University of East London

Pioneering Futures Since 1898

SCHOOL OF ARCHITECTURE, COMPUTING & ENGINEERING

Submission instructions

- All the group members must be listed on the first page of the assignment.
- All pages to be numbered sequentially
- All work has to be presented in a ready to submit state upon arrival at the ACE Helpdesk. Assignment cover sheets or stationery will **NOT** be provided by Helpdesk staff

Module code	**CN5000**		
Module title	**Database Systems**		
Module leader	**Arish Siddiqui**		
Assignment tutor	**Arish Siddiqui, Solomon Alexis, Hisham Abougrad, Azhar Mahmood, Shaheen Khatoon, Joseph Annan, Nabeela Berardilline ,Madhav Tamang, Dhara Parekh, Abdul Qadoos**		
Assignment title	**Coursework: Group assignment**		
Assignment number	**1**		
Weighting	**100%**		
Handout date	**21-Oct-2024**		
Submission date	**18-Dec-2024**		
Learning outcomes assessed by this assignment	**1,2,3,4,5,6,7,8,9 and 10**		
Turnitin submission requirement	**YES**	**Turnitin GradeMark feedback used?**	**No**
UEL Plus Grade Book submission used?	**NO**	**UEL Plus Grade Book feedback used?**	
Other electronic system used?	**email**	**Are submissions / feedback totally electronic?**	**yes**
Additional information			

University of East London

Pioneering Futures Since 1898

Form of assessment:

☐ Individual work ☒ Group work

For **group work** assessment which requires members to submit both individual and group work aspects for the assignment, the work should be submitted as:

☒ Consolidated single document ☐ Separately by each member

Number of assignment copies required:

☒ 1 ☐ 2 ☐ Other

Assignment to be presented in the following format:

☒ On-line submission
☐ Stapled once in the top left-hand corner
☐ Glue bound
☐ Spiral bound
☐ Placed in a A4 ring bound folder (not lever arch)

Note: To students submitting work on A3/A2 boards, work has to be contained in suitable protective case to ensure any damage to work is avoided.

Soft copy:

☐ CD (to be attached to the work in an envelope or purpose made wallet adhered to the rear)
☐ USB (to be attached to the work in an envelope or purpose made wallet adhered to the rear)
☒ Soft copy not required

Note to all students

Plagiarism is a serious offence --please do not jeopardise your degree and please submit your assignment before the due date.

Group assignment– design, develop and document a prototype Database system

This assessment should be attempted in groups of **4 students** to design and implement a database system in Oracle based on the case study below. Your group will be expected to identify the management needs of the organization and present how they are solved and dealt with by your database design and implementation.

You must keep regular minutes of any meetings that you have while undertaking this course work as they will be required if there is a dispute about any members' contribution.

Your minutes should:

- be dated
- include a list of all group members present and apologies for any absences
- include allocation of work to be achieved by each member by the next meeting
- include the time, date and venue of the next meeting
- be signed to indicate the agreement of all group members, present or not.

You are required to submit with your Assignment a statement signed by each member of the group stating that you have all participated and that the mark awarded should be shared equally. Without this statement marks cannot be allocated

In the event of a dispute about a particular member's contribution to the coursework you should make an appointment with the module leader no later than 1 week before the submission date. All group members will be required to attend this meeting. The module leader's reserves the right to alter an individual's grade in the light of any evidence of unequal contribution. It is envisaged that such occurrences will be rare.

All individuals will receive the group grade for this course work unless clear evidence is provided of unequal contributions.

University of East London

Pioneering Futures Since 1898

Case Study: GYM Management System (GMS)

Consider a **Gym Management System (GMS)** for a large fitness center, which offers various membership plans, a variety of fitness classes, personal training sessions, health assessments, and equipment rentals. The system also tracks gym attendance, manages billing, maintains workout routines, and stores information on gym staff, trainers, and clients.

The gym consists of multiple facilities (e.g., Weight Room, Cardio Area, Swimming Pool, Yoga Studio). Each facility has equipment (e.g., Treadmills, Free Weights, Exercise Bikes), with details on the Model, Serial Number, Maintenance Schedule, and Location (Facility). The gym offers different types of fitness classes (e.g., Yoga, Pilates, Spinning), each managed by an instructor.

The gym employs various staff members, including trainers, instructors, and support staff. Each staff member has a Staff ID, Name, Phone Number, Email, Position, and Salary. Trainers specialize in certain areas (e.g., Weight Training, Cardio, Yoga) and provide personal training sessions for clients. Instructors lead fitness classes and may also conduct workshops.

The gym offers memberships, and every member has a Membership ID, Start Date, End Date, Type (e.g., Monthly, Yearly), and Status (Active, Inactive). Members can book fitness classes and personal training sessions. Each member has basic information such as Name, Date of Birth, Gender, Address, Phone Number, Email, and Emergency Contact. Members can bring guests to the gym, but each guest must be recorded in the system with basic details (Name, Contact Info, Relationship with Member).

The gym offers multiple membership plans (e.g., Silver, Gold, Platinum), with varying benefits such as (Access to facilities, Discounts, Bring Guests, rent lockers and towels). The system tracks when members check in and check out of the gym. Each check-in is linked to a specific facility or class. Guests also need to be checked in when accompanying a member.

