

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 does not enforce many principles of relational data models.
- ☐ Excel is a user program and thus cannot run on a server.

✔ Correct
For more information about the following concept, please view [here](#) ↗.

2. What does the term “atomic” mean in the context of relational databases?

1 / 1 point

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

✔ Correct
For more information about the following concept, please view [here](#) ↗.

3. What is the Pareto-Optimality problem?

1 / 1 point

- ☐ 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.
- ☐ Find the optimal path that requires going through specific nodes given by the user.

✔ Correct
For more information about the following concept, please view [here](#) ↗.

4. What constitutes a community within a graph?

1 / 1 point

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

- ☒ Trees take advantage of the parent-child relationship of the data for easy navigation.
- ☐ It is not always the case that XML and JSON can be represented as trees.
- ☐ Computers can easily visualize the data with a tree structure.
- ☐ 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.

✔ 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

- ☐ Enables weighting of the query.
- ☐ The ability to normalize vectors allowing probability distributions.
- ☐ Enables image searching.
- ☒ 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 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?

- ☒ Subsetting
- ☐ Union
- ☐ Not an Operation
- ☐ Join

✘ Incorrect
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

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

✔ 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

- ☐ No because the majority of data do not have a specific field filled, thus our originally defined structure is lost.
- ☒ 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.

✔ Correct
For more information about the following concept, please view [here](#) ↗.