Northeastern University London

LCSCI5208 Database Design AE1

Assessment Details

Course Leader:	Ibukun Afolabi
First, Second, or Third Sitting:	First Sitting
Issue Date:	08/09/2025
Assessment Type:	Set Exercises
Assessment Title:	AE1
Restrictions on Time/Length:	24-32 hours
Assessment Weighting:	70%
Hand-in Deadline:	By 13:00 on 14/11/2025
Planned Feedback Deadline:	28 calendar days after hand-in deadline or last presentation date
File Format Accepted:	PDF, JPEG, Codes(MongoDB)
Mode of Submission:	Online (Canvas)
Anonymous Submission:	Yes
Marking Scheme:	Linear

	**Permitted**	Use of AI is allowed on this assignment; specific tools and uses must be cited (*example: Claude used for feedback on draft*).

Assessment Task

The setting

EduConnect is a growing online learning platform that wants to redesign their database system. Currently, they store all data in spreadsheets, but rapid growth has made this approach inefficient and error-prone. You have been hired as a database consultant to design and implement a robust database solution.

The platform needs to manage:

- Instructors who create and teach courses
- Students who enroll in multiple courses
- Courses with different difficulty levels and categories
- Lessons within each course (video, text, or interactive content)
- Student progress tracking through lessons

- Assessments (quizzes, assignments) with submissions and grades
- Discussion forums for each course with posts and replies

Business Rules

1. Each instructor can create multiple courses, but each course has only one primary instructor
2. Students can enroll in multiple courses, and courses can have multiple students
3. Each course contains multiple lessons arranged in a specific sequence
4. Students must complete lessons in order within a course
5. Each lesson can have multiple assessments, but each assessment belongs to only one lesson
6. Students can submit multiple attempts for assessments, but only the latest grade counts
7. Each course has one discussion forum, with multiple posts and nested replies
8. Students receive certificates only after completing all lessons and achieving 70% average on assessments

Design overview

Step 1 : Initial Design Documentation ***(25 marks)[K2b,T3b]***

1.1 Create your first draft ER diagram based on the requirements. This should be: **(5 Marks)**

- Hand-sketched or created with basic drawing tools (take a photo if hand-drawn)
- Labeled as "Version 1" with date/time stamp
- Include a brief explanation (100-150 words) of your initial approach

1.2: Alternative Design Analysis ***(10 marks)***

Critical Requirement**:** Explain three fundamentally different design approaches you considered for this system and justify why you rejected them. For each alternative:

- Sketch or describe the approach (150-200 words each)
- Identify specific weaknesses or limitations
- Explain what made you move away from this design
- Connect your reasoning to database design principles

Examples of alternative approaches might include: different relationship modeling strategies, alternative normalization approaches, different ways to handle hierarchical data, etc.

1.3: Design Evolution ***(10 marks)***

Document your design refinement process by showing:

- Version 2: Your improved ER diagram after considering alternatives
- Version 3: Your final ER diagram
- Change Log: For each version, explain what changed and why (100-150 words per version)
- Include timestamps to show your iteration process

*Step 2: Personal Experience Integration **(15 marks) [k2b,T3b]***

2.1: Platform Experience Analysis **(8 marks)**

Based on your personal experience with online learning platforms (Moodle, Canvas, Coursera, Khan Academy, etc.):

- Identify 3-5 features you've used that are NOT in the basic requirements given above.
- Explain how each feature enhanced your learning experience
- Design database components to support these features
- Justify why these additions would improve the EduConnect system

2.2: University-Specific Adaptation **(7 marks)**

Modify your design to work specifically for your own university:

- Name your university and describe 2-3 unique characteristics of its academic structure.
- Explain how these characteristics would require design modifications
- Show specific schema changes needed (new entities, attributes, or relationships)
- Discuss any constraints or business rules specific to your institution

Example: "At [Your university name], students can audit courses without assessment, requiring a modified enrollment entity..."

*Step 3: Technical Implementation **(30 marks) [K1b,K3b]***

3.1 Schema Development **(15 marks)**

- Convert your final ER diagram into a complete relational schema through logical design.
- Makes sure you have normalized the relational schema.
- Include your university-specific and personal feature additions
- Create DDL statements with appropriate constraints and indexes. Explain your choice of indexes based on optimization intensions.
- Create the Database on any database management server of your choice and take a screen shot of the database schema.

3.2: Querying **(15 marks)**

Write SQL queries to answer the following business questions:

- List all students who have completed more than 80% of lessons in any course they're enrolled in.
- Find instructors whose courses have the highest average student performance
- Generate a report showing student progress: student name, course name, lessons completed, lessons remaining, and current grade average

Run queries against the database and include screen shots of the query and output in your report.

