



Cairo University
Faculty of Computers and Artificial Intelligence
Information Systems Department

Database I, Year 2022/ 2023
Project

Each Student is required to build the database system of the project that was been assigned to him from projects below.

Deliverables:

- Each project has a set of requirements. These requirements include (ERD, Physical model and set of select statements)
- Software Application using C# programming language

General Instructions:

- IS Cheating Policy will be applied
- No late submissions will be accepted.
- Only One from team has to send the solution via blackboard (No hand written will be accepted)
- Due Date: 28th May at 11:59 pm

Games Rental System

Description	<p>A game rental system provides an easy and cost-effective way to try out new games without having to buy every one.</p> <p>Game rental is a risk-free way to try new games. Because it's so much cheaper than buying.</p> <p>Each game has a vendor who has the responsibility of developing the game.</p> <p>The admin of the system is responsible for adding the games to be rented out by the clients.</p> <p>A games rental system should include the following functionalities:</p> <ul style="list-style-type: none">• Signing up a new user (e.g. admin, client)• Updating a user details• Adding a game (by admin)• Updating a game details (by admin)• Browsing games• Showing a list of games that satisfy certain criteria (e.g. year, vendor, category...)• Performing operations on games: renting, returning.
Requirements	<ol style="list-style-type: none">1. Draw the corresponding ERD for this project2. Convert the ERD to Physical model (<i>DDL scripts</i>)3. The proposed ERD has to be designed in a way that can answer inquiries such the follows (<i>you have to write SQL statement for each inquiry</i>):<ol style="list-style-type: none">a. What was the most interesting game that had maximum number of renters (clients)?b. What were the games that hadn't any renters (clients) last month?c. Who was the renter (client) with the maximum renting last month?d. Who was the vendor with the maximum renting out last month?e. Who were the vendors whose games hadn't any renting last month?f. Who were the vendors who didn't add any game last year?

Super Market (Ex. www.carrefour.egypt.com)

Description	<p>A Super Market that wants to develop a DB to keep track of its products & allow customers to buy online (www.carrefour.egypt.com):</p> <ul style="list-style-type: none">• Sign up a new customer (by Admin or customer)• Update customer data (by Admin or customer)• Remove customer (by Admin or customer)• Add a new product (by Admin)• Remove product (by Admin)• Update the product details (by Admin)• Browsing products (by Admin or Customers)• Showing a list of all available products.• Showing a list of products that need to be re-stocked if below a specific quantity.• Showing a list of frequent customers to give them a discount voucher.
Requirements	<ol style="list-style-type: none">1. Draw the corresponding ERD for this project2. Convert the ERD to Physical model (<i>DDL scripts</i>)3. The proposed ERD has to be designed in a way that can answer inquiries such the follows (<i>you have to write SQL statement for each inquiry</i>):<ol style="list-style-type: none">a. What was the most bought product? (That had maximum number of customers)b. What was the product that has no customers for a specific month? (never bought)c. Who was the customer that did not buy any product since one year?d. Who was the customer that made the highest purchase this month?e. IS the supermarket selling electric appliances more or food products more?f. For each product, retrieve all its information and the number of customers who bought it.

Bank System	
Description	<p>There are multiple banks and each bank has many branches. Each bank has name, code and address. Each branch has an address and a branch number.</p> <p>Each branch has multiple customers. Each customer has SSN, name, phone, and address. Some customers may take different types of loans from these bank branches. Each branch offers multiple loans. Loan number, loan type, and loan amount must be kept for each loan.</p> <p>One customer can have multiple accounts. For each account; account number, balance and type must be kept for it. Draw an ERD for the above scenario.</p> <p>Bank system can include the following functionalities:</p> <ul style="list-style-type: none"> • Signing up a new user (e.g. customer, employee) • Updating a user details • Add bank (by admin) • Add bank branch (by Admin) • Add a customer (by employee) • Showing a list of loan (e.g. industry loan, commercial loan, Personal loan ...) • Showing a list of customers • Showing a list of loans with customer name and employee name • Performing operations on loans: request and start operation (by customer) • Performing operations on loans: accept (reject, pay loan (by employee)
Requirements	<ol style="list-style-type: none"> 1. Draw the corresponding ERD for this project 2. Convert the ERD to Physical model (<i>DDL scripts</i>) 3. The proposed ERD has to be designed in a way that can answer inquiries such the follows (<i>you have to write SQL statement for each inquiry</i>): <ol style="list-style-type: none"> a. What was the branch that has no customers? b. What was the branch that has no employees? c. Who was the employee with the maximum number of loans added? d. Who were the customer(s) who has max number of loans? e. Who were the customer(s) who didn't take any loans? f. For each customer, retrieve all his/her information and the number of employees he deals with

Library System Project (Ex. <https://librarika.com/>)

Description	<p>An online library system is a website where authors can add books, and readers can find what they are searching for.</p> <p>The main advantage of online libraries is its ease of use and being accessible from anywhere at any time. This helps in reducing cost and time for students, researchers and any reader. On the other hand, from the library perspective, it is considered a database for all books, magazines and any type of documents the users are interested to read. In addition, the online library allows as many copies of any book as the number of users who request to buy it.</p> <p>An online library system can include the following functionalities:</p> <ul style="list-style-type: none"> • Sign up (e.g. Admin, Author, Student, Reader, ...etc.). • Update profile. • Upload content (based on the privileges) • Show list of available books along with their price list. • Buy any of the available content. • Share ideas and thoughts as a comment on any content (for readers). • View information related to any book (Author, year, ..etc.) • Generate reports (for admins) to be able to check sales and make offers. • Categorize books based on their type.
Requirements	<ol style="list-style-type: none"> 1. Draw the corresponding ERD for this project 2. Convert the ERD to Physical model (DDL scripts) 3. The proposed ERD has to be designed in a way that can answer inquiries such the follows (you have to write SQL statement for each inquiry): <ol style="list-style-type: none"> a. What is the most interesting book "title" that has maximum number of buyers? b. What was the book "title" that hadn't any buyers last month? c. What is the number of authors whose books hadn't any buyers during last month? d. Who are the authors who didn't upload any books yet? e. What is the category with minimum number of books? f. For each reader, retrieve all his/her information and the number of books he\she bought.