Date: YOUVA

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18.

DC Module 1 Test I.

Q3] Explain any two Fundamental Model of DS.

Ans: On the basis of fundamental properties like security, privacy and failure we have the three fundamental model

(1) Interaction Model.

i) This model deals with issues on the interaction of process such as performance and timing of events

ii) The processes are affected by 2 significant factors
- Performance of communication channel
- Computer clocks.

iii) Latency: delay between sending and receipt message

iv) Throughput: Number of packets delivered per unit of time

v) Band width: Amount of information transmitted per unit time

v) Computer clocks: each pc in DS has its own clock and it can result in different time real values when 2 processes running on different system.

vi) Synchronous Interaction Model - After some time, the clock "drifts apart" or gradually desynchronizes from the other clock.

(Tref) - t1 <= tb
(Tref) - t2 <= tb.

Drift rates between local clocks have sth, known time bound (tb), means drift rate not to be greater than time bound.

vii) Asynchronous DS :- There is no bound on process execution time, message transmission delay, drift rate. It is unpredictable about when process time will be over.

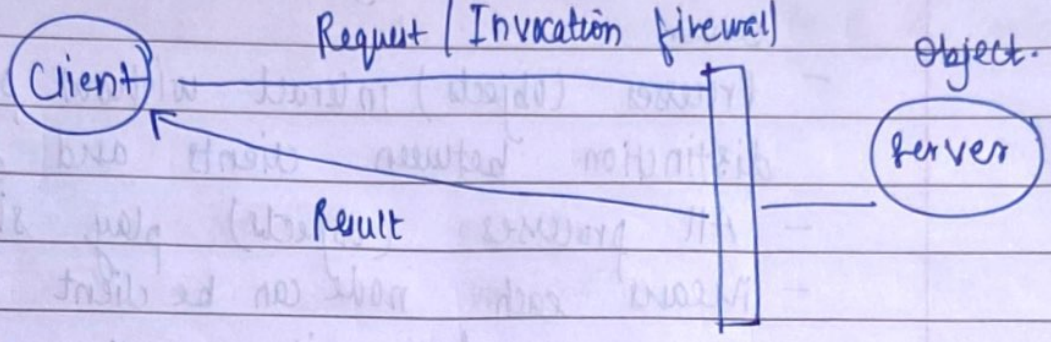
viii) Event ordering helps in knowing whether one event at one process occured before, after or concurrently with another event at another process.

(2) The security model is based on establishing the trustworthiness and role of each component in a distributed computing environment

i) The security of a distributed system can be achieved by securing / protecting the processes and the channels used for their interactions from unauthorized access from malicious activity.

ii) Threats to proces: man in middle attack, unauthenticated request / reply by attacker.

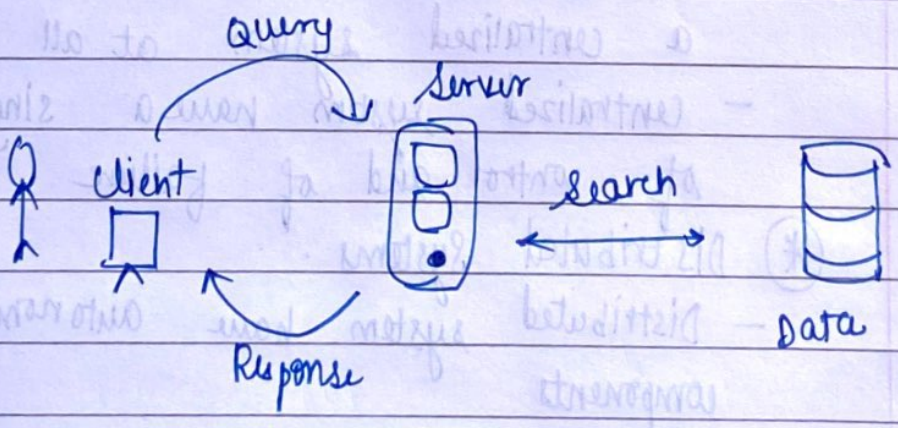
iii) Threats to communication channels: malicious user can copy or alter or inject message on channel.



Q2] Explain two architectural Model of DS.

① Client - server Model.

- The system is structured as a set of processes, called servers that offer services to the users, called clients.
- most widely used DS model in existence.
- Client requests to server - server goes to DB wrt your request server process your request and responded back
- client is slave and server is master.



② Peer-peer model (P2P)

- It does not distinguish between client/server
- Processes (objects) interact without particular distinction between clients and servers.
- All processes (objects) play similar role
- Means each node can be client or server depends on it requesting or service provider
- Each pc has own data & applications and replicas of some other pc's.

Q1) Explain Distributed vs centralized system. Explain goals and real life examples of DS.

(*) Centralized Systems

- They have non-autonomous components
- Are often build using homogeneous technology
- Multiple users share the resources of a centralized system at all times
- centralized system have a single point of control and of failure.

(*) Distributed Systems.

- Distributed system have autonomous components
- They are built using hetero geneous technology

- Components may be used exclusively
- Executed in concurrent processes
- These systems have multiple point of failure.

Examples.

① Tele communication networks:
- wireless sensor network
- routing algorithms
- computer network such as internet.

② Network Applications
- world wide web and peer to peer network.
- massively multiplayer online games and virtual reality communities
- network file systems.

Goals

① Heterogeneity
② Resources are shared
③ Availability
④ Load Sharing
⑤ Fault Tolerance.