Databases I, Winter 2023
Milestone 2
Submission: 01/12/2023 (11:59 pm)

You are required to submit a zip file named after your **Team Number** containing the following documents:

a) SQL file

b) A PDF file containing:
- Team name
- Team leader name, ID and tutorial.
- Team members' names.
- Team members' IDs.
- Team members' tutorial groups.

1. Important Guidelines:

- All alpha-numeric attributes should be defined with type varchar (40).

- All numeric values should be defined with data type int or decimal.

- You must follow the names of the required functions, stored procedures and views. **Not matching the names will result in grade loss.**

- You must follow the order and data types of the parameters required for a stored procedure or function with a specific order and certain data type. Failing to follow this guideline will result in grade loss of that function/stored procedure/view.

- You must follow the order of the needed columns in case a table is required to be returned from a function or fetched from a view.

- You should do the appropriate join if you are required to implement a function/view that fetches data from different tables in your database.

- You should insert the data in the appropriate tables in your database if the required stored procedure inserts data in multiple tables in your database.

- Always think about all **consequences** and required actions to be done in every requirement.

- The status of any sent request can either be 'pending' (default), 'accepted' or 'rejected'.

- The system needs to keep track of the selected courses' grade per exam type and semester.

  - The type of any Exam can either be 'Normal' (default), 'First_makeup' or 'Second_makeup'.

  - The grade will be 'Null' if the student is still taking the course or did not attend the Exam. If he/she took the course, a value should be assigned to the grade.

- The status of the student (blocked or unblocked) should be represented using bit data type. if the student does not pay the installment by the deadline, the student will be blocked and unable to log in to the system.

  - For students, 0 means blocked and 1 means unblocked.

- The status of any Payment can either be 'notPaid' (default), or 'Paid'.

- The Offered attribute of the course should be represented using bit data type

- For Course, '0' means course is not offered in the current semester while '1' means course is offered in the current semester.

- If the student has only one payment with no installments this means that number of installment attribute value should be '0' not Null.

- If the student has any number of installments, please consider the below:

  - Number of installments should be equals to the number of months between the payment's start date and the payment's deadline.

  - The first installment's start date equals to the payment start date.

  - The start date of each upcoming installment is equals to the previous installment's deadline.

  - The deadline of each installment is a month from the installment's start date.

  - Installment's amount is equal to (payment amount / total number of installments).

- Required courses: A course is considered required (according to a certain student) if it is unattended or failed.

  - Failed course: Student failed in this course before and is not eligible for the 2nd makeup.

  - Unattended Course: A mandatory course from previous semesters that the student did not take before (Must be a course from a semester less than student's current semester).

- Optional Courses: courses from the current semester or upcoming semesters (Student is allowed to take the optional course if he/she satisfied their prerequisites).

- Missing courses: The courses remaining to be taken at any semester in order for the student to graduate.

- **Any compilation/syntax error in any of the requirements will result in grade loss**

2. Requirements:

You are required to implement the following:

2.1 Basic Structure of the Database:

1. Write an SQL query to create database called "Advising_Team_Your Team Number"

2. Put the queries that create all the tables of your database with their definition inside the below procedure.
   i. Type: stored procedure
   ii. Name: CreateAllTables
   iii. Input: Nothing
   iv. Output: Nothing

3. Create a procedure that Drop all tables inside your database.
   i. Type: stored procedure
   ii. Name: DropAllTables
   iii. Input: Nothing
   iv. Output: Nothing

4. Create a Stored procedure to clear all records in all tables existing in your database.

      i.   Type: stored procedure

      ii.   Name: clearAllTables

      iii.   Input: Nothing

      iv.   Output: Nothing

2.2 Basic Data Retrieval

A) Fetch details for all Active students.

