**Examination System Database**

**Objects in Database**

* Tables
* Stored Procedures
* Functions
* Views
* Indexes
* Triggers

1. **Tables**

Table: User

Description: contain details for all the users of the system (student, instructor, training manger) define according to user (**PK** user id), name, password, type.

Table: Course

Description: store information about the courses offered define according to course (**PK** course id), name, description, maxdegree, mindegree, degree.

Table: Instructor

Description: contain details for the instructors in the system define according to instructor (**PK** instructor id), name, (**FK** for course id and user id).

Table: Question

Description: store information about questions in exam.

Define according to question (**PK** question id), type, correct answer, text, degree, (**FK** exam id).

Table: Student

Description: contain details of all students enrolled in the system define according to student (**PK** student id), name, (**FK** for user id, track id, manger id, branch id).

Table: Track

Description: store information about the tracks in the system define according to track (**PK** track id), name, (**FK** for user id, department id).

Table: Department

Description: store information about the departments in the system define according to department (**PK** department id), name.

Table: Branch

Description: store information about the branches in the system define according to branch (**PK** branch id), name, (**FK** department id).

Table: Intake

Description: store information about the intakes in the system define according to intake (**PK** Intake id), (**FK** manger id).

Table: Training Manger

Description: contain details of all training mangers in the system define according to student (**PK** Training Manger id), name, (**FK** for user id).

Table: Exam

Description: Contain details of all the exams define according to exam (**PK** exam id), exam type, allowance, start time, end time, total time, (**FK** for instructor id, branch id, track id, student id, intake id, course id, question id).

Table: Student\_Exam

Description: store data about each student exam define according to (**PK** student exam id), exam date, score, (**FK** for exam id, student id).

Table: Student Answer

Description: store data about each student Answer for each question define according to (**PK** student answer id), student answer, (**FK** for question id, student id, student exam id).

Table: Results

Description: store data about each student Result define according to (**PK** result id), score, (**FK** for exam id, student id).

1. **Stored Procedures**

Procedure: SP\_AddNewUser

Description: Adds a new user to the system. (Insert in user table)

Procedure: SP\_AddNewCourse

Description: Adds a new course to the system. (Insert in course table)

Procedure: SP\_AddNewInstructor

Description: Adds a new instructor to the system. (Insert in instructor table)

Procedure: SP\_AddNewQuestion

Description: Adds a new question to the system. (Insert in question table)

Procedure: SP\_AddNewStudent

Description: Adds a new student to the system. (Insert in student table)

Procedure: SP\_AddNewIntake

Description: Adds a new intake to the system. (Insert in intake table)

Procedure: SP\_AddNewDepartment

Description: Adds a new department to the system. (Insert in department table)

Procedure: SP\_AddNewTrack

Description: Adds a new track to the system. (Insert in track table)

Procedure: SP\_AddNewBranch

Description: Adds a new branch to the system. (Insert in branch table)

Procedure: SP\_AddNewTrainingManger

Description: Adds a new training manger to the system. (Insert in training manger table)

Procedure: SP\_AddNewExam

Description: Adds a new Exam to the system. (Insert in Exam table)

Procedure: SP\_AddNewStudentAnswer

Description: Adds a new student answer to the system. (Insert in student answer table)

Procedure: SP\_AddNewStudentExam

Description: Adds a new student exam to the system. (Insert in student exam table)

Procedure: SP\_AddNewResults

Description: Adds a new results to the system. (Insert in result table)

Procedure: SP\_GetExamQuestionsByExamId

Description: retrieves exam questions based on the exam id.

Procedure: GetStudentInfoById

Description: retrieves student information based on student id.

Procedure: SP\_GetCoursesinfoByName

Description: retrieves course information based on its name.

Procedure: RemoveQuestionsFromExam

Description: This sp removes a specified question from a specified exam. It checks if the question exists in the exam and deletes it if found, otherwise, it returns an error message.

1. **Functions**

Function: GetExamResult

Description: Retrieves the exam results for a specific student, including exam date, score, exam type, start time, end time, total time, and course name.

Function: CalculateResult

Description: Calculates the total score for a specific student in a specific exam based on their answers. The function sums the degree of all correctly answered questions.

Function: GenerateExamReport

Description: Generates a detailed report for a specific exam, including exam details, course description, instructor name, student details, and student answers with correct answers.

Function: RetriveExamDetails

Description: Retrieves detailed information about a specific exam, including exam ID, start time, end time, course name, and instructor name.

1. **Views**

View: V\_StudentInfo

Description: Provides a detailed view of student information including student ID, name, user ID, track ID, manager ID, and branch ID.

View: V\_InstructorInfo

Description: Provides a detailed view of instructor information including instructor ID, name, course ID, and user ID.

View: V\_CourseInfo

Description: Provides a detailed view of course information including course ID, name, description, maximum degree, and minimum degree.

View: V\_ExamInfo

Description: Provides a comprehensive view of exam information including exam ID, type, course ID, course name, instructor ID, instructor name, intake ID, branch ID, track ID, start time, end time, total time, and allowance.

View: V\_ExamQuestions

Description: Provides a detailed view of exam questions including exam ID, question ID, question text, question type, and degree.

View: V\_StudentExamResults

Description: Provides a view of student exam results including student ID, student name, exam ID, course ID, course name, and score.

View: V\_StudentAnswers

Description: Provides a view of student answers including student ID, student name, student exam ID, question ID, question text, student answer, and correct answer.

View: V\_ExamOverview

Description: Provides an overview of exams including exam ID, course ID, course name, instructor ID, instructor name, start time, end time, total number of questions, and total points.

View: V\_InstructorCourses

Description: Provides a view of instructor courses including instructor ID, instructor name, course ID, course name, description, maximum degree, and minimum degree.

1. Indexes

Indexes on user table

idx\_user\_userType

idx\_user\_userName

Indexes on course table:

idx\_course\_Name

Indexes on instructor table

idx\_Instructor\_Name

idx\_Instructor\_CourseId

idx\_Instructor\_userId

Indexes on question table

idx\_Question\_type

idx\_Questio\_examId

Indexes on Student table

idx\_Student\_userId

idx\_Student\_userName

idx\_Student\_trackId

idx\_Student\_studentName

idx\_Student\_branchId

Indexes on track table

idx\_Track\_trName

idx\_Track\_deptId

Indexes on department table

idx\_Department\_deptName

Indexes on branch table

idx\_Branch\_brName

idx\_Branch\_depId

Indexes on Exam table

idx\_Exam\_startTime

idx\_Exam\_endTime

idx\_Exam\_InstructorId

idx\_Exam\_branchId

idx\_Exam\_trackId

idx\_Exam\_studentId

idx\_Exam\_intakeId

idx\_Exam\_courseId

Indexes on student answer table

idx\_StudentAnswer\_questionId

idx\_StudentAnswer\_studtId

idx\_StudentAnswer\_studentExam

Indexes on student exam table

idx\_StudentExam\_examId

idx\_StudentExam\_studId

Indexes on result table

idx\_Results\_exId

idx\_Results\_stId

1. Triggers

Trigger: trigger\_UpdateResult

Description: Updates the student's total score in the Results table whenever a new answer is inserted or updated in the Student Answer table.

Trigger: trigger\_UpdateExamTotalPoints

Description: Updates the total points for an exam whenever questions are inserted, updated, or deleted.