An-Najah National University
Information Technology College
Computer Science Apprenticeship Department
Syllabus

Course: 10672218, Database Systems as a project-based class.
Providing Department: Computer Science Apprenticeship Department
Instructor: Souhad M. Daraghma

Course Description:

The primary goal of this class is to learn principles and practices of database management and database design. Over the course of the semester we will discuss the database, relational database design, normalization, SQL queries, reports and other interfaces to database data, and documentation.

Intended Learning Outcomes (ILOS):

At the conclusion of this course students should:

1. Understand the fundamentals of how data is stored in computer systems.
2. Know the fundamentals of Structured Query Language (SQL) and how it can be used to store and retrieve data from a relational database.
3. Be able to apply the principles used in class to build a database application from the ground up.
4. Identify the data requirements of contemporary organizations and how database management systems meet them,
5. Develop conceptual data model specifications,
6. Design and implement authentic database applications,
7. Gain experience with the existing database management systems.
8. Demonstrate ability to communicate effectively when collecting project data and when presenting project phases and product(s).

Grading

Exams(40% of final grade)

There will be two examination during the term. The midterm exam will consist of short database design exercises using Entity Relationship Analysis, as well as some basic SQL concepts.

Final exam will consist of database analysis and design exercises using Normalization Forms, in addition to some advanced relational algebra and SQL concepts.

Mini-Labs and Programming assignments (20% of final grade)

A series of short programming and database exercises designed to complement the hands-on work done in class. These exercises must be completed each week before the start of class. They will represent not only a demonstration of the students' grasp of concepts covered in the course, they will also provide a convenient code base from which students can

draw when designing their own projects. There will be 7 to 10 assignments that will cumulatively be worth 15% of the final grade.

Final Project (40% of final grade)

The final project will be done in groups of 3-5. For the final project, the groups will select or be presented with a real-world scenario for which a database application must be built; Such as Kindergarten , Clinic, ministry of health or any departments in our university.

The project will incorporate database and programming concepts covered in class. Up to 25 points will be awarded based on the content and construction of the final project, 10 points will be awarded based on the in-class presentation, 10 points will be based on project documentation and 5 points will be based on group participants' member evaluations.

Topics to be covered (and tentative course schedule):

Week 1:	Introduction: Databases, Database Users and Database system Concepts.
Week 2:	characteristics of the database approach, the three level-schema architecture and data independence ***Field Work:*** • Forming project teams • Choosing a Suitable community project
Weeks 3 & 4:	Data Modeling Using the Entity-Relationship (ER) Model ***Field Work:*** • Collecting User Requirements and its documentation ***Exercise*** : • Develop ER Diagram for COMPANY/ Organization Schema
Week 5 :	Data Modeling Using the Enhanced Entity-Relationship (EER) Model ***Field Work:*** • Developing an ER/EER diagram of The community project • Due date: at the end of sixth week
Week 6 :	The Relational Data Model and Relational Database Constraints,
Week 7 & 8:	Relational Database Design by ER- and EER-to-Relational Mapping ***Field Work:*** • The ER-to-Relational Mapping for producing the logical Design Model of the case study. ***Exercise*:** • Mapping the COMPANY ER schema into a relational schema. • Due date : at the end of week 8
Week 9:	Relational Algebra, Mid term Exam
Week 10 & 11:	Introduction to SQL standard ***Field Work:*** • The logical Design-to-SQL Mapping and implementation. ***Exercise:*** • Implement the COMPANY database schema using SQL.
Week 12:	Functional dependences,

Commented [D1]: Add due dates for project milestones. This will facilitate project quality followup. How will you check quality of the products- presentation, report, assignment, etc.

Commented [D2]: Same note as in 3. Add milestone and deliverable with a due date.

Weeks 13:	Normalization Forms, Multi-valued Dependences. ***Field Work:*** • Testing the Produced Project Database.
Week 14 & 15	• Working on the final presentation • Final Project presentation and evaluation.
Exam Week:	**Final Exam**

Commented [D3]: Project presentation and evaluation.

Required Text:

1. Fundamentals of Database Systems 6th edition by Elmasri & Navathe
2. Other handouts the instructor find out it is necessary.

References:

1. Database Modeling and Design: Logical Design
   By Toby J. Teorey, Sam S. Lightstone, Tom Nadeau, H.V. Jagadish
2. An Introduction to Database Systems 8th edition by C.J. Date
3. Modern Database Management 8th Edition (or later) by Jeffrey A. Hoffer, Mary B. Prescott, Fred R. McFadden

Assignments:
Assignments, announcements, class notes, and other material will be made available on the course web site: moodle
Students are responsible for checking this resource frequently.

Laboratory Assignments: For many of the lab assignments you will be permitted to work in pairs. When teams are permitted, you should indicate both authors in the assignment and turn in only one copy of the assignment for the team (not one for each team member).