      i.   Type: view

      ii.   Name: view_Students

      iii.   Input: Nothing

      iv.   Output: Student Table

B) Fetch details for all courses with their prerequisites

      i.   Type: view

      ii.   Name: view_Course_prerequisites

      iii.   Input: Nothing

      iv.   Output: Table

C) Fetch details for all Instructors along with their assigned courses

      i.   Type: view

      ii.   Name: Instructors_AssignedCourses

      iii.   Input: Nothing

      iv.   Output: Table

D) Fetch details for all payments along with their corresponding student

      i.   Type: view

      ii.   Name: Student_Payment

      iii.   Input: Nothing

iv. Output: Table

E) Fetch details for all courses along with their corresponding slots' details and instructors

    i. Type: view

    ii. Name: Courses_Slots_Instructor

    iii. Input: Nothing

    iv. Output: Table (CourseID, Course.name, Slot ID, Slot Day, Slot Time, Slot Location, Slot's Instructor name)

F) Fetch details for all courses along with their exams' details.

    i. Type: view

    ii. Name: Courses_MakeupExams

    iii. Input: Nothing

    iv. Output: Table (Course's name, Course's semester, MakeUp_Exam details)

G) Fetch students along with their taken courses' details

    i. Type: view

    ii. Name: Students_Courses_transcript

    iii. Input: Nothing

    iv. Output: table (Student id, student name, course id, course name, exam type, course grade, semester (the student took the course in), and Instructor's name)

H) Fetch all semesters along with their offered courses

    i. Type: view

    ii. Name: Semster_offered_Courses

    iii. Input: Nothing

iv. Output: Table (Course id, Course name, Semester code)

I) Fetch all graduation plans along with their initiated advisors

    i. Type: view

    ii. Name: Advisors_Graduation_Plan

    iii. Input: Nothing

    iv. Output: Table (Graduation_Plan details, Advisor id, Advisor name)

2.3 All Other Requirements

A) Student Registration

    i. Type: Stored Procedure

    ii. Name: Procedures_StudentRegistration

    iii. Input: first name varchar (40), last name varchar (40), password varchar (40), faculty varchar (40), email varchar (40), major varchar (40), Semester int.

    iv. Output: Student id int

B) Advisor Registration

    i. Type: Stored Procedure

    ii. Name: Procedures_AdvisorRegistration

    iii. Input: advisor name varchar (40), password varchar (40), email varchar (40), office varchar (40),

    iv. Output: Advisor id int

C) List all advising students

    i. Type: Stored Procedure

ii. Name: Procedures_AdminListStudents

iii. Input: Nothing

iv. Output: Table

D) List all Advisors

    i. Type: Stored Procedure

    ii. Name: Procedures_AdminListAdvisors

    iii. Input: Nothing

    iv. Output: Table

E) List all Students with their Advisors

    i. Type: Stored Procedure

    ii. Name: AdminListStudentsWithAdvisors

    iii. Input: Nothing

    iv. Output: Table

F) Add new Semester

    i. Type: Stored Procedure

    ii. Name: AdminAddingSemester

    iii. Input: start_date date, end_date date, and semester code

    iv. Output: Nothing

G) Add new course

    i. Type: Stored Procedure

    ii. Name: Procedures_AdminAddingCourse

    iii. Input: major varchar (40), semester int, credit hours int, course name varchar (40), and offered bit

iv.   Output: Nothing

H) Link instructor to course on specific slot

    i.   Type: Stored Procedure

    ii.   Name: Procedures_AdminLinkInstructor

    iii.   Input: InstructorId int, courseId int, and slotID int

    iv.   Output: Nothing

I) Link student to course with Specific instructor

    i.   Type: Stored Procedure

    ii.   Name: Procedures_AdminLinkStudent

    iii.   Input: Instructor Id int, student ID int, course ID, and semester code varchar (40)

