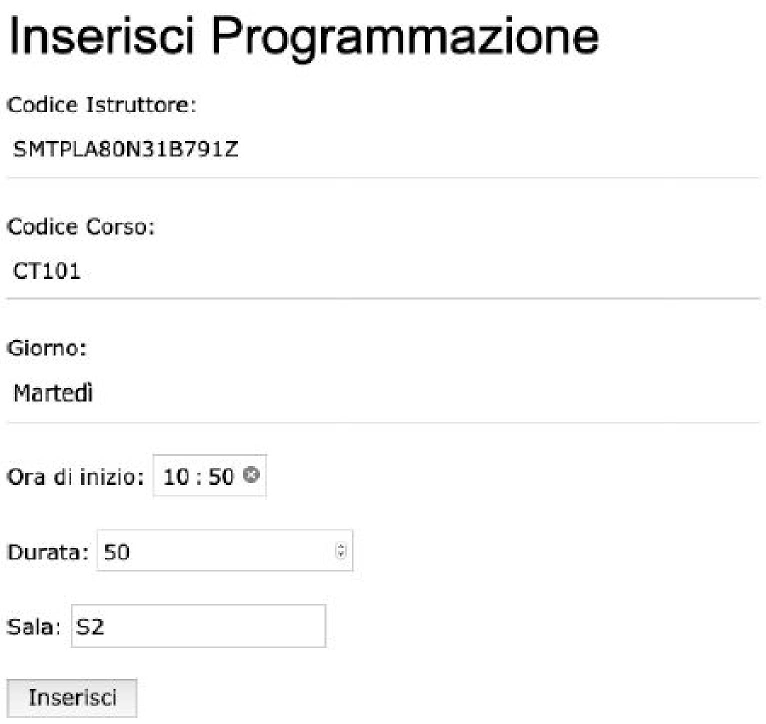
Figura 8 – Esempio output inserimento errato

Figure 7: Output example.

6. Create a form that allows to insert the scheduling for one of the existing courses. The form must allow to choose, through two dropdown menus, the SSN of the trainer and the code of the course for which we are adding a schedule. The menus must propose the trainers and the courses already present in the database. The result page must evaluate the correct inserting of data by the user by checking:

   - if all fields have been inserted;
   - if the data types are coherent (for example if the inserted day is not one of the days of the week);
   - if there are compatibility problems with the schedules already present. In particular, check if, in the provided day and hour, the selected room is free and if the selected trainer is not busy with another course.

   These checks have to be performed through the usage of dedicated functions. If the insert does not end successfully, the page must notify the error.



Inserisci Programmazione

Codice Istruttore:

SMTPLA80N31B791Z

Codice Corso:

CT101

Giorno:

Martedì

Ora di inizio: 10 : 50

Durata: 50

Sala: S2

Figure 8: Form example for schedule insert.