Examination System Documentation

Instructor:

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1. Introduction

The Examination System is a backend system designed to automate the examination process. It does not have a user interface but operates through structured database tables and logic. The system generates exams randomly, compares students' answers with correct answers, and calculates their scores automatically.

2. Features

- **Exam Generation:**
  - Randomized exam creation for each student.

- **Question Bank:**
  - Stores and manages a set of questions for different subjects.

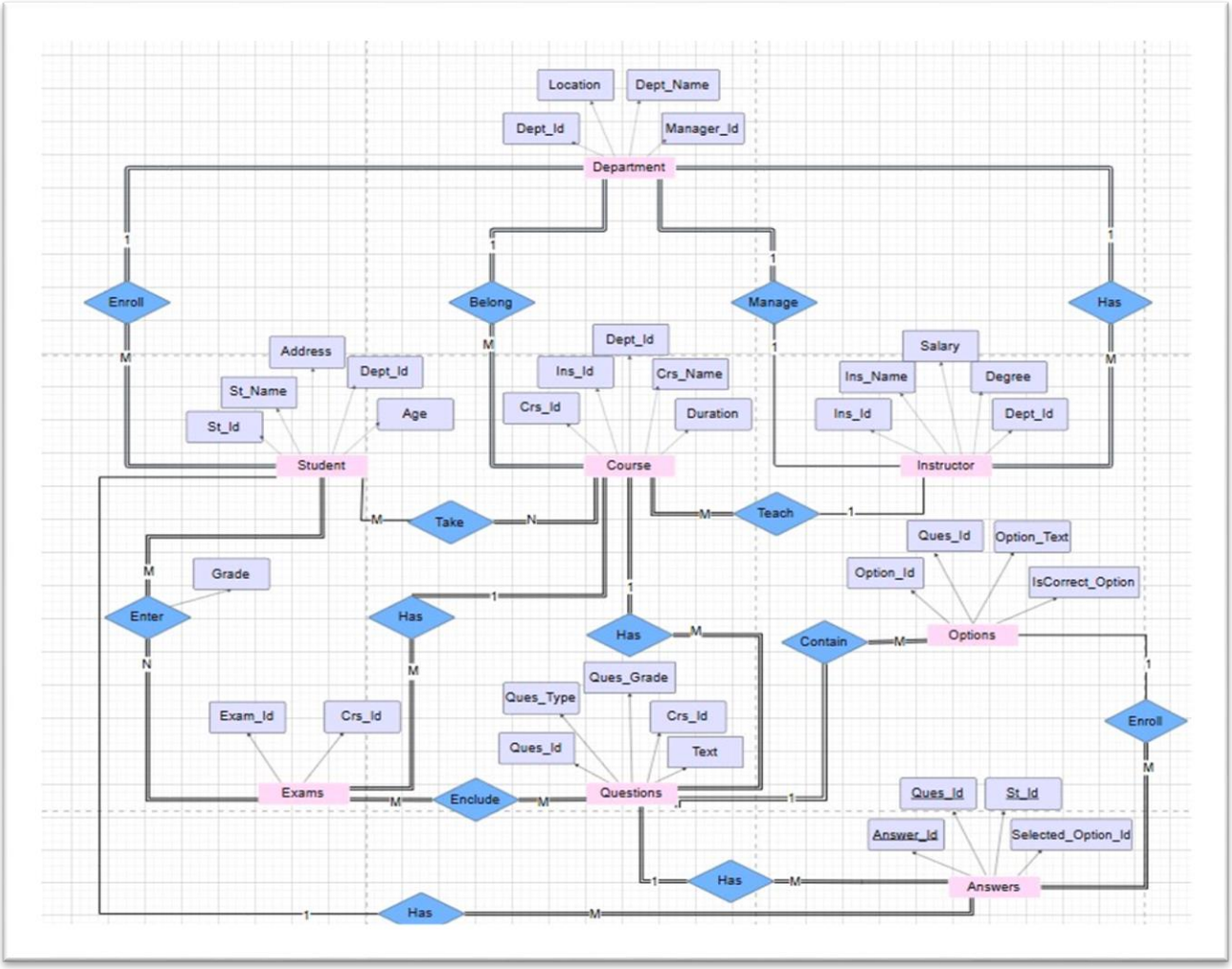
- **Automatic Grading:**
  - Compares students’ answers with correct answers and assigns scores.

- **Result Calculation:**
  - Computes student grades based on their exam performance.

3. System Diagrams

Entity-Relationship Diagram (ERD)

The ERD provides a structured representation of database entities and relationships.



The **Entity-Relationship Diagram (ERD)** for the examination system represents the key entities, their attributes, and the relationships between them.

Main Entities and Tables:

- **Department**
  - Dept_Id
  - Dept_Name
  - Location
  - Manager_Id

  Represents academic departments.

- **Instructor**
  - Ins_Id
  - Ins_Name
  - Salary
  - Degree
  - Dept_Id

  Stores instructors' details.

- **Student**
  - St_Id,
  - St_Name,
  - Address, Age,
  - Dept_Id

  Represents students enrolled in the system.

- **Course**
  - Crs_Id
  - Crs_Name
  - Duration
  - Dept_Id

  Stores information about courses.

- **Exams**
  - Exam_Id
  - Crs_Id

  Represents exams linked to courses.

- **Questions**
  - Ques_Id
  - Ques_Type
  - Ques_Grade
  - Crs_Id
  - Text

  Stores exam questions.

- **Options**
  - Option_Id
  - Ques_Id
  - Option_Text
  - IsCorrect_Option

  Contains answer choices for multiple-choice questions.

