

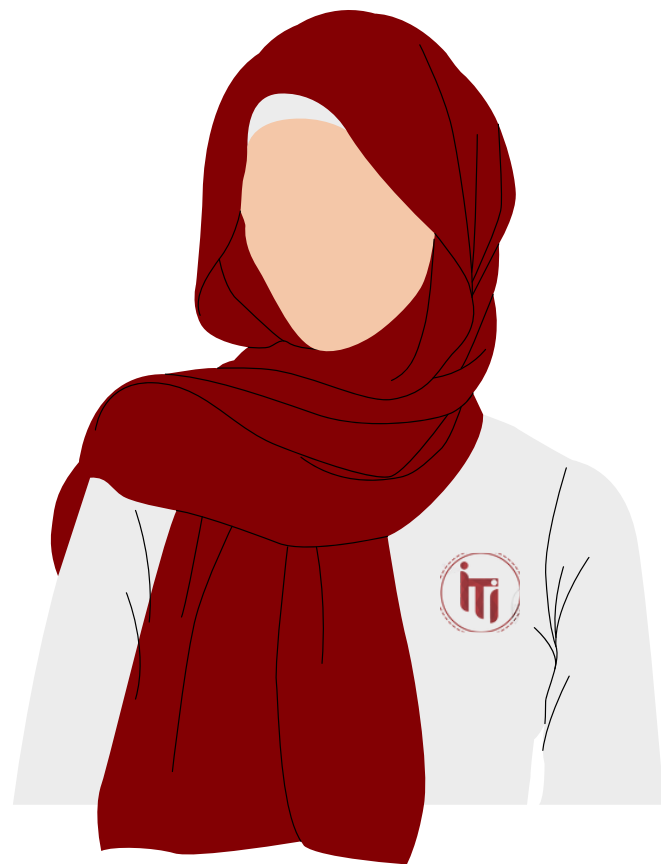


Examination System

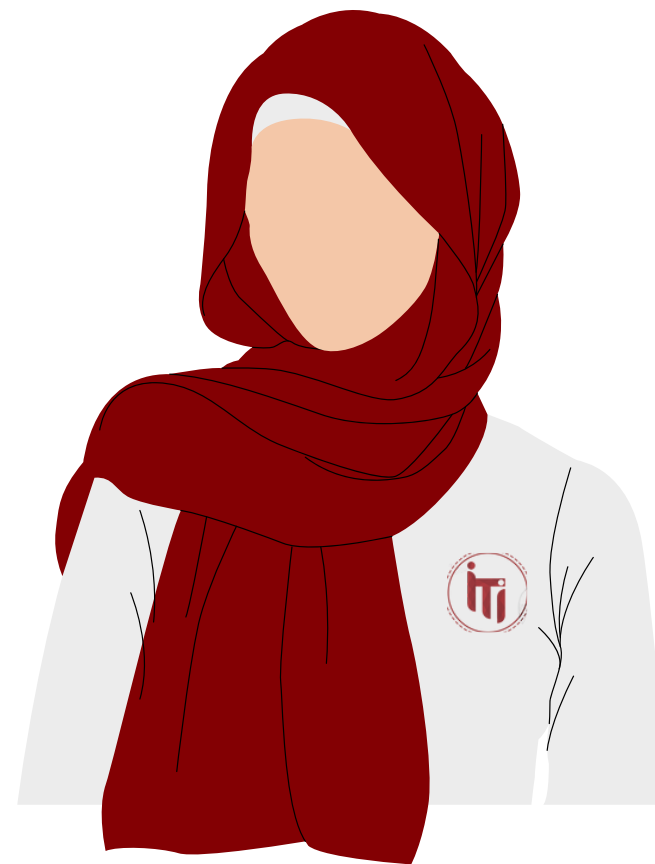
| **2025**



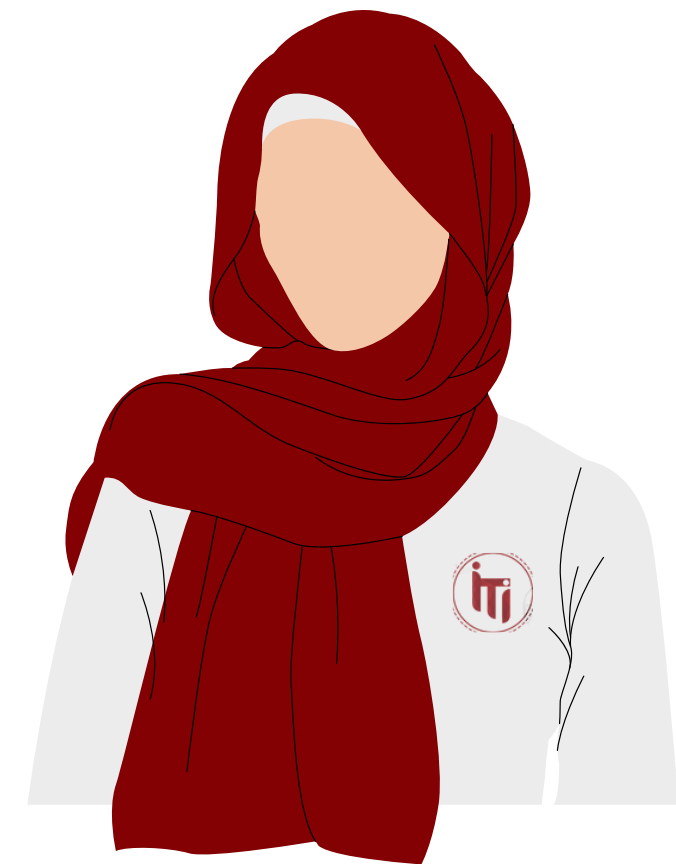
Team Members



Manar Hamada



Gharam Mokhtar

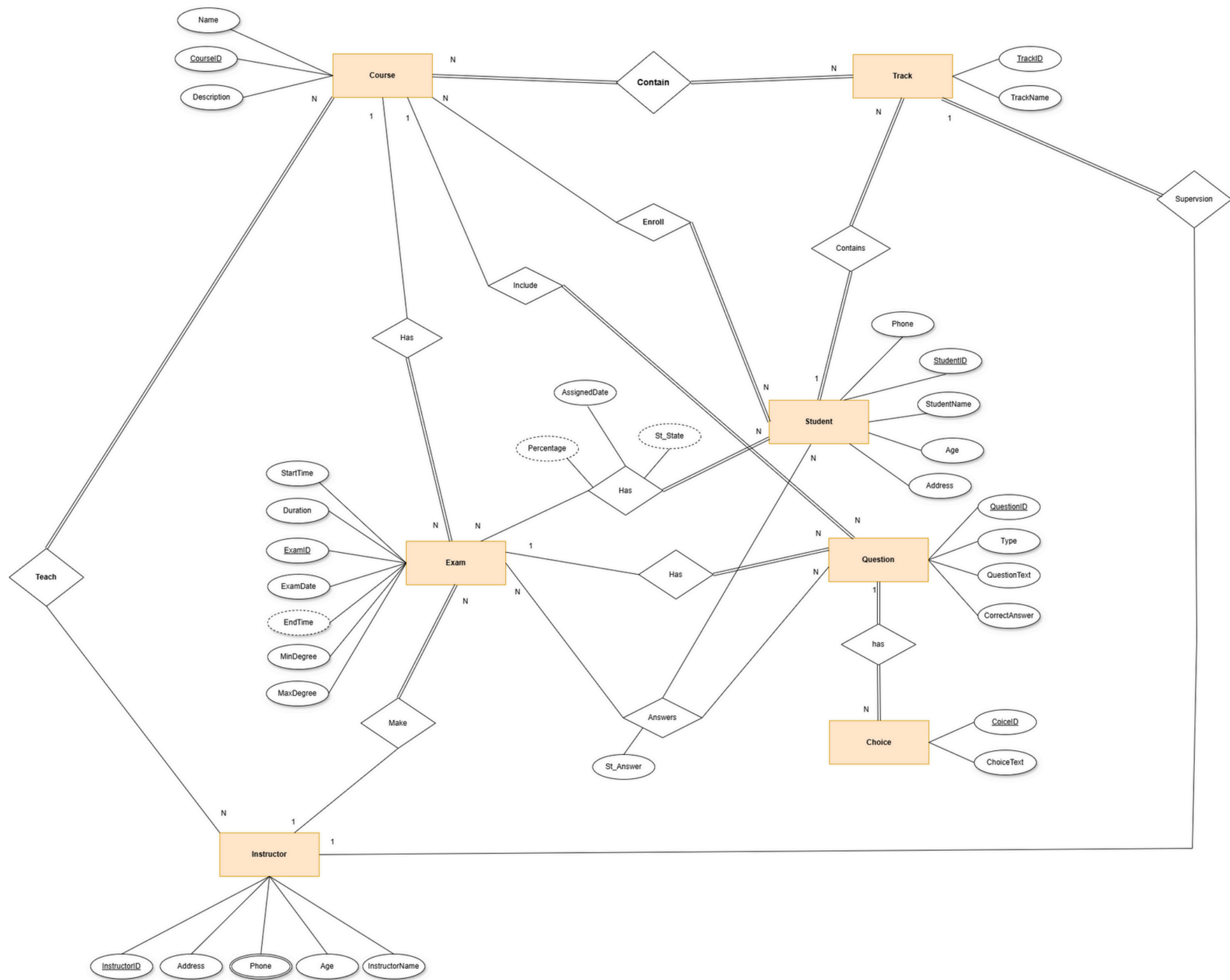


Mariam Hossam

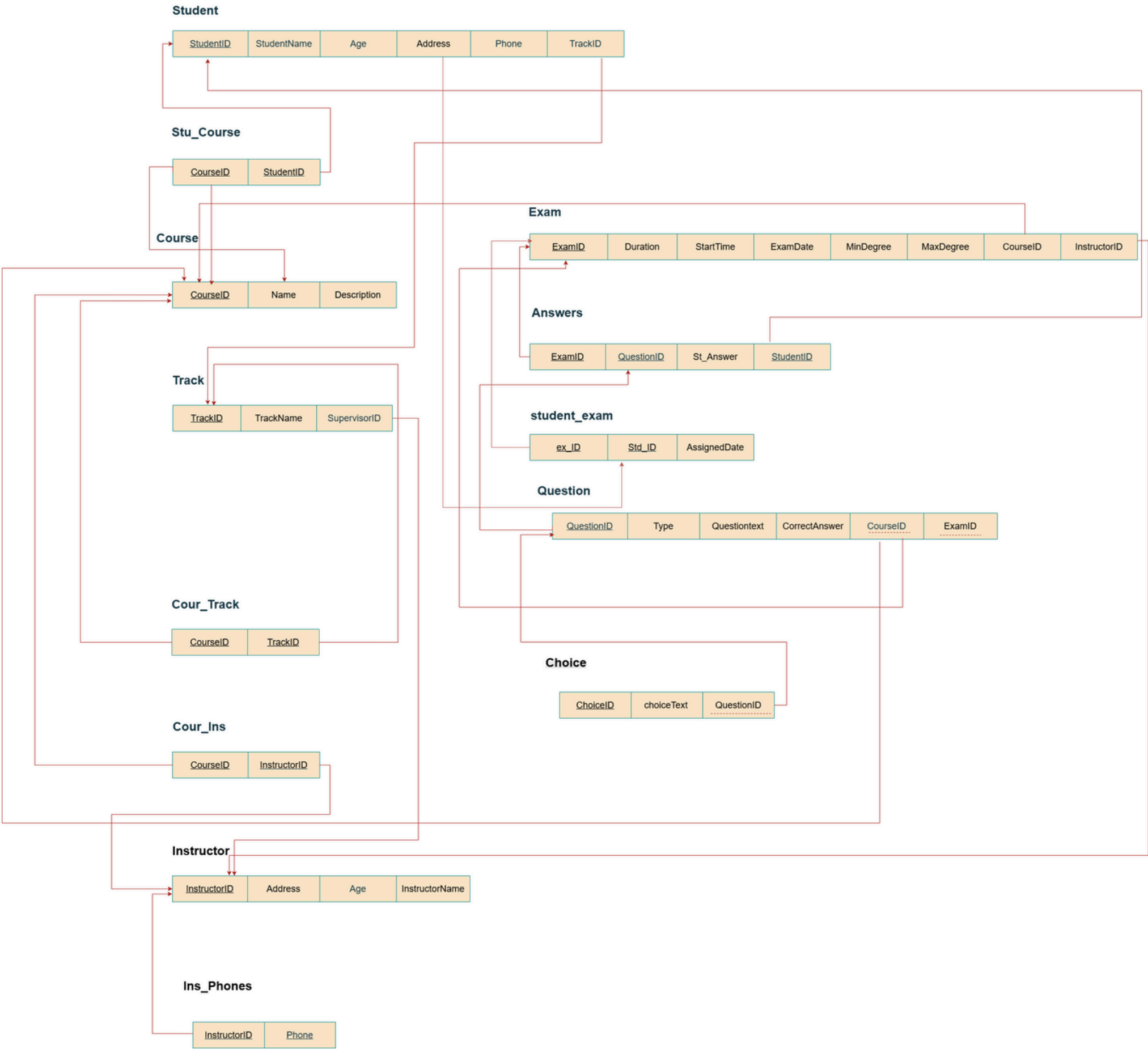
Requirements

- The system includes multiple tracks. Each track (TrackID, TrackName) contains one or more courses and is supervised by one instructor.
- Each course has a unique identifier, Name and Description.
- One or more instructors teach each course, and each instructor(InstructorID, InstructorName, Phone, Address, Age) may teach multiple courses.
- Each course(ExamID, ExamDate, StartTime, EndTime, Duration, MinDegree, MaxDegree) includes one or more exams.
- Each exam is prepared by one (and only one) instructor.
- Each exam contains one or more questions. A single question (QuestionID, Type, QuestionText, CorrectAnswer) may appear in more than one exam.
- Each question has one or more choices(ChoiceID, ChoiceText)
- Students (StudentID, StudentName, Age, Address, Phone) can enrol in one or more courses, and each course may have multiple students.
- Each student answers the questions in an exam and for each answer, the system stores:
 - The student's answer,
 - The grade the student achieved for the question.

