

**IT-130 - Introduction to Databases
Final Exam Project**

Project Objectives:

Students will demonstrate real-world application of database concepts learned during the semester to a business entity. Specifically, students will:

- Select a business entity to create a database
- Design and model the database using the ER diagrams, and define the application components
- Implement the database, create the tables and establish relationships with foreign keys
- Populate the database by adding data records
- Write the SQL code for selected queries and analyze the data
- Create forms and reports
- Present database solutions professionally and effectively through both oral and written communications

Project Description:

Students in teams of 2 or 3 are required to select a business entity that would entail creation of a database and its components. Students will be working in a team environment. The tasks include planning, designing with an entity-relationship diagram (ERD), creating a database using a popular industry software, writing queries to analyze data and generating reports. The team will be required to submit a comprehensive MS Word Report and professionally present their completed database project using MS PowerPoint or any other visual presentation software.

Group Tasks:

I. Select a Business

A. Select one (1) business from the link below:

1. [University](#): In this database, the team would be modeling entities such as Courses, Students, Professors, Classrooms and so on. You can support various queries such as finding specific professor courses, finding courses taking place in a specific classroom to name a few.
2. [Bank](#): In this database, the team would be modeling entities such as Branch, Accounts, Customers and so on. You can support various queries such as finding the location, how many accounts does each customer have at each branch,

- find the average loan amount for each customer, find all customers with more than one loan, find customers with Student Loan to name a few.
3. [Hotel](#): In this database, the team would be modeling entities such as Hotels, Rooms, Reservation, Guest, and provide options to book a room, confirm reservation and so on. You can support various queries such as finding specific hotels, locations, and rooms. There exists several sources on the Web from which you can get data to populate such a database.
 4. [Employee](#): This database would require modeling employees and their properties, entities such as Departments, Projects, Dependents, Location, Benefits and so on. You can support various queries such as finding the top 10 salaried employees, employees with projects, project status, etc.
 5. [Hospital](#): The database model for the Hospital requires entities such as Hospitals, Departments, Patients, Staff, Doctors, Appointments and so on. The purpose of this database is to show and explain hospital structure, staff, relationships with patients, and patient treatment terminology. This Module handles various activities such as Doctor Diagnoses the patient, gives treatment and gives suggestions to the patients.
- B. **Or** students may select a business other than the ones provided in the list above for the approval of the instructor/professor.

II. Database Design:

Design and draw an Entity Relationship diagram that captures the information about your database. The ER model should include the tables, fields, relationships, type of relationships, primary and foreign keys.

III. Database Implementation:

Students will:

- Construct a **minimum of four tables** pertaining to your selected business; select the appropriate fields and data types for each table. Use Input Masks and data validation as needed (e.g. zip code, phone numbers, majors...)
- Create the relationships and assign all primary and foreign keys
- Make at least **four queries of their choice** that can be beneficial to the user
- Write the SQL code for the queries selected
- Create one form using the form wizard with customized layout and a search combo Box
- Create two customized reports with data from multiple tables

IV. Word Report

The word report covers an introduction about the project, the purpose and the benefits of a Bookstore database. Students will also provide information on the research approach and how they have assigned tasks to each member of the group.

The body of the report narrates the entire project from planning phase, the designing / developing phase and implementing phase.

In conclusion, the students summarize the project outcomes, the overall lessons learned on the project including the challenges of working, collaborating with team members and improvements for the future.

V. Presentation:

Students will present their entire project in groups using MS PowerPoint or any other visual presentation software including a reflection on the group project.

The presentation should address mainly the following points:

- The importance/purpose and benefits of using the Bookstore Database
- Explain the database design phase and application functionalities. (ER diagram can be included)
- Description of the Database implementation: Tables, Fields, Datatypes, Records.
- Discuss the choice/selection of the Database queries
- Reflect on the Project Outcomes, lessons learned including challenges working as a group and improvements for the future