The gym offers a variety of fitness classes, each with a Class ID, Name, Type (e.g., Yoga, HIIT, Spinning), Schedule, and Max Capacity. Each class is led by an instructor, and the system tracks which members are enrolled in each class. Members can book classes online or through the gym app, and each booking has a status (Confirmed, Canceled, Waitlisted).

Members can book personal training sessions with specific trainers. Each session has a Session ID, Date, Time, Duration, Trainer, and Status (Scheduled, Completed, Canceled). Trainers create workout plans for members during training sessions, which include details like Exercises, Sets, Reps, and Weight. Members can review their past workout plans and track their progress.

The gym provides health assessments where trainers evaluate a member's body measurements (e.g., Weight, BMI, Body Fat Percentage) and Fitness Goals. Health assessments are done periodically, and results are stored in the system. Members can set fitness goals (e.g., Lose Weight, Build Muscle, Improve Endurance), and the system tracks progress against these goals.

The system manages payments for memberships, personal training sessions, and other services like equipment rentals. Each bill includes the Total Amount, Date, Payment Method (Credit Card, Debit, Cash, Direct Debit), and Status (Paid, Unpaid). Invoices are generated for each

payment, with a breakdown of the services. In case of membership renewal, a new bill is generated. The gym occasionally runs promotions and offers discounts (e.g., 10% off on annual membership, free class for referrals). Discount codes can be applied to memberships or class bookings, and the system tracks their usage.

Answer the following question based on above case study of Gym Management System (GMS).

Q1. Draw the Entity Relationship Model. (10 Marks)

Q2. Map the ERD Model of GMS in to fully normalized Relation Model. (5 Marks)

Q3. Draw the USE CASE for the GMS. (5 Marks)

Q4. Create tables with DDL scripts and populate table's data. (10 Marks)

Q5. Write executable SQL queries to generate desired output. (15 Marks)

1. **Get a list of all fitness classes** offered at the gym, along with their schedules and the instructor names. **(1 mark)**
2. Display all members who have booked a yoga class, including their booking status (Confirmed, Canceled, etc.). **(1 mark)**
3. **Calculate the total revenue** generated from memberships, personal training sessions, and class bookings for a given month. **(2 marks)**
4. **List the top 5 trainers** who have conducted the most personal training sessions. (2 marks)
5. **List all members whose membership has expired** but who have attended the gym in the past 30 days. **(2 marks)**
6. **Find the members who have the most active workout plans** with at least three different exercises in their current routine. (2 marks)
7. **Calculate the total usage of discount codes** and how much revenue was lost due to discounts applied in the last year. (2 marks)
8. Identify the progress of members in the last month at the gym, including the number of fitness classes they attended. The result should display the member's name, the specific dates they attended, and the total number of classes attended during that period. (3 marks)

Q6. Trigger & Store Procedures (5 Marks)

1. Create a trigger to automatically set the membership status to "Inactive" when a member's membership has expired (i.e., the current date exceeds the membership's end date). (2 marks)
2. Create a trigger to automatically decrease the available spots for a fitness class when a member books a class and ensure the class capacity is not exceeded. (2 marks)

3. Create a trigger to automatically notify members when their membership is about to expire (e.g., 7 days before the end date). (1 mark)

Q7. Report Reflection **(5 Marks)**

Q8. Gantt Chart **(5 Marks)**

Mark Distribution

Total Report Marks	60 Marks
Presentation	20 Marks
Lab Tasks	20 Marks
Total	**100 Marks**

Marking Criteria

Designing Part (20)		
Criteria	**Factors for good grade**	**Remarks**
Entities AND ERD (10)	• Identification of Potential Entities • Identification of Weak Entities • Appropriate Names have been identified for Entities • Using CASE tools for drawing diagram • Diagram corresponds to tables and relationships • Multiplicity and optionality indicated on relationships	• **ERD diagram** • **Major entities should be identified** (weak entities can be eliminated)
UML Diagram (5)	• Using CASE tools for drawing diagram	**UML Diagram / USE CASES**
Tables AND Normalization (5)	• Identification of necessary Tables • Identification of Primary and foreign keys • Identification of well documented attributes • Identification of constraints to the system • Removal of repeating groups • Removal of functional dependencies • Creation of tables in 3NF	• Entities described as tables with keys (primary/foreign/composite) and attributes • consistency of data in the database by developing integrity and referential integrity constraints

Implementation Part (30)		
Criteria	**Factors for good grade**	**Remarks**
Creation of tables in SQL AND Population of tables (10)	• Correct use of SQL syntax • Evidence of successful execution • Use of Full range of constraints • A range of data values to test any constraints on attributes	(e.g. data types, primary key, foreign key, not null, unique and check, where appropriate, etc) At least 10 records in each table
SQL queries (15)	• Correct use of SQL syntax • Evidence of successful execution	
stored procedures and triggers (5)	Correct SQL syntax to perform the defined actions with evidence of successful execution. Partial answers may gain some marks if there is evidence of a reasonable attempt.	SQL syntax correctly used to attempt all queries

Report and Presentation (30)		
Criteria	**Factors for good grade**	**Remarks**
Report Reflection (5)	• A short essay discussing the principles of databases design and ow you apply them to the case study ✓ (A well-written, logically coherent) discussion to evaluate the design decisions ✓ recognizing other alternative solutions Justifying choices made	What other alternatives are available? how can it be deployed in the real world? Design choices etc.
Presentation (20)	• Group presentation - presenting the design and implementation of the solution in Oracle.	10 Mins 5 Mins Q/A
Gantt Chart (5)	• Milestones • Group involvement	TEAM WORK: Documentation stating how each group member participated in the development and completion of the assignment.

