Project

Web Programming Project

Overview

In this project you will create a system for students to select courses for enrollment. The students will be able to search for their course, using either the entire course code or a prefix of it, and then add it to their enrollment. The administrators will be able to create courses, sections, or process the pending students' enrollment.

Database

This project involves using a database with several tables. Here are the required tables with the required fields (you may use additional tables or fields if deemed necessary):

|  |
| --- |
| **course** |
| course\_id |
| title |
| credits |

|  |
| --- |
| **enrollments** |
| student\_id |
| course\_id |
| section\_id |
| status |

|  |
| --- |
| **student** |
| student\_id |
| password |
| name |
| year\_of\_study |

|  |
| --- |
| **section** |
| course\_id |
| section\_id |
| capacity |

Requirements

Here are the tasks and/or requirements.

Courses & Sections

* Course IDs must consist of 4 uppercase letters followed by 4 digits.
* Section IDs must consist of 3 characters.
* Capacity must be a natural number.
* Credits must be a natural number.

Student registration

* The student ID will play the role of username. It can only consist of lowercase letters and periods. More specifically, it must have at least one letter followed by a period followed by at least one letter.
* Year of study must be 1-5.
* Name can only consist of letters, periods, dashes, and apostrophes. Note that "letters" include foreign language accents such as é, è, ü, ç, etc.
* Password must be at least 8 characters long.
* Usernames must not be repeated.

Admin

* Must be able to apply CRUD operations on courses.
* Must be able to apply CRUD operations on sections, but only for existing courses.
* Must have an option to apply enrollment rules for all pending enrollments.
* Are identified by having a year of study set to 0.
* For simplicity, admins will be created manually.

Course search

* Students and admins should both be able to perform this search.
* Search can be done using the entire course code (CCOM4019) or a prefix (CCOM4, or CCOM).
* Search results must be displayed in ascending order of course id and section id (in that order).
* Course id and section id must be visually separated by a hyphen (-), although the hyphen must not be stored in the database.
* For students, search results must be *logically* grouped by course code, so that a student may select at most one section of a particular course. For example, if the search is for "CCOM4006" and the search results include CCOM4006-M10 and CCOM4006-M25, then the student can only select one of those two sections.
* If a student is already enrolled in a section of a course, that logical group must be disabled so that the student cannot select another section of the same course. There must be a visual cue to the student that those sections are disabled.
* For students, at the bottom of the search results the user must have an option (button or link) to enroll in the selected course sections, which then saves the enrollment(s).
* For admins, they must be able to edit or delete a course section.
* If a section is deleted, all existing enrollments of that section must also be deleted ("on delete cascade").

Enrollments

* Students must be able to save every course they wish to enroll in.
* Upon save course(s), student must be redirected to the page where they can view all of the courses they have selected so far.
* All enrollments are initially pending and the status should be set to 0.
* Students must be able to view/update courses their enrollments, including each enrollment status.
* Admins must have an option to apply all pending enrollments using the following rules:
  + Possible status of enrollments are: 0 - Pending, 1 - Successful, 2 - Unsuccessful
  + Enrollments are processed in descending order of students' year of study, so that senior students are enrolled first.
  + Successful enrollments must have their status changed to 1.
  + Once enrollment in a section reaches its capacity, it cannot accept any more students. Any remaining pending enrollments for that section must have their status changed to 2.
  + It's possible for a student to be successfully enrolled in some sections but not in others.
  + **ENROLLMENTS MUST ALL BE PROCESSED SIMULTANEOUSLY, NOT ONE BY ONE**. That is, the admins do not consider each individual enrollment, but run a task that processes all of the enrollments at once.
  + **Once enrollments have been processed, no more changes may be performed.** That is, neither students nor admins can make any more changes.

Misc. requirements

* You must use the MVC pattern. This includes a separate file for each database table, containing the logic to execute the appropriate queries for that table.
* User must be redirected to the search page upon successful login.