Step 4: Backend Programming with Personal Touch ***(20 marks)[S2b,T3b]***

4.1 Create a backend application that implements one (1) core function from the basic requirements. **(12 marks)**

4.2 Include detailed comments explaining: **(8 marks)**

- Why you chose your specific programming approach
- How your personal experience influenced your implementation decisions
- What challenges you faced and how you overcame them

Step 5: English proficiency ***(10 marks) [T3b]***

- Correct spelling and grammar. Word and element of style should be used appropriately. Appropriate sentence construction and paragraph usage. Attention to formatting. APA referencing style.

This assignment is 70% of the overall mark for the course.

This assignment requires that you submit a PDF document which contains your response to step 1-4 above. The PDF document should be clearly organised to address steps 1- 4 of the assessment task above and contain necessary diagrams (high resolution), screen shots(high resolution) and codes. You are expected to include code files for step 4 separately. You could also include separate JPEG files for the images in the PDF file. Not submitting the PDF file (s), the codes and JPEG files (or submitting a wrong file format) will mean that no marks will be allocated to the questions that require these submissions.

Use of AI is allowed on this assignment, however specific tools and uses must be cited (*example: Claude used for feedback on draft*). You may use AI for planning idea development and research, but your final submission should show how you have developed and refine these ideas.

Assessment Criteria

Excellent (80-100%)

- Authenticity: Clear evidence of personal reflection and university-specific knowledge
- Design Evolution: Sophisticated iteration process with well-justified changes
- Critical Analysis: Thoughtful evaluation of alternative approaches with deep reasoning
- Integration: Seamless incorporation of personal and institutional requirements
- Technical Excellence: Robust implementation reflecting design decisions

Good (60-79%)

- Personal Insight: Some evidence of personal experience but limited depth
- Design Process: Shows iteration but reasoning could be stronger
- Alternatives: Identifies alternatives but analysis lacks sophistication
- Implementation: Good technical work with minor integration issues

Satisfactory (40-59%)

- Basic Personal Input: Minimal personal reflection or generic responses
- Limited Iteration: Shows some design changes but poor documentation
- Weak Analysis: Superficial treatment of alternatives
- Technical Issues: Implementation works but doesn't reflect design thinking

Unsatisfactory (0-39%)

- No Personal Connection: Generic responses that could apply to any system
- Poor Process: No evidence of design iteration or critical thinking
- Missing Elements: Fails to address alternative approaches or personal experience
- Non-functional: Implementation doesn't work or is incomplete

Submitting Assessments

You have three submission attempts, but only the last submission will be graded. If your last submission attempt is late, you will receive the late penalty even if you have a previous submission that was on time. Please make sure to avoid multiple submissions for assessments with multiple components, as only the last attempt will be graded. Upload several files in one submission attempt using the ‘add files’ function instead.

If you encounter issues with submission:

- Check the assessment details table at the top of the assessment brief to be sure you are submitting a permitted file format. Avoid zip files (unless explicitly

required) and scanned PDFs. Use the ‘add files’ function to submit multiple files instead of a zip file.

- Make sure you have ticked the agreement box at the bottom of your Canvas submission page (scroll down if you don’t see it). This will enable you to select ‘Submit Assessment.’
- Try changing web browsers.

If you still cannot submit, e-mail a copy of your assignment before the deadline to student.assessments@nulondon.ac.uk along with screenshots of the problem on Canvas, showing a timestamp.

If your assessment requires anonymous submission (see the assessment details table at the top of the assessment brief), be sure you have left your name off of your submission and out of the submission file name.

Please review the submitted file to ensure that everything is in order. To turn on notifications for submission confirmation emails in your Canvas settings: Account > Notifications > Turn on the bell for ‘All submissions.’ In the app this is via Settings > Email Notifications > All submissions.

Marking

The University uses two assessment marking schemes – one for undergraduate and one for postgraduate – to mark all taught programmes leading to an award of the University.

More detailed information on the assessment marking scheme and the criteria can be found in the Course Syllabus, available on the University’s VLE.

Learning Outcomes

This assessment will enable students to demonstrate in full or in part the learning outcomes identified in the Course Descriptor.

On successful completion of this assessment, students should be able to:

Knowledge and Understanding

K1b Critically understand well-established concepts of database design theory, query language, and query optimisation.

K2b Recognise main methods and techniques and assess their suitability for solving a data-driven problem, and understand their relationship in developing a database application.

K3b Demonstrate knowledge and critical understanding of the capabilities and limitations of well-established tools, methods and techniques required to build a database application.

Subject-Specific Skills

S1b Evaluate relational database management systems as a class of software systems, and their technical, social and management dimensions when deployed in multi-user environments.

S2b Develop original software for a database application that solves a practical data problem using best industry practices and standards.

