

**SP 22 Seattle Q1 NUID Last Digit 0, 1, 2, 8, or 9**  
**Write your NUID and name in all submitted files**

Question 1 (6 points)

The Wang Organization provides free health advice to low-income families. Please design a relational database based on the business requirements below to help manage the patient appointments with the health advisors. Normalize the design to the 3rd Normal Form.

- 1) Store the basic patient information.
- 2) Store the advisor information.
- 3) Track patient appointments with advisors. A patient sees only an advisor for an appointment.
- 4) Track the specialties an advisor is responsible for.
- 5) An advisor is responsible for at least a specialty, but sometimes could be over several specialties.
- 6) Track the location of an appointment.
- 8) Maintain the location(s) an advisor works at. An advisor may work at more than one location.

Create the ERD in your design tool. Submit the ERD either in the PDF format or as an image.

Question 2 (2 points)

Our data usage pattern is to look up a sales territory and find out all states included in it. Please use the embedding design technique to design a MongoDB database reflecting the data provided below. Submit a screenshot of the created document(s).

TerritoryID	TerritoryName	State
3	Central	Arkansas
3	Central	Colorado
3	Central	Iowa
3	Central	Illinois
3	Central	Kansas

-- Question 3 (3 points)

```
/* Write a query to retrieve colors which have been sold
in more than 14 months of different years as reflected
by the data stored in AdventureWorks. Exclude products
which don't have a color specified for this query.
```

```
Include the color, and number of months a color has been
sold in for the returned data. Sort the returned data by color.
Use AdventureWorks2008R2 for this question. */
```

-- Question 4 (4 points)

/\* Write a query to retrieve the least valuable salesperson of each city. The least valuable salesperson has the smallest sales amount in a city. Use TotalDue in SalesOrderHeader for calculating the sales amount. Use BillToAddressID in SalesOrderHeader to determine what city an order is related to. Exclude orders which don't have a salesperson specified.

Return only the salesperson(s) who has sold more than \$650000 in the same city and has done business in more than one sales territory. If there is a tie, your solution must retrieve it.

Include City, SalesPersonID, salesperson's last and first names, and Total sales of the least valuable salesperson in the same city for the returned data. Sort the returned data by City. Use AdventureWorks2008R2 for this question. \*/