

ADO.NET ASSESSMENT

“EduTrack – University Course Enrollment System”

A mid-sized university wants to automate its course registration process.
You are hired to develop the **Data Access Module** of their system using **ADO.NET**.

Your module must allow:

- Managing students
- Managing courses
- Registering students for courses
- Viewing enrollment reports

Students will build a **Console App** using **ADO.NET**.

Create the following tables:

1. Students

Column	Type	Constraints
StudentId	INT	PK, Identity
FullName	VARCHAR(100)	NOT NULL
Email	VARCHAR(100)	UNIQUE
Department	VARCHAR(50)	NOT NULL
YearOfStudy	INT	NOT NULL

2. Courses

Column	Type	Constraints
CourseId	INT	PK, Identity
CourseName	VARCHAR(100)	NOT NULL
Credits	INT	NOT NULL
Semester	VARCHAR(20)	NOT NULL

3. Enrollments

Column	Type	Constraints
EnrollmentId	INT	PK, Identity
StudentId	INT	FK → Students
CourseId	INT	FK → Courses
EnrollDate	DATETIME	NOT NULL
Grade	VARCHAR(5)	NULL

Insert:

- 5 Students
 - 6 Courses
 - Few enrollments
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Connected Architecture Tasks (45–60 mins)

Use: `SqlConnection`, `SqlCommand`, `SqlDataReader`

Task 2.1 – Display all courses

Show: CourseId, CourseName, Credits, Semester

Task 2.2 – Add a new student

Input:

- FullName
- Email
- Department
- YearOfStudy

Insert via **parameterized query**.

Task 2.3 – Search students by department

Input example: “Computer Science”

Display matching students.

Task 2.4 – Display enrolled courses for a student

Input: StudentId

Output example:

Course Name | Credits | Enroll Date | Grade

Task 2.5 – Update grade (Connected Mode)

Input:

- EnrollmentId
- Grade (A/B/C/D/F)

Update Enrollments table.

Disconnected Architecture (45–60 mins)

Use: **SqlDataAdapter**, **DataSet**, **CommandBuilder**

Task 3.1 – Load Students and Courses into a DataSet

Show the data in tabular format.

Task 3.2 – Modify course credits (Disconnected Mode)

Steps:

1. Load Courses into DataSet
2. Ask user for CourseId
3. Update **Credits**
4. Use SqlCommandBuilder to update DB

Task 3.3 – Insert a new course (Disconnected Mode)

Add new row → Update DB.

Task 3.4 – Delete a student (Disconnected Mode)

Delete student record inside DataTable.

Stored Procedure

Call stored procedure:

usp_GetCoursesBySemester @semester

=====ALL THE BEST=====