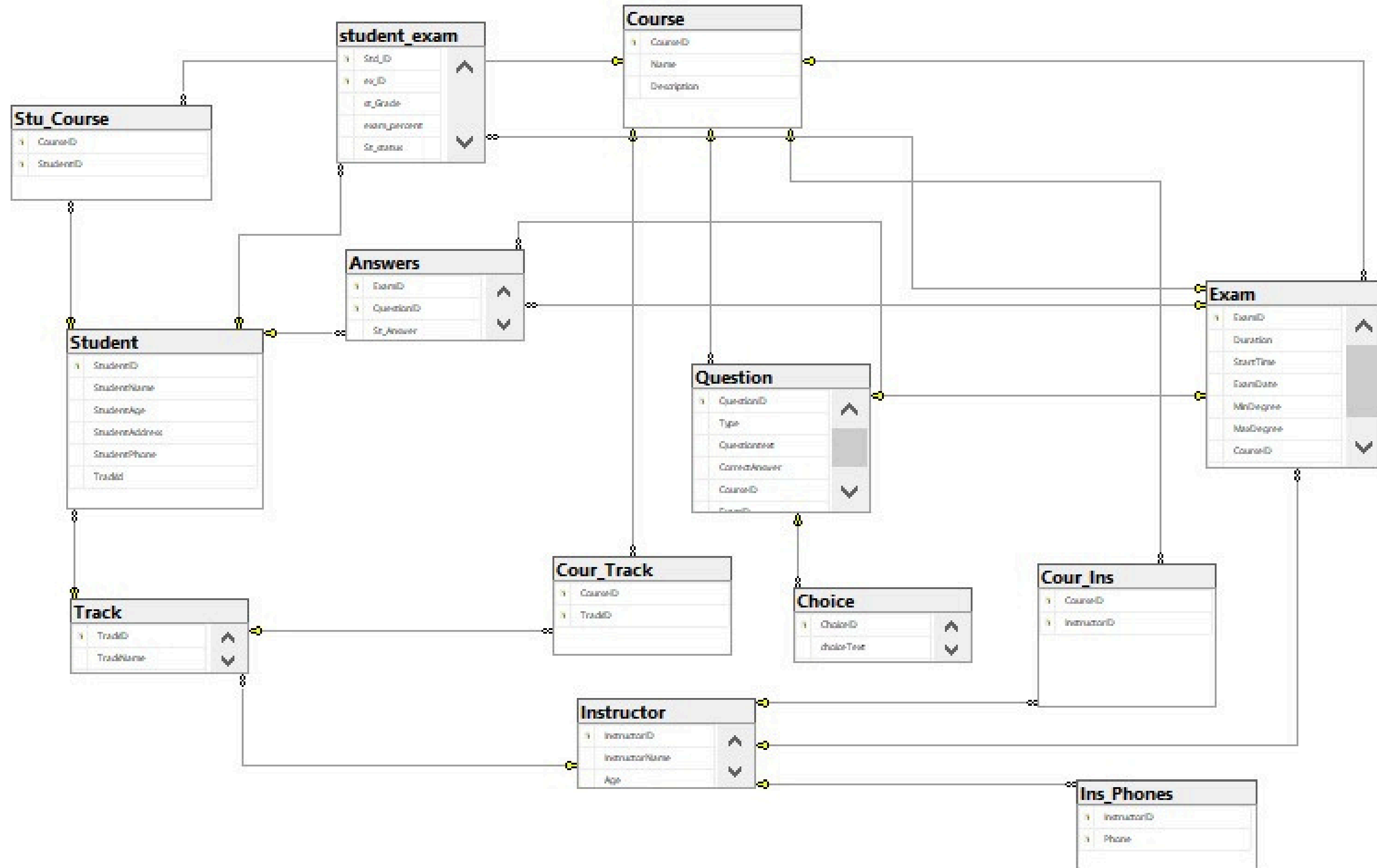
ERD



Mapping



Diagram



CreateExam PROCEDURE

```
CREATE PROCEDURE CreateExam
    @ExamID INT,
    @Duration INT,
    @StartTime TIME,
    @ExamDate DATE,
    @MinDegree INT,
    @MaxDegree INT,
    @CourseID INT,
    @InstructorID INT
AS
BEGIN
    INSERT INTO Exam (ExamID, Duration, StartTime, ExamDate, MinDegree, MaxDegree, CourseID, InstructorID)
    VALUES (@ExamID, @Duration, @StartTime, @ExamDate, @MinDegree, @MaxDegree, @CourseID, @InstructorID);
END

EXEC CreateExam
    @ExamID = 1,
    @Duration = 90,
    @StartTime = '11:00:00',
    @ExamDate = '2025-05-20',
    @MinDegree = 5,
    @MaxDegree = 10,
    @CourseID = 1,
    @InstructorID = 1;
select * from Exam
```

Add_Choices_To_Question PROCEDURE

```
CREATE PROCEDURE Add_Choices_To_Question
    @ChoiceID INT,
    @ChoiceText VARCHAR(50),
    @QuestionID INT
AS
BEGIN
    INSERT INTO Choice (ChoiceID, choiceText, QuestionID)
    VALUES (@ChoiceID, @ChoiceText, @QuestionID)
END
EXEC Add_Question_To_Exam
    @QuestionID = 3,
    @Type = 'MCQ',
    @QuestionText = 'What is the capital of France?',
    @CorrectAnswer = 'B',
    @CourseID = 1,
    @ExamID = 1;

EXEC Add_Choices_To_Question @ChoiceID = 5, @ChoiceText = 'Berlin', @QuestionID = 3;
EXEC Add_Choices_To_Question @ChoiceID = 2, @ChoiceText = 'Paris', @QuestionID = 3;
EXEC Add_Choices_To_Question @ChoiceID = 3, @ChoiceText = 'Rome', @QuestionID = 3;
