1. Memcached

Definition: Memcached is an in-memory key-value store for small chunks of arbitrary data like Strings, Objects.
It's simply designed which makes it easy to deploy. Memcached is distributed, meaning that it is easy to scale out by adding new nodes. It is multithreaded, you can easily scale up compute capacity.

2. Memcached vs Redis

Features	**Memcached**	**Redis**
Latency	Sub-millisecond	Sub-millisecond
Data partitioning	Allow distributed	Allow distributed
Category	In-memory	In-memory
Cache clearing	Flush_all	Flushall
Scaling	Supported	Supported
Command-line	telnet	redis-cli
Disk I/O dumping	Third-party tools	RDB and AOF
Data structure	Strings	Strings, Set, Hash, List, SortedSet
Replication	Third-party tools	Built-in
Transaction	No	Yes
Publish and subscribe	Third-party	Built-in
Memory usage	High	Low

3. Vertical scaling vs Horizontal scaling
Horizontal scaling means adding additional machines into the pool of resources while Vertical scaling means adding more resources or performances to the existing machine.

Features	**Vertical scaling**	**Horizontal scaling**
Database	Data lives on the single node and scaling is done through multi cores	Usually based on partitioning data
Downtime	Data is on the single node which allows less downtime.	Not limiting data on the single node which allows less downtime for

		scaling
Concurrency	Performed via multi-threading and in-process message passing	Based on distributing data over multiple nodes as it involves distributing jobs across networks. It provides higher concurrent access compares to vertical scaling
Message passing	In a multithreading process, it's easy to share data over threads	Lack of shared address makes data sharing more complex
Examples	MySQL, AWS RDS	MongoDB, Cassandra

4. Hierarchical data store

The hierarchical database structure means that a parent record in the data store can have several child records, each child record can only have one parent record.

The difference between relational and hierarchical database lies in the data structures. The hierarchical database architecture is tree-like. Characteristics of hierarchical database models include their simplicity, but also their lack of flexibility.

5. BASE

NoSQL relies upon a softer model known as the BASE model. It consists of three principles:

a. Basic Availability - The NoSQL database approach focuses on the availability of data even in the presence of multiple failures. Instead of maintaining a single large data across many storage systems with a high degree of replication.
b. Soft State - It abandons the consistency requirements of the ACID model pretty much completely.
c. Eventual Consistency - The only requirement that NoSQL databases have regarding consistency is to require that at some point in the future, data will converge to a consistent state.

6. View and stored procedure

View: it is a "window" where developers can observe a specific segment of data.
Procedure: It is an encapsulation of logic that can be called from an application.

View should be used when only a SELECT statement is needed to store commonly-used JOIN queries and specific columns to build virtual tables of an exact set of data.
Procedures should be used when more complex logic such as INSERT, DELETE and UPDATE statements are needed to automate large database workflows.

View can not perform modification to any table while stored procedure can perform modification to one or several tables.
View can be used as a building lock in large query while stored procedure can not be used as a building block in large query.