

Question Bank and Quiz Correction Portal

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Members:

Sahil Shah - 160050005
Preey Shah - 160050008
Kunal Goyal - 160050026
Aman Bansal - 160050028

1 Introduction - Functional Specifications

Our project involves functionality to add and modify a question bank. Besides this, we have students who register for courses and can appear for quizzes online. A quiz can be created by the instructor of a course by adding questions from the question bank. Besides this, there can be Teaching Assistants to whom the instructor can assign questions of a quiz to. After this, the Teaching Assistant can grade the responses of a student.

The landing page for the portal would be a login page with options to login as an instructor, a teaching assistant or a student. The instructor would see options to add questions to the question bank or navigate to any of the courses that the instructor is instructing. Questions could be subjective or objective with answers specified by the instructor when creating the question. The objective questions would be automatically graded after they appear in a quiz. Each question is associated with a topic for ease of creating a quiz. Each quiz would have a start and an end time during which students registered for the course can appear for the quiz

The student would register for courses and then appear for quizzes. If time permits, we would try to implement a sort of a dynamic quiz - what this means is that we would give different students different questions (from a subset of the question bank specified by the instructor creating the quiz) based on his performance in the quiz thus far. We could implement strategies like asking more questions from topics that the student has answered questions incorrectly in.

The teaching assistant would be appointed to courses by instructors and they would then have access to the responses for the question that the instructor has assigned to them. They would grade the responses (for subjective questions) and then when all the teaching assistants have completed their duty, the instructor can have the marks computed automatically and displayed to students.

2 The Different Roles

2.1 Student

The student sees the list of all courses he is enrolled in. In each course he sees the list of all quizzes (both past and ongoing). For the ongoing quiz, he can mark his responses and submit the quiz. For the past quizzes, student will be able to view his marks and report if it has been graded by the Teaching Assistant. If time permits we would also provide the student with statistics like the student's position in the class.

2.2 Instructor

The teacher sees his personal question bank and the list of all his courses. The question bank will have option of adding and deleting questions. Each course page will have all the past quizzes and option to create a new quiz. While creating a quiz, the instructor may import the questions from his question bank. For the past quizzes, the instructor will be able to grade the questions of the students. The instructor will be able to add teaching assistants to the course for grading of the quizzes. Additionally, the instructor has an option to create a new course and a section that he is instructing.

2.3 Teaching Assistant

The teaching assistant will see all the courses in which he is assisting. In the courses, he will be able to see all the quizzes in the course and the responses of all the students for the questions that have been assigned to him. There will be a grade option in the quiz page. He will be able to grade all the responses of the students of the particular questions allotted to him by the instructor.

3 Plans for Testing

Our project does not require the creation of an extensive database for testing as the question bank is supposed to evolve over time when actually deployed. However, we would create a few students, instructors and teaching assistants as required to test the implemented functionality. We would also create a few courses, questions and quizzes as we build the system. For most of the entities in the database we would provide an interface to create new entries in the