Transferable Skills

T2b Review existing database technologies and propose the right tools for solving a problem or ways to improve it.

T3b Demonstrate a sound technical proficiency in written English and skill in selecting vocabulary so as to communicate effectively to specialist and non-specialist audiences.

T4b Work in a proactive and effective manner as part of a team in a database management project, exercising significant responsibility in the application design and implementation.

Accessing Feedback

Students can expect to receive feedback on all summative coursework within 28 calendar days of the submission deadline or, if applicable, the last oral assessment date, whichever later. The 28 calendar day deadline does not apply to work submitted late. Feedback can be accessed through the assessment link on the Canvas course page.

Late Submissions

Please ensure that you submit your assignment well before the deadline to avoid any late penalties, as a submission made exactly on the deadline will be considered late. Please keep in mind that there may be differences between your computer's clock and the server time, which can cause discrepancies, and that Canvas may take some time to process your submission.

Your Canvas submission portal displays two due dates: one is the deadline for your assignment, and the second is the latest possible date by which your assignment can be submitted late. Please make sure you submit by the assessment deadline in order to avoid late penalties.

If assessments are submitted late without approved Extenuating Circumstances, there are penalties:

- For assessment elements submitted up to one day late, any passing mark will receive 10 marks deducted or a threshold pass (40% for undergraduate students, 50% for postgraduate students), whichever is higher. Any mark

below 40% for undergraduate students and below 50% for postgraduate students will stand.
- Students who do not submit their assessment within one day of the deadline, and have no approved Extenuating Circumstances, are deemed not to have submitted and to have failed that assessment element. The mark recorded will be 0%.
- For assessment subelements, late submission will result in non-submission penalties deducted according to the marking criteria above.

For further information, please refer to.

Extenuating Circumstances

The University's Extenuating Circumstances (ECs) procedure is in place if there are genuine circumstances that may prevent a student from submitting an assessment. If the EC application is successful, there will be no academic penalty for missing the published submission deadline.

Students are normally expected to apply for ECs in advance of the assessment deadline. Students may apply for consideration of ECs retrospectively if they can provide evidence that they could not have done so in advance of the deadline. All applications for ECs must be supported by independent evidence.

Successful EC applications for live oral assessments, including vivas, will result in a deferral of the oral to be organized by faculty, students, and Timetabling for a date as close as possible to the original presentation date. The deadline for supplementary materials, if assigned, will be carried forward by the length of the oral assessment extension.

Missing an oral assessment, including a compulsory viva, without an approved EC will result in a non-submission for the entire assessment and, accordingly, a recorded mark of 0%.

Students are reminded that the ECs procedure covers only short-term issues (within 21 days leading to the submission deadline) and that if they experience longer-term matters that impact on learning then they must contact Student Support for advice.

Under the Extenuating Circumstances Policy, students may defer an assessed element on only one occasion and may request an extension on a maximum of two occasions.

For further information, please refer to the Extenuating Circumstances Policy in the Academic Handbook.

Academic Misconduct

You must submit work for assessment purposes that is your own and meets good academic practice. Assessments must be completed strictly in accordance with the instructions outlined in the assessment brief. This includes ensuring that your work is appropriately referenced.

It is important to understand if artificial intelligence (AI) is permitted to be used or not, and if yes, the conditions for its use. For clarity, the assessment brief expressly states if AI can be used, and the parameters of its permitted usage. You are not permitted to use AI (in any form) if the assessment brief does not expressly state that usage is permitted.

Any concerns with the academic integrity of a submission will be addressed in accordance with the Academic Misconduct Policy. This policy gives details of the different types of misconduct and the steps the University may take when a concern arises. Action may result in academic penalties being applied directly to you. You are advised to review this policy in full before completing and submitting any work for marking purposes. The University may also take steps to ascertain the authenticity of a submitted piece of work in cases of relevant concern, such as by holding a viva.

Version History

Title: Assessment Brief Template **Approved by: The Quality Team**					
Version number	**Date approved**	**Date published**	**Owner**	**Location**	**Proposed next review date**
4.0	March 2023	March 2023	Registrar	VLE/ Faculty Resources Page	March 2024
3.0	August 2022	August 2022	Registrar	VLE, Faculty Resources Page	July 2023
2.3	December 2021	December 2021	Registrar	VLE	August 2022
2.2	August 2021	August 2021	Registrar	VLE	August 2022
2.1	September 2020	September 2020	Registrar	VLE	August 2021
2.0	September 2020	September 2020	Registrar	VLE	August 2021
1.0	August 2019	August 2019	Registrar	VLE	August 2020

Referenced documents	AQF7 Academic Regulations for Taught Awards; Extenuating Circumstances Policy; Academic Misconduct Policy; Course Syllabus
External Reference Point(s)	UK Quality Code Theme: Assessment