1. Memcache v.s. Redis

Difference:

	Memcache	Redis
Implementation	Multi-thread	Single thread
Data type	Key-value	Supports different data type: List, set, zset, hash...
Permanent data to hard-disk	Doesn't support	Supports
Data consistency	Guarantees thread safe	Can't guarantees thread safe
Transaction	Doesn't support	Supports

2. Elastic Cache

Elastic Cache is a in-memory cache service provided by AWS. It's fully-managed, and compatible with popular cache applications like Redis and Memcache. Elastic Cache not only provides high performance, but also greatly simplifies the construction and management of distributed memory environments.

3. Vertical scaling v.s. horizontal scaling

Vertical scaling is we add more resources to a single point machine.

Horizontal scaling is we introduce multiple machines.

For example, now we have 1 server to store user data. As the number of users increases, the user table becomes very large and our operations become slower and slower. Now there are two ways: One way is to upgrade this server to make it have more processing power, which is vertical scaling. Another way is to bring in more servers to share the work, which is horizontal scaling.

4. Hierarchical data store

Hierarchical data store is an data-store approach which we tend to store data as a tree-like structure. Every node can have one parent and multiple children.

5. BASE principle

BASE is one of the most popular principles in distributed systems. It is a principle evaluated when the CAP principle cannot be satisfied, BASE represented by Basically Available, Soft state and Eventually consistent.

Basically Available: reduces availability in the event of a failure

Soft state: Adding an intermediate state to the data (for better user experience) in case of downstream server congestion.

Eventually consistent: Data need to end up with consistency.

6. View v.s. stored procedure

View is a virtual table based on a SELECT query. When we need to temporarily see some data and don't need to store them, we can create view.

Stored procedure is a named collection of procedural and SQL statements. We can stored frequent-used procedural as a unit to reduce code duplication, as well as reduce network traffic and increase performance.