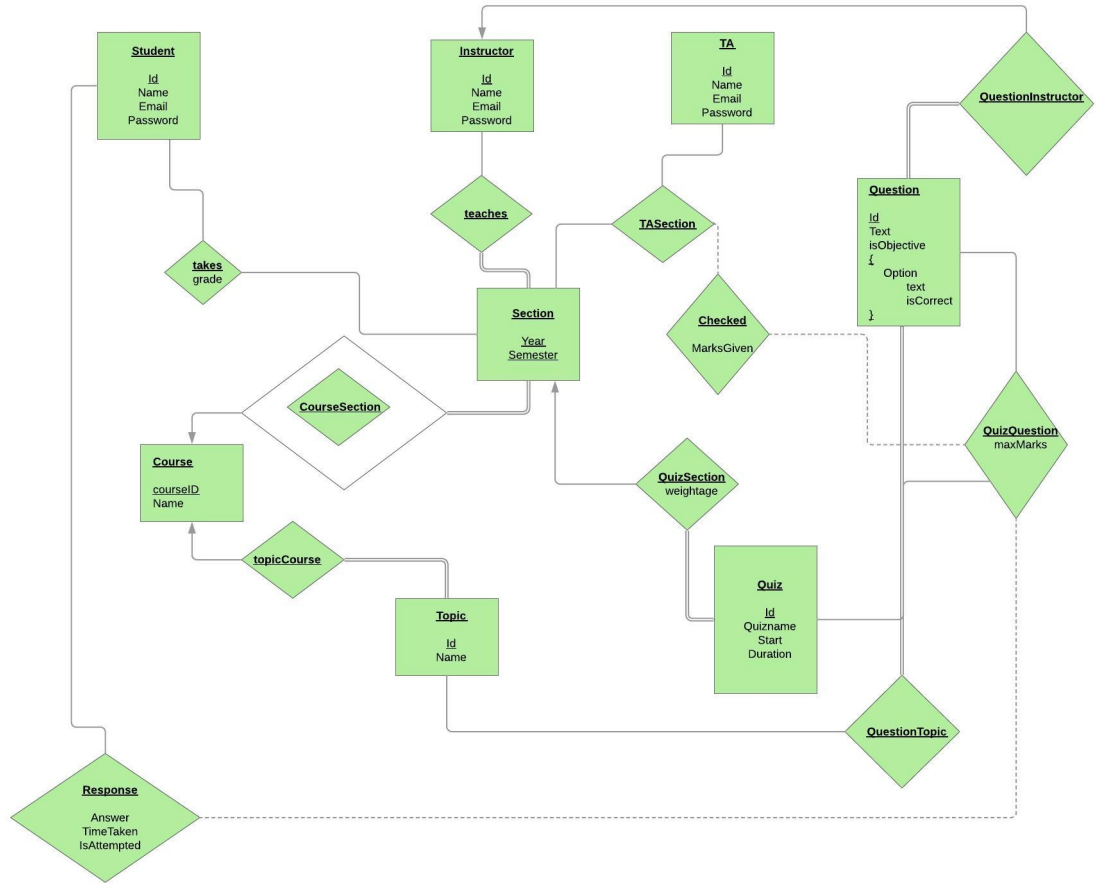


Figure 1: Our ER Diagram

database and hence we do not really need extensive SQL scripts to add data to the database for testing.

4 ER Diagram

We created the following ER diagram using Lucid Chart. To denote relations between aggregations, the broken line from a relation indicates that the relation is with an aggregation. Moreover, the additional attributes in a relation have been denoted in the diamond along with it to prevent further cluttering in the diagram. We have also added the image in the submission.

5 Deliverables

- Option to signup
- Each person can have multiple roles, and shift between them.
- Login portal for students/ instructors/ TAs which would redirect to different pages
- Create account page for students/ instructors/ TAs
- Student Home page
 - Student sees a list of all courses he is enrolled in
 - In every course, there is a list of all past, future and present quizzes
 - Make responses in the ongoing quizzes and submit the quiz
 - For a past quiz, the student can view his responses, model answers and marks allocated, including if the question has been checked or not.
 - For future quizzes, student can view the schedule and weightage
 - The student can view detailed statistics- performance in objective, subjective questions and in all topics.
 - The student can view his course total and marks in each quiz
- Instructor Home Page
 - Every instructor has a question database and can add and delete questions in it
 - Each instructor sees a list of all the courses he instructs and can navigate to any one
 - In each course, the instructor sees a list of quizzes and an option to create a new quiz
 - Instructor can add TAs to the course
 - Instructor can add topics to the course
 - While creating a new quiz, the instructor specifies the name and weightage of the quiz
 - On navigating to a quiz, the instructor can see all the questions currently a part of the quiz and its weightage
 - On the same page, the instructor can add or delete questions from the quiz. While adding the questions, instructor can use topic filters.
 - The instructor can schedule the quiz after adding all the questions he wants to by specifying the start time and the duration
 - The instructor can then assign TAs to each (subjective) question

- Total marks obtained in the quiz would be computed based on the weightage assigned to each question
- The instructor can also view the marks obtained by each student **A master grade sheet is available to the instructor which has all the quiz marks and totals of all the students in a tabular format**
- **The instructor has an option to automatically grade all objective questions of quiz**
- **The instructor can also view and grade the individual submissions of all students**
- Option to create a section that he is instructing
- Teaching Assistant Home page
 - TA sees a list of all courses he is enrolled in by the instructor of that course
 - In every course, there is a list of all quizzes of that course
 - In every quiz, there is a link for grading every subjective problem of the quiz. **Objective questions are automatically graded but can also be graded manually by the TA.**
 - The grading page of a question will allow the TA to grade every student's answer to that questions allotted to him by the instructor