EXEC Add_Choices_To_Question @ChoiceID = 4, @ChoiceText = 'Madrid', @QuestionID = 3;
```


Add_Question_To_Exam PROCEDURE

```
CREATE PROCEDURE Add_Question_To_Exam
    @QuestionID INT,
    @Type VARCHAR(50),
    @QuestionText VARCHAR(500),
    @CorrectAnswer CHAR(1),
    @CourseID INT,
    @ExamID INT
AS
BEGIN
    INSERT INTO Question (QuestionID, Type, Questiontext, CorrectAnswer, CourseID, ExamID)
    VALUES (@QuestionID, @Type, @QuestionText, @CorrectAnswer, @CourseID, @ExamID)
END
EXEC Add_Question_To_Exam
    @QuestionID = 2,
    @Type = 'True/False',
    @QuestionText = 'SQL is a programming language.',
    @CorrectAnswer = 'F',
    @CourseID = 1,
    @ExamID = 1;
select * from Question

EXEC Add_Question_To_Exam @QuestionID = 1, @Type = 'MCQ', @QuestionText = 'What is the capital of USA?', @CorrectAnswer = 'B', @CourseID = 1, @ExamID = 1;
EXEC Add_Choices_To_Question @ChoiceID = 1, @ChoiceText = 'Washington DC', @QuestionID = 1;
EXEC Add_Choices_To_Question @ChoiceID = 2, @ChoiceText = 'New York', @QuestionID = 1;
EXEC Add_Choices_To_Question @ChoiceID = 3, @ChoiceText = 'Los Angeles', @QuestionID = 1;
EXEC Add_Choices_To_Question @ChoiceID = 4, @ChoiceText = 'Chicago', @QuestionID = 1;

EXEC Add_Question_To_Exam @QuestionID = 2, @Type = 'True/False', @QuestionText = 'The Earth is flat.', @CorrectAnswer = 'F', @CourseID = 1, @ExamID = 1;
```

