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FACULTY OF EGINEERING AND TECHNOLOGY

Distributed Systems (BCS-701)

LECTURE -8

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OUTLINE

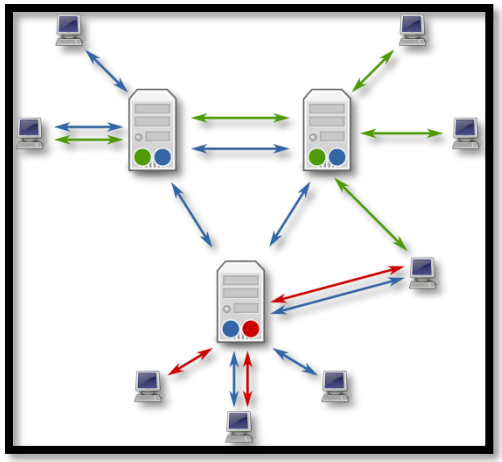
- Interprocess Communication in Distributed Systems
- Fundamental Causes of Deadlock
- Deadlock Handling Strategies
-
- MCQ
- Reference

Interprocess Communication in Distributed Systems

Interprocess Communication is a process of exchanging the data between two or more independent process in a distributed environment is called as Interprocess communication. Interprocess communication on the internet provides both Datagram and stream communication.

Examples Of Interprocess Communication:

1. N number of applications can communicate with the X server through network protocols.
2. Servers like Apache spawn child processes to handle requests.
3. Pipes are a form of IPC: grep foo file | sort



It has two functions:

Synchronization:

Exchange of data is done synchronously which means it has a single clock pulse.

Message Passing:

When processes wish to exchange information. Message passing takes several forms such as: pipes, FIFO, Shared Memory, and Message Queues.

Global State Collection

Applications: –

- Checking “stable” properties, checkpoint & recovery •

Issues: –

- Need to capture both node and channel states –
- system cannot be stopped –
- no global clock

Notations

Some notations: –

- LSi: Local state of process i –
- send(mij) : Send event of message mij from process i to process j –
- rec(mij) : Similar, receive instead of send –
- time(x) : Time at which state x was recorded –
- time (send(m)) : Time at which send(m) occurred

Definitions

- send(mij) ϵ LSi iff time(send(mij)) < time(LSi) •
- rec(mij) ϵ LSj iff time(rec(mij)) < time(LSj)
- transit(LSi, LSj) = { mij | send(mij) ϵ LSi and rec(mij) ∉ LSj }
- inconsistent(LSi, LSj) = { mij | send(mij) ∉ LSi and rec(mij) ϵ LSj }
- **Global state:**
- collection of local states GS = {LS1, LS2,…, LSn} •
- GS is consistent iff for all i, j, 1 ≤ i, j ≤ n, inconsistent(LSi, LSj) = Φ
- GS is transitless iff for all i, j, 1 ≤ i, j ≤ n, transit(LSi, LSj) = Φ
- GS is strongly consistent if it is consistent and transitless.

MCQ

1. What is the access point (AP) in a wireless LAN?

a) device that allows wireless devices to connect to a wired network

b) wireless devices itself

c) both device that allows wireless devices to connect to a wired network and wireless devices itself

d) all the nodes in the network

2. In wireless ad-hoc network _____

a) access point is not required

b) access point is must

c) nodes are not required

d) all nodes are access points

3. Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?

a) CDMA

b) CSMA/CA

c) ALOHA

d) CSMA/CD

4. In wireless distribution system _____

a) multiple access point are inter-connected with each other

b) there is no access point

c) only one access point exists

d) access points are not required

5. A wireless network interface controller can work in _____

a) infrastructure mode

b) ad-hoc mode

c) both infrastructure mode and ad-hoc mode

d) WDS mode

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