**In-Class Exercise: Basics of Relational Databases**

**Introduction to Databases**

* What is a database?
* Why do we use a Database Management System (DBMS)?
* Name the two main categories of databases. Describe the key difference between them.

**Understanding Relational Databases**

* What is the purpose of relationships in relational databases?
* What language is commonly used to work with relational database management systems?

**Common Relational Database Management Systems**

* List three popular relational database management systems.

**Introduction to Non-Relational Databases**

* What is a key characteristic of non-relational databases?
* Can you use SQL with non-relational databases? Why or why not?

**Installing MySQL**

* Outline the steps needed to install MySQL on a Windows system. (Optional)

**Working with the hospital\_db Database**

* Write a SQL command to retrieve all patients in the hospital\_db database.
* How would you filter the results to get only the patient with patient\_id = 1?
* Write a query to sort the patients by their first name.

**Selecting Specific Columns**

* Write a SQL command to get only the first\_name and last\_name columns from the patients table.

**Applying Discounts in Queries**

* How would you apply a 10% discount to the amount\_due in the billing table and display the patient\_id, original amount\_due, and the amount after the discount?
* How would you give a clear descriptive name to the discounted amount in the results?

**Using the WHERE Clause**

* Write a query to get patients who were born after 1990-01-01.
* How would you find the patient who was born on 1990-05-12?
* Write a query to get patients who were born before 1990.

**Filtering by State**

* Write a query to find only patients in the state of Illinois.
* How would you find patients who are outside the state of Illinois?

**Using Logical Operators: AND, OR, NOT**

* Write a query to find patients who were born after 1990-01-01 and are from Seattle.