Add_Student_Answer PROCEDURE

```
-- CREATE PROCEDURE Add_Student_Answer
    @ExamID INT,
    @QuestionID INT,
    @StudentID INT,
    @St_Answer CHAR(1)
AS
-- BEGIN
--     INSERT INTO Answers (ExamID, QuestionID, StudentID, St_Answer)
--     VALUES (@ExamID, @QuestionID, @StudentID, @St_Answer);
-- END;

EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 1, @StudentID = 2, @St_Answer = 'B';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 2, @StudentID = 2, @St_Answer = 'F';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 3, @StudentID = 2, @St_Answer = 'A';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 4, @StudentID = 2, @St_Answer = 'T';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 5, @StudentID = 2, @St_Answer = 'C';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 6, @StudentID = 2, @St_Answer = 'F';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 7, @StudentID = 2, @St_Answer = 'B';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 8, @StudentID = 2, @St_Answer = 'T';
EXEC Add_Student_Answer @ExamID = 1, @QuestionID = 9, @StudentID = 2, @St_Answer = 'D';
```

Exam_Correction PROCEDURE

```
ALTER PROCEDURE Exam_Correction
    @StudentID INT,
    @ExamID INT
AS
BEGIN
    DECLARE @TotalQuestions INT;
    DECLARE @CorrectAnswers INT;
    DECLARE @Grade INT;
    DECLARE @Percentage FLOAT;
    DECLARE @MinDegree INT;
    DECLARE @Duration INT;
    DECLARE @assigndate DATETIME;
    DECLARE @Studentname varchar(30);

    SELECT @TotalQuestions = COUNT(*)
    FROM Question
    WHERE ExamID = @ExamID
    IF @TotalQuestions = 0
    BEGIN
        RAISERROR('No questions found for this exam.', 16, 1);
        RETURN;
    END

    IF EXISTS (
        SELECT 1 FROM student_exam WHERE Std_ID = @StudentID AND ex_ID = @ExamID
    )
    BEGIN
        RAISERROR('Result for this student and exam already exists.', 16, 1);
        RETURN;
    END
END
```

```
SELECT @CorrectAnswers = COUNT(*)
FROM Answers A
INNER JOIN Question Q ON A.QuestionID = Q.QuestionID
WHERE A.StudentID = @StudentID AND A.ExamID = @ExamID
AND A.St_Answer = Q.CorrectAnswer;
SET @Grade = @CorrectAnswers;

SET @Percentage = (CAST(@CorrectAnswers AS FLOAT) / @TotalQuestions) * 100;

SELECT @MinDegree = MinDegree ,
    @Duration = duration,
    @assigndate = CAST(CONCAT(CONVERT(VARCHAR(10), ExamDate, 120), ' ', CONVERT(VARCHAR(8), StartTime, 108)) AS DATETIME)
FROM Exam WHERE ExamID = @ExamID;

SELECT @Studentname = StudentName
from Student
WHERE StudentID=@StudentID

INSERT INTO student_exam (Std_ID, StudentName, ex_ID, st_Grade, exam_percentage, St_status, AssignedDate, Duration)
VALUES (
    @StudentID,
    @Studentname,
    @ExamID,
    @Grade,
    @Percentage,
    CASE WHEN @Grade >= @MinDegree THEN 'Passed' ELSE 'Failed' END,
    @assigndate,
    @Duration
);
END;
EXEC Exam_Correction @StudentID = 1, @ExamID = 1;
```

student_exam PROCEDURE

```
CREATE TABLE student_exam (
    Std_ID INT,
    StudentName varchar(30),
    ex_ID INT,
    st_Grade INT,
    exam_percentage FLOAT,
    St_status VARCHAR(10),
    AssignedDate DATETIME DEFAULT GETDATE(),
    Duration INT,
    PRIMARY KEY (Std_ID, ex_ID),
    FOREIGN KEY (Std_ID) REFERENCES Student(StudentID),
    FOREIGN KEY (ex_ID) REFERENCES Exam(ExamID)
);
```