Commented [D4]: In the assessment workshop try and add 2 rubrics. 1) project assessment rubric. 2. Presentation rubric.

Database Project Phase 1 Grading Rubric

(20 points)

	Emerging (0-1 points)	**Developing** (2- 3 points)	**Advanced** (4-5 points)	**Score**
1.Presentation Organization	Ideas may not be focused or developed; the main purpose is not clear. The introduction is undeveloped. Main points are difficult to identify. Transitions may be needed. There is no conclusion or may not be clear the presentation has concluded. Conclusion does not tie back to the introduction. The audience cannot understand presentation because there is no sequence of information.	The main idea is evident, but the organizational structure many need to be strengthened; ideas may not clearly develop and the purpose is not clearly stated. The introduction may not be well developed. Main points are not clear. Transitions may be awkward. The conclusion may need additional development. Audience has difficulty understanding the presentation because the sequence of information is unclear.	Ideas are clearly organized, developed, and supported to achieve a purpose; the purpose is clear. The introduction gets the attention of the audience and clearly states the specific purpose of the speech. Main points are clear and organized effectively. The conclusion is satisfying and relates back to the introduction.	
2. Topic Knowledge	Student does not have grasp(understand) of information; student cannot answer questions about the subject. Inaccurate, generalized, or inappropriate	Student has a partial grasp of the information. Supporting material may lack in originality. Student is at ease with expected answers to all questions but fails to elaborate (explain in details). Over-dependence on notes may be observed.	Student has a clear grasp (understand)of information. Supporting material is original, logical and relevant. Student demonstrates full knowledge (more than required) by answering all class questions with explanations and	

	supporting material may be used. Over-dependence on notes may be observed.		elaboration(detailing). Speaking outline or note cards are used for reference only.	
3. Presentation skills	Incorrect or inappropriate language; filler words, Problems with voice control; Inappropriate eye contact; Appears tense, nervous; Reads and/or relies heavily on notes.	Appropriate language, Okay voice control. Mostly appropriate eye contact; Appears mostly relaxed; Uses notes occasionally.	Smooth effective delivery; Good voice control, Appropriate eye contact. Appears relaxed. Speaks without notes.	
4. Team Work	Didn't act as a team player. Did not listen to others. Did not share ideas or resources. Did not help other team members.	Was not always a team player. Did not always listen to team members or share ideas and resources. Did own work but did not help other team members.	Was a team player. Always listened carefully to what others said. Shared ideas and resources. Finished own work on time and helped other team members.	

Entity-Relationship Diagram Grading Rubric

Criteria (weight)	5 Exemplary	3 Satisfactory	1 Needs Improvement	Score (Weighted)
Notation	Diagram uses an appropriate E-R notation. The notation is used correctly for all elements of the diagram.	Diagram uses an appropriate E-R notation. The notation is used correctly for most elements of the diagram.	Diagram does not use an appropriate E-R notation or uses a notation incorrectly for most or all elements.	
Complexity	The required number of tables and foreign key relationships will be needed to implement the database.	As drawn, the required number of tables and foreign key relationships may not be needed, but the required complexity can be achieved with minor changes.	The required number of tables and foreign key relationship will not be needed. It is unclear how the project could satisfy the required complexity.	
Professionalism	Diagram presents a professional appearance. It could be shared with a "real-world" customer without changes.	Diagram largely presents a professional tone. It could be shared with a "real-world" customer with minor revisions.	Diagram is unprofessional. Major revisions would be necessary before sharing the document with a "real-world" customer.	
Entity Sets	Diagram captures all en-	Diagram captures most	Diagram captures few or	

	tity sets necessary for a database that would satisfy the initial problem statement.	entity sets necessary for a database that would satisfy the initial problem statement.	none of the entity sets necessary for a database that would satisfy the initial problem statement.	
Attributes and Keys	Diagram captures all attributes and primary keys necessary for a database that would satisfy the initial problem statement.	Diagram captures most attributes and primary keys necessary for a database that would satisfy the initial problem statement.	Diagram captures none or few of the attributes and primary keys necessary for a database that would satisfy the initial problem statement.	
Relationships	Diagram captures all relationships necessary for a database that would satisfy the initial problem statement.	Diagram captures most relationships necessary for a database that would satisfy the initial problem statement.	Diagram captures none or few of the relationships necessary for a database that would satisfy the initial problem statement.	

Criteria (weight)	5 Exemplary	3 Satisfactory	1 Needs Improvement	Score (Weighted)
Constraints	Diagram captures all cardinality and participation constraints necessary for a database that would satisfy the initial problem statement. (Recognizing that if all relationships are legitimately many-many with partial participation, then no constraint anno- tations are necessary.)	Diagram captures most of the cardinality and partici- pation constraints neces- sary for a database that would satisfy the initial problem statement.	Diagram captures none or few of the cardinality and participation constraints necessary for a database that would satisfy the initial problem statement.	