- **Answers**
  - Answer_Id
  - Ques_Id
  - St_Id
  - Selected_Option_Id

  Stores students' answers.

- **Enrollment**
  - St_Id
  - Crs_Id

  Links students to their courses.

- **Grade**
  - `St_Id`
  - `Exam_Id`
  - `Grade`

  Stores students' exam scores.

Key Relationships:

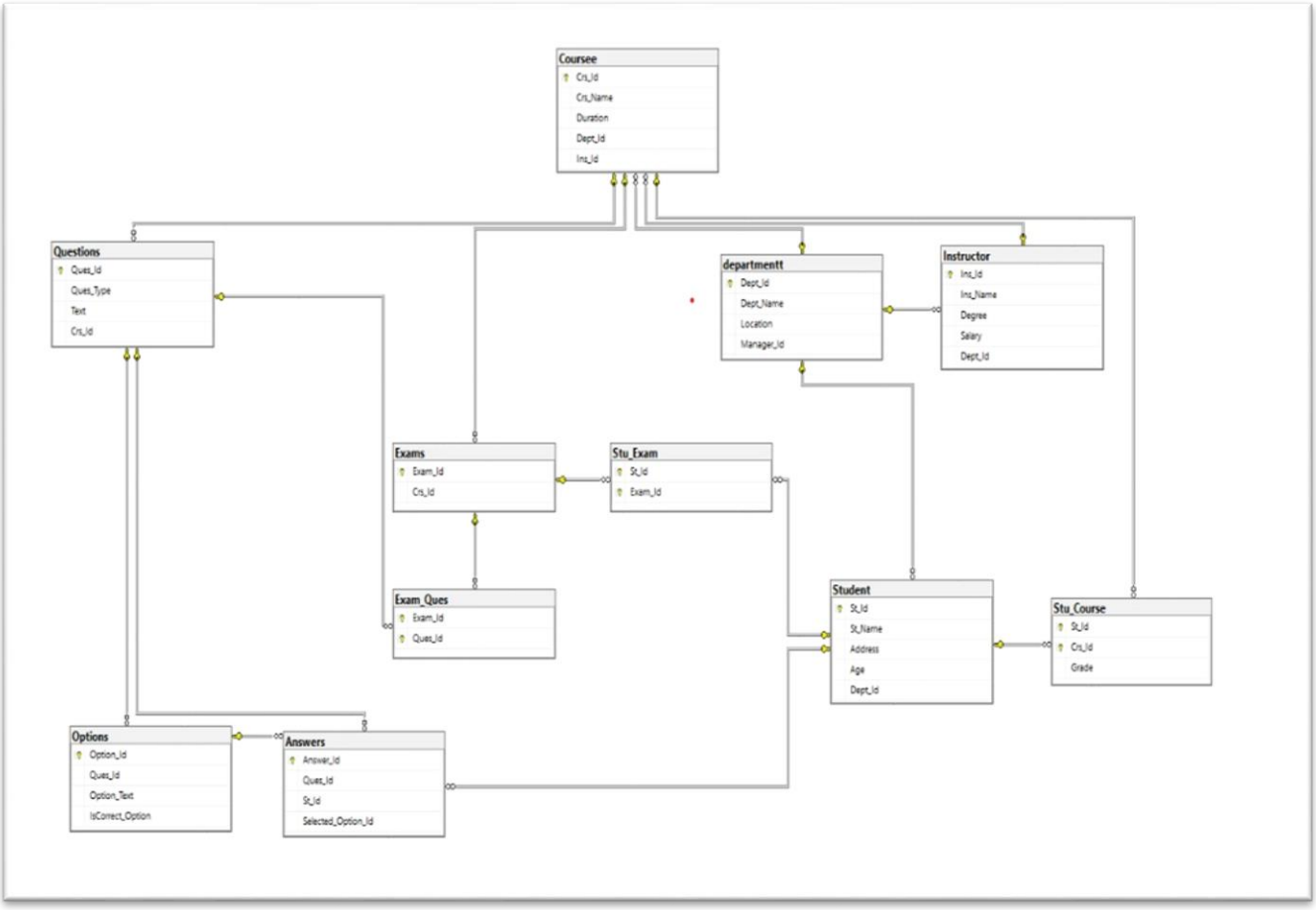
1. **One-to-Many:**
   - A **department** can have multiple **instructors**, **students**, and **courses**.
   - A **course** can have multiple **exams** and **questions**.
   - An **exam** consists of multiple **questions**.
   - A **question** can have multiple **answer options**.

2. **Many-to-Many:**
   - **Instructors** can teach multiple **courses**, and a **course** can have multiple **instructors**.
   - **Students** can enroll in multiple **courses**, and a **course** can have multiple **students**.
   - **Students** can take multiple **exams**, and an **exam** can have multiple **students**.

This structured design ensures efficient management of exams, student progress tracking, and result evaluation.

System Architecture

Illustrates how the backend system components interact with the database to generate and evaluate exams.



4. Technologies Used

- **Database:** SQL Server
- **Backend Logic:** Stored procedures for automated exam processing

5. System Modules

Exam Management Module

- Generate randomized exams
- Store and retrieve exam questions

Student Answer Processing Module

- Store student responses
- Compare responses with correct answers
- Calculate and store student scores

Result Management Module

- Retrieve and display student scores
- Store exam results in the database

7. Conclusion

The Examination System is a backend-based solution that ensures automation, accuracy, and efficiency in managing exams. It eliminates manual grading, provides randomized tests, and offers a structured approach to tracking student performance.