362 | SELECT * FROM student_exam

100 %

Results Messages

| | Std_ID | StudentName | ex_ID | st_Grade | exam_percentage | St_status | AssignedDate | Duration |
|---|--------|----------------|-------|----------|------------------|-----------|-------------------------|----------|
| 1 | 1 | Ahmed Ali | 1 | 2 | 14.2857142857143 | Failed | 2025-05-20 11:00:00.000 | 90 |
| 2 | 2 | ahmed | 1 | 9 | 64.2857142857143 | Passed | 2025-05-20 11:00:00.000 | 90 |
| 3 | 3 | Maram Mohammed | 1 | 6 | 42.8571428571429 | Passed | 2025-05-20 11:00:00.000 | 90 |
| 4 | 4 | Fatma Ibrahim | 1 | 6 | 42.8571428571429 | Passed | 2025-05-20 11:00:00.000 | 90 |
| 5 | 5 | Galal Ahmed | 1 | 6 | 42.8571428571429 | Passed | 2025-05-20 11:00:00.000 | 90 |
| 6 | 6 | Farida Elsayed | 1 | 6 | 42.8571428571429 | Passed | 2025-05-20 11:00:00.000 | 90 |
| 7 | 7 | Amany Osama | 1 | 8 | 57.1428571428571 | Passed | 2025-05-20 11:00:00.000 | 90 |
| 8 | 8 | Karam Ali | 1 | 8 | 57.1428571428571 | Passed | 2025-05-20 11:00:00.000 | 90 |


Data Dictionary

| | TABLE_SCHEMA | TABLE_NAME | ORDINAL_POSITION | COLUMN_NAME | Full_Data_Type | Nullability | Key | FK_Constraint | Referenced_Table | Referenced_Column |
|----|--------------|------------|------------------|----------------|----------------|-------------|-----|--------------------------------|------------------|-------------------|
| 1 | dbo | Answers | 1 | ExamID | int | NOT NULL | PK | c6 | Exam | ExamID |
| 2 | dbo | Answers | 2 | QuestionID | int | NOT NULL | PK | c7 | Question | QuestionID |
| 3 | dbo | Answers | 3 | St_Answer | char(1) | NULL | | NULL | NULL | NULL |
| 4 | dbo | Answers | 4 | StudentID | int | NOT NULL | PK | c8 | Student | StudentID |
| 5 | dbo | Choice | 1 | ChoiceID | int | NOT NULL | PK | NULL | NULL | NULL |
| 6 | dbo | Choice | 2 | choiceText | varchar(50) | NULL | | NULL | NULL | NULL |
| 7 | dbo | Choice | 3 | QuestionID | int | NULL | | c5 | Question | QuestionID |
| 8 | dbo | Cour_Ins | 1 | CourseID | int | NOT NULL | PK | FK__Cour_Ins__Course__619B8048 | Course | CourseID |
| 9 | dbo | Cour_Ins | 2 | InstructorID | int | NOT NULL | PK | FK__Cour_Ins__Instru__628FA481 | Instructor | InstructorID |
| 10 | dbo | Cour_Track | 1 | CourseID | int | NOT NULL | PK | FK__Cour_Trac__Cours__5DCAEF64 | Course | CourseID |
| 11 | dbo | Cour_Track | 2 | TrackID | int | NOT NULL | PK | FK__Cour_Trac__Track__5EBF139D | Track | TrackID |
| 12 | dbo | Course | 1 | CourseID | int | NOT NULL | PK | NULL | NULL | NULL |
| 13 | dbo | Course | 2 | Name | nvarchar(30) | NULL | | NULL | NULL | NULL |
| 14 | dbo | Course | 3 | Description | nvarchar(50) | NULL | | NULL | NULL | NULL |
| 15 | dbo | Exam | 1 | ExamID | int | NOT NULL | PK | NULL | NULL | NULL |
| 16 | dbo | Exam | 2 | Duration | int | NULL | | NULL | NULL | NULL |
| 17 | dbo | Exam | 3 | StartTime | time | NULL | | NULL | NULL | NULL |
| 18 | dbo | Exam | 4 | ExamDate | date | NULL | | NULL | NULL | NULL |
| 19 | dbo | Exam | 5 | MinDegree | int | NULL | | NULL | NULL | NULL |
| 20 | dbo | Exam | 6 | MaxDegree | int | NULL | | NULL | NULL | NULL |
| 21 | dbo | Exam | 7 | CourseID | int | NULL | | c1 | Course | CourseID |
| 22 | dbo | Exam | 8 | InstructorID | int | NULL | | c2 | Instructor | InstructorID |
| 23 | dbo | Ins_Phones | 1 | InstructorID | int | NOT NULL | PK | FK__Ins_Phone__Instr__5441852A | Instructor | InstructorID |
| 24 | dbo | Ins_Phones | 2 | Phone | varchar(20) | NOT NULL | PK | NULL | NULL | NULL |
| 25 | dbo | Instructor | 1 | InstructorID | int | NOT NULL | PK | NULL | NULL | NULL |
| 26 | dbo | Instructor | 2 | InstructorName | varchar(50) | NULL | | NULL | NULL | NULL |
| 27 | dbo | Instructor | 3 | Age | int | NULL | | NULL | NULL | NULL |