    iv.   Output: Nothing

J) Link student to advisor

    i.   Type: Stored Procedure

    ii.   Name: Procedures_AdminLinkStudentToAdvisor

    iii.   Input: studentID int, advisorID int

    iv.   Output: Nothing

K) Admin add exam

    i.   Type: Stored Procedure

    ii.   Name: Procedures_AdminAddExam

    iii.   Input: Type varchar (40), date datetime, courseID int

    iv.   Output: Nothing

L) Issue installments as per the number of installments for a certain payment

     i.   Type: Stored Procedure

     ii.   Name: Procedures_AdminIssueInstallment

     iii.   Input: payment ID int

     iv.   Output: Nothing

M)   Delete courses along with its related slots

     i.   Type: Stored Procedure

     ii.   Name: Procedures_AdminDeleteCourse

     iii.   Input: courseID int

     iv.   Output: Nothing

N) Update student's Status based on his/her financial status, if the students' installment status was "NotPaid" and the installment's deadline was passed then this student should be blocked.

(Student status should be 0 in case the student is blocked and 1 in case the student is Active).

     i.   Type: Stored Procedure

     ii.   Name: Procedure_AdminUpdateStudentStatus

     iii.   Input: StudentID int

     iv.   Output: Nothing

O) List all pending requests

     i.   Type: View

     ii.   Name: all_Pending_Requests

     iii.   Input: Nothing

iv.   Output: Table (Pending requests details, initiated student name and Related advisor name)

P) Delete slots of certain courses if the course isn't offered in the current semester

   i.   Type: Stored Procedure

   ii.   Name: Procedures_AdminDeleteSlots

   iii.   Input: current_semester varchar (40)

   iv.   Output: Nothing

Q) Advisor login using username and password.

   i.   Type: Scalar Function

   ii.   Name: FN_AdvisorLogin

   iii.   Input: ID int, password varchar (40)

   iv.   Output: Success bit

R) Insert graduation Plan

   i.   Type: Stored Procedure

   ii.   Name: Procedures_AdvisorCreateGP

   iii.   Input: Semester code varchar (40), expected_graduation_date date, sem_credit_hours int, advisor id int, student id int

   iv.   Output: Nothing

S) Add course inside certain plan of specific student

   i.   Type: Stored Procedure

   ii.   Name: Procedures_AdvisorAddCourseGP

iii. Input: student id int, Semester_code varchar (40), course name varchar (40).

iv. Output: Nothing

T) Update expected graduation date in a certain graduation plan

    i. Type: Stored Procedure

    ii. Name: Procedures_AdvisorUpdateGP

    iii. Input: ==expected_grad_date date== and studentID int

    iv. Output: nothing

U) Delete course from certain graduation plan in certain semester

    i. Type: stored procedure

    ii. Name: Procedures_AdvisorDeleteFromGP

    iii. Input: studentID int, semester code varchar (40) and course ID (the course he/she wants to delete)

    iv. Output: nothing

V) Retrieve requests for certain advisor

    i. Type: TVFunction

    ii. Name: FN_Advisors_Requests

    iii. Input: advisorID int

    iv. Output: Table (Requests details related to this advisor)

W) Approve/Reject extra credit hours' request

    i. Type: Stored Procedure

    ii. Name: Procedures_AdvisorApproveRejectCHRequest

    iii. Input: RequestID int, Current semester code varchar (40)

iv. Output: nothing

X) View all students assigned to specific advisor from a certain major along with their taken courses

     i. Type: Stored Procedure

     ii. Name: Procedures_AdvisorViewAssignedStudents

     iii. Input: AdvisorID int and major varchar (40)

     iv. Output: Table (Student id, Student name, Student major, Course name)

Y) Approve/Reject courses request

After approving/rejecting the request, the status of the request should be updated and all consequences should be handled. The approving/rejecting is based on the below conditions:

- All the Requested course's prerequisites are taken.
- Student has enough assigned hours for the requested course.

     i. Type: Stored Procedure

     ii. Name:Procedures_AdvisorApproveRejectCourseRequest

     iii. Input: RequestID int, current_semester_code varchar(40)

     iv. Output: nothing

Z) View pending requests of specific advisor students

     i. Type: Stored Procedure

     ii. Name: Procedures_AdvisorViewPendingRequests

     iii. Input: Advisor ID int {this advisor should be the one advising the student}

iv. Output: Table of pending requests' details.

