In Previous Years Questions

Bandwidth

Bandwidth, in broad terms, refers to the data transfer rate or the maximum amount of data that can be transmitted over a connection or path in a given amount of time.

It’s often measured in bits per second (bps), with common units like megabits per second (Mbps), gigabits per second (Gbps), and even terabits per second (Tbps) for high-speed connections.

Think of it like a highway for data – a wider highway (higher bandwidth) means more cars (data packets) can flow through faster, whereas a narrower road (lower bandwidth) creates bottlenecks and slower transfers.

Bandwidth is crucial for various applications, including:

- Internet connectivity: Downloading files, streaming videos, video conferencing, and online gaming all depend on decent bandwidth for smooth experiences.
- Mobile data: Downloading apps, using navigation, and social media rely on mobile data bandwidth, impacting connection speed and data usage.
- Network connections: The internal speed of data transfer within a network, like between servers and devices, relies on the network bandwidth.

Cache

Cache, in simple terms, is a temporary storage area that holds frequently accessed data for faster retrieval later. It acts like a shortcut, saving time and bandwidth by avoiding the need to re-download or process the same data repeatedly.

Think of it as a local grocery store near your home – instead of driving across town for every common item, you can quickly grab it from the nearby cache (store).

Types of caches

- CPU cache: Located within the processor, it stores frequently used instructions and data for immediate access, dramatically speeding up program execution.
- Web cache: Employed by browsers and servers, it stores web pages, images, and other static content, reducing website loading times for repeat visits.
- Content Delivery Network (CDN) cache: Distributed servers geographically located closer to users, these caches store popular content, minimizing download times and bandwidth usage.
- Database cache: Stores frequently accessed database queries and results to improve database performance.

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