Submission

Please upload ONLY 1 file:

A word document with answers to all the assessed tasks (a,b,c,d,e and f). Only one member of the group is required to submit the coursework. The file must be called your studentid.doc (i.e. 1234567.docx or 1234567.doc)

Group Presentation (Design and Implementation): Term-1 Week 11

DEADLINE: Report, Term 1, Week 12 (Dec 18, 2024, 23:59)

PLAGIARISM & COLLUSION

http://www.uel.ac.uk/aple/academic/avoidingplagiarism/

FEEDBACK TO STUDENTS

Feedback is central to learning and is provided to students to develop their knowledge, understanding, skills and to help promote learning and facilitate improvement.

- Feedback will be provided as soon as possible after the student has completed the assessment task.
- Feedback will be in relation to the learning outcomes and assessment criteria.
- It will be offered via Turnitin GradeMark and an Audio file where appropriate.

As the feedback (including marks) is provided before Award & Field Board, marks are:

- Provisional
- available for External Examiner scrutiny
- subject to change and approval by the Assessment Board

All students are actively encouraged to collect feedback, review and consider its recommendations and implications, and seek further advice and guidance from academic staff where required.

University of East London

Pioneering Futures Since 1898

Agreement of Participation – Group Assignment One CN5000

Please complete this agreement and keep a copy for each member of your group. The original of this agreement goes to your Tutor.

We agree to work as a group (**group of 4**) to complete the course work for CN5000/CD5000 and understand that the grade awarded will be the grade allocated to us individually as a result of our group work.

Student No.	**Name (block letters) and e-Mail Address**	**Signature**

Note: Students should form their groups (group of 4) within the SAME Tutorial / Practical.

Tutorial / Practical Number: _____

Tutor's Name: _____

Date of agreement_____2024

Assessment Criteria

Deliverable	**Grade Band**
There is a clear indication in the answer that students have fully understood the problem domain and spent a considerable amount of time iterating over different solutions. All relevant entities, data attribute and relationships have been identified and many-to-many relationships have been eliminated. Documentation is to a professional standard along with complete list of references.	*70-100%* **Excellent**
Most of the relevant entities, data attributes and relationships have been identified. Many-to-many relationships have been eliminated. Any assumptions have been justified in the context of the case study and problem domain. Documentation is of a high standard and there is an evidence of iteration and adequate referencing.	*60-69%* **Good *to* Very Good**
About half of the relevant entities, data attributes and relationships have been identified. The standard of documentation is satisfactory. Evidence of iteration will be patchy.	*50-59%* **Satisfactory *to* Good**
Very little or no iteration. Less than half of the relevant entities, data attributes and relationships have been identified. The standard of documentation is generally weak.	*40-49%* **Pass standard *to* satisfactory**
Significant errors and misunderstandings. Entities, data attributes and relationships have not been identified correctly. Level of detail is inappropriate. Documentation is poor. Task not attempted or incomplete or fails to identify the most obvious points.	*0-39* **Fail**

University of East London

Pioneering Futures Since 1898

UNIVERSITY OF EAST LONDON
School of Computing, Architecture and Engineering

Group: .....

Assessment form for Presentation

CN5000/CD5000 Database Systems Presentation 20%)

Students to fill this information. Examiners will not be liable for any mistakes in student ids.

Group No:
Group Member (Student No):

All students agree to equal distribution of marks? Yes/No IF No state percentage for each.

The following is a checklist of things that MUST be present in order that this assessment point may go ahead. If any of the items are missing the student is deemed to have FAILED. It is the group's responsibility to have brought the items on the checklist with them.

Item	Present	Not Present
ALL Group Members		
Necessary resources		
All students agreed distribution of marks		

Assessment for Presentation
Please mark the following criteria. All marks are out of a total of 20.

Clear, concise and all the group members played an active part		**2 Marks**
ERD and USE Case		**4 Marks**
Data Dictionary		**2 Marks**
Normalization and Integrity Constraints		**2 Marks**
Developed and implemented advanced database solutions using SQL statements in Oracle or Other SQL (Demonstrate : query 8 is compulsory along with any queries totaling 6 marks) E.g Query 8 = 3 marks plus other queries of 2 and 1 mark =6 total		**6 Marks**
Fully working system		**2 Marks**
Ability to handle questions and Project report along with PPT Slides		**2 Marks**

Overall Mark:

Assessors should show their comments on the back of this form.

Signed: **As Assessors** **Date:**