PowerBI

TrackName

DE



Student according department

| StudentID | StudentName | StudentPhone | StudentAddress | StudentAge | TrackName | TrackID |
|-----------|----------------|--------------|----------------|------------|-----------|---------|
| 1 | Ahmed Ali | 01234567890 | Cairo | 21 | DE | 1 |
| 2 | ahmed | 01134567895 | Alex | 23 | DE | 1 |
| 3 | Maram Mohammed | 01159801236 | Suez | 22 | DE | 1 |
| 4 | Fatma Ibrahim | 01234897888 | Banha | 24 | DE | 1 |
| 5 | Galal Ahmed | 01025634897 | Giza | 25 | DE | 1 |
| 6 | Farida Elsayed | 01559874756 | Alex | 23 | DE | 1 |
| 7 | Amany Osama | 01224123698 | Alex | 22 | DE | 1 |
| 8 | Karam Ali | 01054789648 | Cairo | 24 | DE | 1 |
| 17 | Kareem | 01098765432 | Cairo | 22 | DE | 1 |
| 18 | Laila | 01234567890 | Giza | 21 | DE | 1 |
| 19 | Omar | 01156789345 | Alexandria | 23 | DE | 1 |
| 20 | Hana | 01567893421 | Mansoura | 22 | DE | 1 |
| 21 | Youssef | 01023456789 | Tanta | 25 | DE | 1 |
| 22 | Farah | 01187654321 | Aswan | 22 | DE | 1 |
| 23 | Samir | 01265437890 | Port Said | 20 | DE | 1 |
| 24 | Noor | 01534567892 | Suez | 24 | DE | 1 |
| 25 | Hassan | 01076543289 | Fayoum | 23 | DE | 1 |
| 26 | Salma | 01298765431 | Ismailia | 24 | DE | 1 |
| 27 | Mahmoud | 01123456788 | Luxor | 24 | DE | 1 |

student_info x

Exam Question

Instructor

Student answer

Stuent_grades

+

PowerBI

TrackName

DE



Instructor according Track

| InstructorID | InstructorName | Address | Age | CourseID | Name |
|--------------|-----------------|---------|-----|----------|----------|
| 3 | Ali Ibrahim | Alex | 32 | 2 | OS |
| 1 | Mohsen Mohammed | Alex | 40 | 1 | Networks |
| 4 | Osama Ahmed | Cairo | 30 | 3 | Docker |
| 4 | Osama Ahmed | Cairo | 30 | 4 | Linux |

PowerBI

ExamID

All



Exam Questions

Questiontext

☐ **What does RAM stand for?**

Random Access Memory

Readily Available Memory

Remote Access Memory

Run Access Mode

☐ **What is the capital of USA?**

Chicago

Los Angeles

New York

Washington DC

☐ **What is the primary function of a firewall?**

Block unauthorized access

Increase internet speed

Manage user passwords

Store data securely

☐ **Which country is the largest by land area?**

Canada

Russia



student_info

Exam Questions

Instructor_according_track

Student answer

Stuent_grades



PowerBI

ExamID

1

StudentID

3



Student Answers

| StudentID | False | True |
|-----------|-------|------|
| 3 | | |
| 1 | | B |
| 2 | T | |
| 3 | | A |
| 4 | | T |
| 5 | | C |
| 6 | | F |
| 7 | A | |
| 8 | | T |
| 9 | C | |



ExamID
1

StudentID
3

Student Grades

| StudentID | ExamID | St_status | st_Grade | exam_percentage |
|-----------|--------|-----------|----------|-----------------|
| 6 | 1 | Failed | 3 | 21.43 |
| 5 | 1 | Failed | 4 | 28.57 |
| 4 | 1 | Passed | 5 | 35.71 |
| 3 | 1 | Passed | 8 | 57.14 |
| 9 | 1 | Passed | 9 | 64.29 |
| 12 | 1 | Passed | 9 | 64.29 |
| 2 | 1 | Passed | 12 | 85.71 |
| 7 | 1 | Passed | 12 | 85.71 |
| 1 | 1 | Passed | 14 | 100.00 |
| 8 | 1 | Passed | 14 | 100.00 |



student_info

Exam Questions

Instructor_according_track

Student answer

Stuent_grades

