

CSIT 355: Database Systems

Final Project

Due date: 12/17/2019

Instructions: This project is due on Tuesday, Dec. 17th, 23:59:59. Submission includes the source code (.py or .ipynb file), the database (.db file), and a design report (.pdf file), which should be done in electronic format on Canvas.

Group work: Both individual and group work are allowed in this project. Each group can include at most 3 students. All the names of group members should be indicated in the project design report.

Design a database system for the university, which contains the information of students (identified by student ID) and courses (identified by course ID). Students also have student names. Courses have a course name and the number of credits. Students enroll courses.

Task 1: Database Design

Create a design.pdf file which includes the following information:

1. Provide your relational schema definitions in text form, including the attributes for each relation and the types of all the attributes. Make sure to clearly indicate your chosen keys (including primary and foreign). You are allowed flexibility on the exact attribute types you use for your schema, as long as they reasonably match the specification above (e.g., in terms of number types, string types).
2. Provide an Entity-Relation (ER) diagram that describes your schemas.

Task 2: Database Application

1. Create a database including all the relations designed in Task 1. Insert the information of at least 5 students, 5 courses, and 10 enrollments.
2. The application must have a command-line interface menu that allows the user to select one option as below. Once that menu function is completed, the program must return to the main menu. For each menu option, you are allowed (and even recommended, if needed) to have multiple steps to complete the tasks.

Student Menu:

Application starts by requesting student's ID. If (-1) is introduced, a new student is created, and the user is prompted for all necessary information. The main menu is the following:

L – List: lists all records in the course table

E – Enroll: enrolls the active student in a course; user is prompted for course ID; check for conflicts, i.e., student cannot enroll twice in same course

W – Withdraw: deletes an entry in the Enrolled table corresponding to active student; student is prompted for course ID to be withdrawn from

S – Search: search course based on substring of course name which is given by user; list all matching courses

M – My Classes: lists all classes enrolled in by the active student.

X – Exit: exit application