1. What were the big differences in hardware over the last few decades that MongoDB attempted to address?

Parallelism of cores

Parallelism of servers

1. When scaling out horizontally (adding more servers to contain your data), what are the problems that arise as you go from, say, 1 commodity server to a few dozen?

The servers must communicate with one another eating up network bandwidth.

The need for redundancy increases as the likelihood of some failure in the system per unit of time increases.

1. What causes significant problems for SQL when you attempt to scale horizontally (to multiple servers)?

Joins

Transactions

1. What are some advantages of representing our data using a JSON-like format?

JSON presents a flexible and concise framework for specifying queries as well as storing records

The JSON syntax is similar to that of common data structures used in many programming languages and is, therefore, familiar to developers

JSON is language independent

1. How many data types are there in JSON?

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1. Why do we represent our data as BSON rather than JSON in the system?

Fast machine scalability

Stronger typing (and more types) than JSON

1. For a typical client (for example, a Python client) that is receiving the results of a query in BSON, would we convert from BSON to JSON to the client's native data structures (for example, nested dictionaries and lists in Python), or would we convert from BSON straight to those native data structures?

BSON -> Native data structures

1. By default, which database does the mongoDB shell connect to?

test