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# Data Models Quiz

**LATEST SUBMISSION GRADE**
100%

1. What is a possible pitfall of utilizing Excel as a way to manipulate small databases? **1 / 1 point**

- ○ Excel does not allow algorithms for data manipulation.
- ○ Excel is a user program and thus cannot run on a server.
- ◉ Excel does not enforce many principles of relational data models.

**Correct**
For more information about the following concept, please view here.

2. **1 / 1 point**

What does the term "atomic" mean in the context of relational databases?

- ○ A tuple that cannot be reduced.
- ◉ One unit of information that cannot be decomposed.
- ○ Fixed schema of a particular database.
- ○ A column or row of data. Depends on the context.

**Correct**
For more information about the following concept, please view here.

3. What is the Pareto-Optimality problem? **1 / 1 point**

- ○ Find the optimal path that requires going through specific nodes given by the user.
- ○ Find the shortest path from source node to target node.
- ◉ Find the best possible path given two or more optimization criteria where neither constraint can be fully optimized simultaneously.

**Correct**
For more information about the following concept, please view here.

4. What constitutes a community within a graph? **1 / 1 point**

- ○ A neighborhood defined by an integer constant K around a specific node. All K+1 nodes belong in another community.
- ◉ A dense amount of edge connections between nodes in a community and a few connections across communities.
- ○ Many anomalous neighborhoods within the same vicinity.
- ○ High density of nodes at a certain location.

**Correct**
For more information about the following concept, please view here.

5. Why are trees useful for semi-structured data such as XML and JSON? **1 / 1 point**

- ○ It is not always the case that XML and JSON can be represented as trees.
- ○ They are only useful for XML data as tree-like structure is apparent with tags. While JSON does not contain a tree-like structure as it contains arrays.
- ○ Computers can easily visualize the data with a tree structure.
- ◉ Trees take advantage of the parent-child relationship of the data for easy navigation.

**Correct**
For more information about the following concept, please view here.

6. What is the general purpose of modeling data as vectors? **1 / 1 point**

- ○ The ability to normalize vectors allowing probability distributions.
- ○ Enables image searching.
- ○ Enables weighting of the query.
- ◉ Results can be ordered by similarity using vector projection.

✓ **Correct**
For more information about the following concept, please view here.

7. For the following questions 7, 8, and 9, suppose a registration website creates data with the following fields for each person registered (note: if the user does not input a value, NULL is stored instead): Name, Date, Address, and Account Number. **1 / 1 point**

Suppose we collect data month by month. Each month, we would have a batch of data containing the fields listed above. At the end of the year, we want to summarize our registrant activities for the entire year, so we would remove redundancies in our data by removing any records with duplicate account numbers from month to month. What type of operation do we use in this scenario?

- ○ Join
- ◉ Union
- ○ Not an Operation
- ○ Subsetting

✓ **Correct**
For more information about the following concept, please view here.

8. From the information given in question 7, what are the constraints, if any, which we have placed on the Account Number field for the end of year collection? **1 / 1 point**

- ◉ Account Number should be unique.
- ○ Account should have at most n digits.
- ○ If we had n duplicate Account Numbers then we will remove n-1 duplicate fields.
- ○ There are no constraints.

✓ **Correct**
For more information about the following concept, please view here.

9. Suppose 100 people signup for our system and of the 100 people, 60 of them did not input an address. The system lists the values as NULL for these empty entries in the address field. Would this situation still have structure for our data? **1 / 1 point**

- ◉ Yes the data has structure because we have placed a structural constraint on the data, thus the data will always have the originally defined structure.
- ○ No because the majority of data do not have a specific field filled, thus our originally defined structure is lost.

✓ **Correct**
For more information about the following concept, please view here.