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Assignment: #5 - Course Management System – Next Design Phase (v3)

Implicit Requirements:
1. There is a one-to-many relationship between students and courses.
2. Each course will have a list of semesters that it is normally available.
3. Each course can have multiple current instructors.
4. Every record will have a one-to-one relationship with a Semester.
5. Every record will have a one-to-one relationship with a student.
6. Every record will have a one-to-one relationship with a course.
7. Every record will have a one-to-one relationship with an instructor.
8. Every record will have to be kept in order by semester to avoid confusion and allow for new
        Records.
9. Each course can be taught by more than one instructor.
10. There must be a way to keep track of instructor allocations for each semester.
11. Information will need to be kept about course requests granted to students.
12. Information will need to be kept about course requests refused to students.
13. There will need to be some sort of interface (GUI) for the clients to manipulate data.
14. Each course should have a method that calculates seating capacity based on the triples provided.
15. Each student will have to have a way to verify they qualify to take a specific course.
16. If the number of seats available in a course is changed, we must be able to add or remove students
        who previously requested the course.
17. The system should perform CRUD operations.
18. There will be a queue of granted requests.

Explicit Requirements:
1. The system will need to maintain no more than 5,000 students.
2. The system will need to maintain current records for each student.
3. The system will need to maintain past records for each student.
4. Each student will have a unique UUID (University Unique Identifier).
5. Each student will have a name.
6. Each student will have an address.
7. Each student will have a phone number.
8. Each student will have method to find the status for enrollment (enrolled or dis-enrolled).
9. Students will not be dis-enrolled automatically if they are not registered for a class.
10. Students can take 0 to 5 classes.
11. Courses will come from the most current Course Catalog.
12. Each course will have a distinct course ID.
13. Each course will have a Course Title.
14. Each course will have a Description.
18. The system must be able to manage up to 100 different courses at a time.
19. The system must be able to manage up to 50 different instructors.
20. Each instructor will have a list of qualifications.
21. Each instructor will have a UUID.
22. Each instructor will have a name.
23. Each instructor will have an address.

24. Each instructor will have a phone number.
25. Each instructor will have a field for extra information.
26. An academic record will be created for each course a student takes once it is completed.
27. Every record will have a letter grade.
28. Every record will have an optional comments section that the instructor can write in.
29. Each course can have prerequisite courses, but are not required to.
30. Students cannot enlist in any course without first completing the prerequisite courses.
31. In order to "complete" a course the student's grade must be either A, B, C or D.
32. The number of available seats for a course is dependent upon how many instructors are assigned to the course and their capacity of seats to teach, delivered as a trip in the following format:
    <instructorID, courseID, capacity>
33. Students that request to join the course after all available seats are filled will be denied.
34. Students may re-take a course only if they have previously earned a D or F in the course.
35. There must be an ability to add each type of record.
36. There must be an ability to remove each type of record.
37. There must be an ability to modify each type of record.
38. There will be a Semester Class.
39. Each semester will have a String idSemester.
40. Each semester will have a String name.
41. Each semester will have a String year.
42. Each instructor can only teach either none or 1 class per semester.
43. Load requests only after instructor assignments are complete.
44. Any rejected request for lack of prerequisites or an unqualified re-take will be "discarded".
45. The system will keep track of student course requests.
46. When a request is discarded, we must alert the user with a reason for the denial.
47. We must keep track of students who are "waitlisted" and add them to a waitlist for the next semester.
48. At the end of every iteration we will store the current state of the system in a CSV file.
49. Errors will be handled appropriately and the user will be notified of any errors.