System Design Basics

Whenever we are designing a large system, we need to consider a few things:

1. What are the different architectural pieces that can be used?
2. How do these pieces work with each other?
3. How can we best utilise these pieces: what are the right tradeoffs?

Investing in scaling before it is needed is generally not a smart business proposition; however, some forethought into the design can save valuable time and resources in the future.

We will try to define some of the core building blocks of scalable systems.

Familiarising these concepts would greatly benefit in understanding distributed system concepts.

In the next few sections, we will go through:

- Consistent Hashing
- CAP Theorem
- Load Balancing
- Caching
- Data Partitioning
- Indexes
- Proxies
- Queues
- Replication
- Choosing between SQL vs. NoSQL databases