

**Q1 Seattle Last Digit of NUID 0, 1, 2, 3, or 9**  
**Pease include your NUID and name in all submitted files.**

Question 1 (6 points)

The Wang Data Science Institute conducts data science research. Please design a relational 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. The name and details of a specialty are also tracked.
- 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 may cover multiple specialties.

Normalize the design to the 3rd normal form. Create the ERD in your design tool. Submit the ERD as an image or in the pdf format.

Question 2 (2 points)

Our data usage pattern is to review a salesperson's complete sales history frequently. Please use the embedding design technique to design a MongoDB database reflecting the data provided below. Submit a screenshot of the created document(s).

SalesPersonID	FirstName	LastName	SalesOrderID	ProductID	Name	OrderQty	UnitPrice
279	Tsvi	Reiter	43684	763	Road-650 Red, 48	1	419
279	Tsvi	Reiter	43685	765	Road-650 Black, 58	3	419
279	Tsvi	Reiter	43685	763	Road-650 Red, 48	1	419

Submit a single sql file containing the solutions to Q3 and Q4.

-- Question 3 (4 points)

```
/* Using AdventureWorks2008R2, write a query to retrieve the
product colors which have been sold in all months of all years
as reflected by the data stored in AdventureWorks. To be more
specific, if there was any sale in a month, the product color
was sold in that month.
```

Include the color and number of months a color has been sold in in the returned data.

Return only the colors which have been sold to more than 8000 unique customers and exclude the products which didn't have a color specified in this query.

Sort the returned data by the product color. \*/

-- Question 4 (3 points)

/\* Write a query to return the sales territory which had the highest total sales amount. Include only the sales territories which never had an order worth less than \$4 for this query. If there is a tie, the tie needs to be returned.

Include the territory id, territory name, lowest order value, and total sales amount for the territory in the returned data. Use TotalDue of SalesOrderHeader as the order value. Format the total sales as an integer.

\*/