**Week 11**

* Load Balancer
  + dynamic
    - Balances the load such there is as little traffic as possible
    - Always picks traffic with least traffic
    - Can also weight servers and traffic
  + Static
    - Round robin
    - Weighted round robin
  + Cache
    - Storing frequently accessed data in a temporary storage location
  + CDN
    - Special type of database that are geographically distributed
    - Costly
  + Storage Options
    - Images/videos
    - CDNS
    - Text searching
    - Analytics
    - SQL
    - noSQL
  + Message Queues
    - Queue any incoming requests or changes
* Key-Value Storage
  + Document store
  + Wide Columnar Store
  + Graph database
* How to Scale a Database (applies to all types of databases)
  + Replication: copying data from database to another
    - Leader-follower
    - Master-master
  + Federation: splitting up database by functionality
  + Sharding
    - Less read and write traffic
    - Less replication
    - Celebrity problem
  + Join & Denormalization (specific to relational databases)
    - Difficult to scale
  + Denormalize: improve read performance at expense of write performance
  + SQL Tuning

Resources

System Design Interview by Alex Xu

Database Internals – O’Reilly

ByteByteGo

https://roadmap.sh/system-design