DISTRIBUTED OPERATING SYSTEMS
ASSIGNMENT
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Monotonic Reads:

A data store is said to provide monotonic read consistency if the process reads r1, and r2 where r2 would either return the same value or a latest value as that of r1. It does not apply to different processes, but only reads done by the same process.

Monotonic Write:

A data store is said to provide monotonic write consistency if the process writes w1 and w2, then the w1 should be completed before w2 by the same process.

Read your writes:

A data store is said to provide read your write consistency if the effect of w1 on data x is seen by the successive read on data x by the same process.

Writes follow Reads:

This type of consistency is provided by the data store if the write w1 on data with a previous read r1 takes place on the most recent or the same value.

Content Distribution Network:

These networks refer to the distributed group of servers to provide high speed resources. A CDN provides high transfer of data over the network especially in services requiring large data files like videos, like Netflix and Facebook. These CDN provide faster loading time, hence increasing the traffic of users. It also improves bandwidth costs as CDN uses caching and other optimizations and hence reducing the amount of traffic on the main server.

CDN are also used to increase the availability and redundancy of the resources. They are able to replicate the data over different places in the network, hence improving the availability and also resistance from DDoS attacks. If one of the data servers is taken down, even then the user can access the same resource from other resources.

Cache Consistency/Replication:

A static page or a resource that is not required to be updated as frequently, can be cached at many places without any issue for consistency. When there is data that needs frequent updates, there needs to be a consistency between these files. Hence, when these files are cached for better availability across the network, the caches are required to be consistent to provide the users with

the updated data. States are more efficient to updates across the network. Also, if the tasks are performed over data in a certain order, then the data will always be consistent.

Quorum Based Protocols:

This type of the quorum-based protocols uses votes in distributed systems to decide a winner. The Quorum based protocols uses a certain number of votes to decide the transaction which will be done on the data. This criteria of using a minimum number of votes improving the system performance.

Fault Tolerance Basic Concepts:

This concept of fault tolerance is related to dependable systems which is defined by the following properties: Availability, Maintainability, Reliability, and Safety

Triple Modular Redundancy:

In Triple Modular Redundancy in which a task is performed by 3 systems and the output is processed by the voting. Hence, if one of the systems does not perform any task, the other redundant servers can be used to perform the task. Hence, inducing redundancy improving the performance of the system as the systems performance is governed by the slowest system and as we putting the computation on multiple systems, we can take the system's output with the fastest machine and then send stop message to the other machines.