

NUID 2nd Last Digit ending in 3 or 5
Your NUID:

-- Question 1 (6 points)

The Wang Machine Learning Institute conducts modeling research. Please design a database to support its research operations based on the business requirements listed below.

- 1) Researchers work on research projects. A researcher may work on multiple projects simultaneously.
- 2) A researcher's specialties must be tracked. Specialties are all coded. A specialty has a standard code.
- 3) All specialties of a researcher need to be tracked.
- 4) A researcher's publications must be tracked.
- 5) A publication may be published by multiple researchers.
- 6) A publication covers a specialty, but sometimes a publication covers multiple specialties.

Normalize the design to the 3rd normal form. Create the ERD in your design tool. Submit the ERD.

-- Question 2 (2 points)

Use the referencing technique to design MongoDB documents which contain the data below. Submit the documents in JSON format.

TerritoryID	Name	CustomerID	AccountNumber
7	France	30103	10-4020-000638
7	France	29940	10-4020-000193
7	France	29923	10-4020-000085

-- Question 3 (2 points)

/*

Write a query to retrieve all years which had products of more than 7 unique colors ordered in them.

For example, in a year if the following products were sold:

Product 1 in red, quantity sold 2025

Product 2 in green, quantity sold 3030

Product 3 in yellow, quantity sold 2500

Product 4 in red, quantity sold 1215

Product 5 in green, quantity sold 4050

Then, the sold products had 3 unique colors.

Exclude the products which don't have a color specified.

Return the year and the number of the unique colors sold in that year. Sort the returned data by the number of unique colors in desc.

*/

-- Question 4 (2 points)

/* Write a query to retrieve the months of 2007 in which there was at least one product sold but no product in white was sold. Sort the returned data by the month. */

-- Question 5 (3 points)

/*

Write a query to retrieve a territory's most valuable order.

The most valuable order has the highest totaldue amount. The totaldue amount is stored in the SalesOrderHeader table. If there is a tie, the tie needs to be retrieved.

Exclude orders that don't a territory specified.

Return the territory's id and name, the order id and totaldue value, and the total order quantity for the order.

Sort the returned data by the territory's id.

*/