AA) Student Login using username and password.
    i. Type: Scalar Function
    ii. Name: FN_StudentLogin
    iii. Input: Student ID int, password varchar (40)
    iv. Output: Success bit

BB) Add Student mobile number(s)
    i. Type: Stored Procedure
    ii. Name: Procedures_StudentaddMobile
    iii. Input: StudentID int, mobile_number varchar (40)
    iv. Output: Nothing

CC) View available courses in the current semester
    i. Type: TVFunction
    ii. Name: FN_SemsterAvailableCourses
    iii. Input: semster_code varchar (40)
    iv. Output: Table of available courses within the semester

DD) Sending course's request
    i. Type: Stored Procedure
    ii. Name: Procedures_StudentSendingCourseRequest
    iii. Input: Student ID int, course ID int, type varchar (40), and comment varchar (40)

iv. Output: Nothing

EE) Sending extra credit hours' request

    i. Type: Stored Procedure

    ii. Name: Procedures_StudentSendingCHRequest

    iii. Input: Student ID int, credit hours int, type varchar (40), and comment varchar (40)

    iv. Output: Nothing

FF) View graduation plan along with the assigned courses

    i. Type: TVFunction

    ii. Name: FN_StudentViewGP

    iii. Input: student_ID int

    iv. Output: Table (Student Id, Student_name, graduation Plan Id, Course id, Course name, Semester code, expected graduation date, Semester credit hours, advisor id)

GG) Student view his first not paid installment deadline

    i. Type: Scalar Function

    ii. Name: FN_StudentUpcoming_installment

    iii. Input: StudentID int

    iv. Output: deadline date of first not paid installment

HH) View slots of certain course that is taught by a certain instructor

    i. Type: TVFunction

    ii. Name: FN_StudentViewSlot

    iii. Input: CourseID int, InstructorID int

      iv.   Output: table of slots' details (Slot ID, location, time, day) with course name and Instructor name

II) Register for first makeup exam {refer to eligibility section (2.4.1) in Milestone 1}

      i.   Type: Stored Procedure

      ii.   Name: Procedures_StudentRegisterFirstMakeup

      iii.   Input: StudentID int, courseID int, studentCurrent semester varchar (40)

      iv.   Output: Nothing

JJ) Second makeup Eligibility Check {refer to eligibility section (2.4.1) in the description}

      i.   Type: Scalar Function

      ii.   Name: FN_StudentCheckSMEligiability

      iii.   Input: CourseID int, Student ID int

      iv.   Output: Eligible bit {0 → not eligible, 1 → eligible}

KK) Register for 2nd makeup exam {refer to eligibility section (2.4.1) in the description}

      i.   Type: Stored Procedure

      ii.   Name: Procedures_StudentRegisterSecondMakeup

      iii.   Input: StudentID int, courseID int, Student Current Semester Varchar (40)

      iv.   Output: Nothing

LL) View required courses

      i.   Type: Stored Procedure

      ii.   Name: Procedures_ViewRequiredCourses

iii. Input: StudentID int, Current semester code Varchar (40)

iv. Output: Table of the required courses' details.

MM) View optional courses

    i. Type: Stored Procedure

    ii. Name: Procedures_ViewOptionalCourse

    iii. Input: StudentID int, Current semester code Varchar (40)

    iv. Output: Table of the optional courses' details.

NN) View missing/remaining courses to specific student.

    i. Type: Stored Procedure

    ii. Name: Procedures_ViewMS

    iii. Input: StudentID int

    iv. Output: Table of missing courses' details

OO) Choose instructor for a certain selected course.

    i. Type: Stored Procedure

    ii. Name: Procedures_ChooseInstructor

    iii. Input: Student ID int, Instructor ID int, Course ID int, current_semester_code varchar(40)

    iv. Output: nothing