CS304 || Distributed Systems || Mid Semester (Section B)-March 2022

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Questions

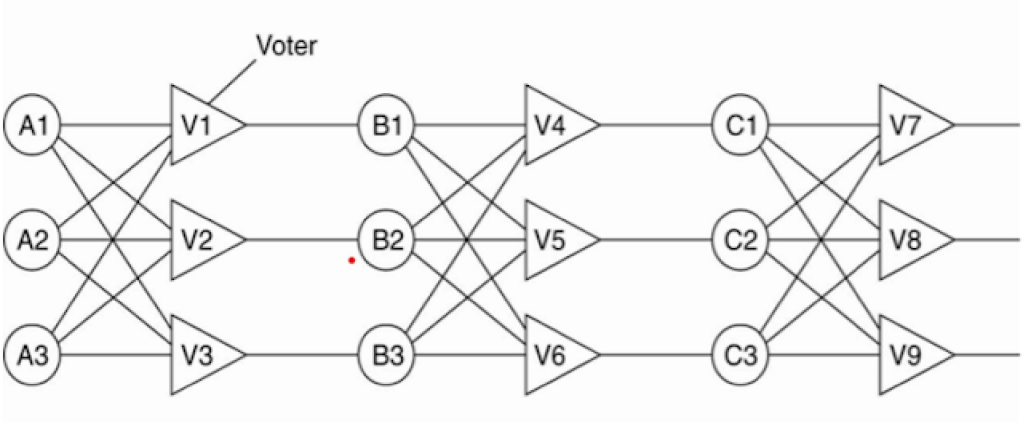
Distributed Operating System is Tightly-coupled operating system which is used for heterogeneous multicomputers

a) True
b) False
c) Insufficient Information

- ○ A
- ◉ B
- ○ C

Clear selection

Explain the role of the voter in the given below figure



TMR (Triple Modular Redundancy). 1.) Each v

If we want to write a *character* to a file object *fobject*, the static and dynamic invocation would take the form

- (●) fobject.write(char) and invoke (fobject, write, char)
- ( ) object.write(char) and invoke (fobject, id.write, char)
- ( ) fobject.write(char) and invoke (fobject, id(write), char)
- ( ) fobject.write(char) and Invoke (fobject, id.(write), char)

Clear selection

. Multiprocessor OS can be viewed as:

a. Loosely-coupled software on tightly-coupled hardware
b. Loosely -coupled software on Loosely -coupled hardware
c. Tightly-coupled software on tightly-coupled hardware
d. None of the above

- ○ A
- ○ B
- ◉ C
- ○ D

Clear selection

Which of the following statements are true about Hierarchical Feedback Control?

- ☑ There is coordinator at root and has its own history buffer
- ☑ It is very easy to construct tree since it is constructed statically
- ☐ If the coordinator acknowledgements message 'm' from any one member, it will remove message 'm' from buffer
- ☑ If a member misses message 'm', it will ask coordinator to retransmit message 'm'

_____ object is not dependent on its current server, whereas
_____ object is dependent on its current server

- ○ Remote and Distributed
- ◉ Persistent and Transient
- ○ Transient and Persistent
- ○ Runtime and language level

Clear selection

Write down your views on the origin site concept of handling co-processes.

1.) There is process's origin site (or home node)
2.) Origin site is responsible for keeping information about the current location of all the processes created on it
3.) Messages are sent to the origin site first and from there they are forwarded to the current location
4.) Drawbacks: (a) not good from reliability point of view - Failure of origin site will disrupt the message-forwarding
mechanisms (b) continuous load on migrant process's original site

. Vertical distribution (multi-tier) is:

a. replicating a server's functionality over multiple computers
b. splitting up a server's functionality over multiple computers
c. None of the above

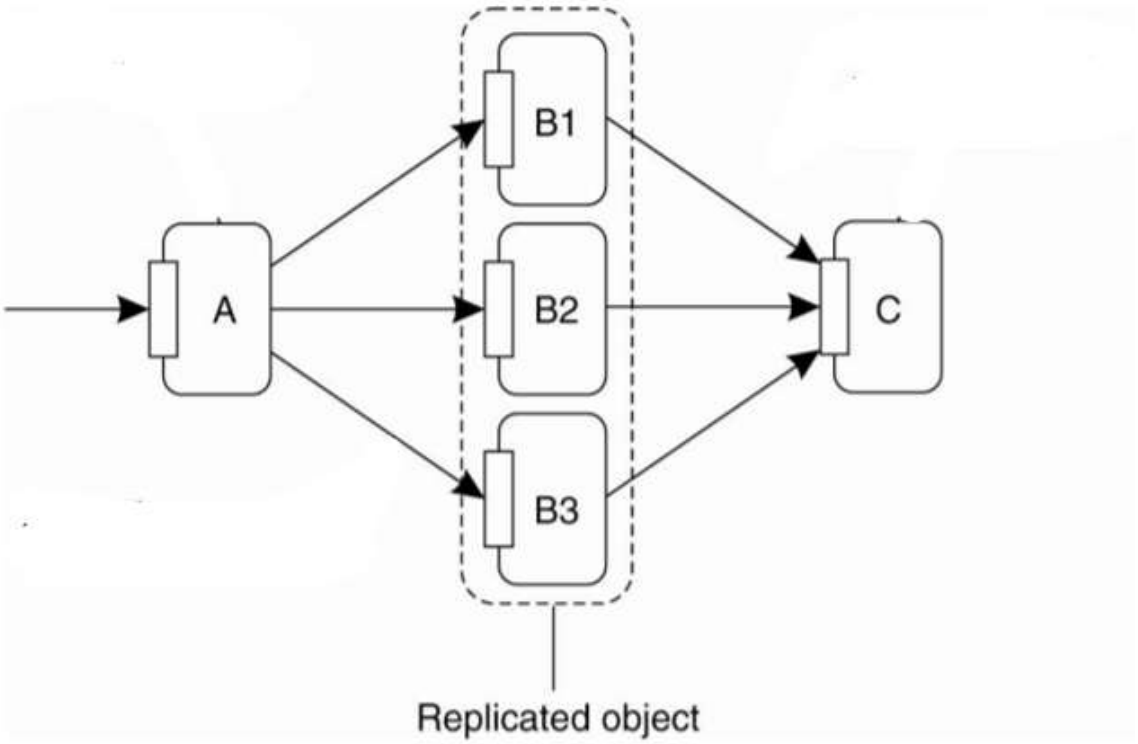
- ○ A
- ◉ B
- ○ C

Clear selection

..... System provides the highest degree of transparency. Write an answer only in CAPITAL LETTER and do not give space in between.

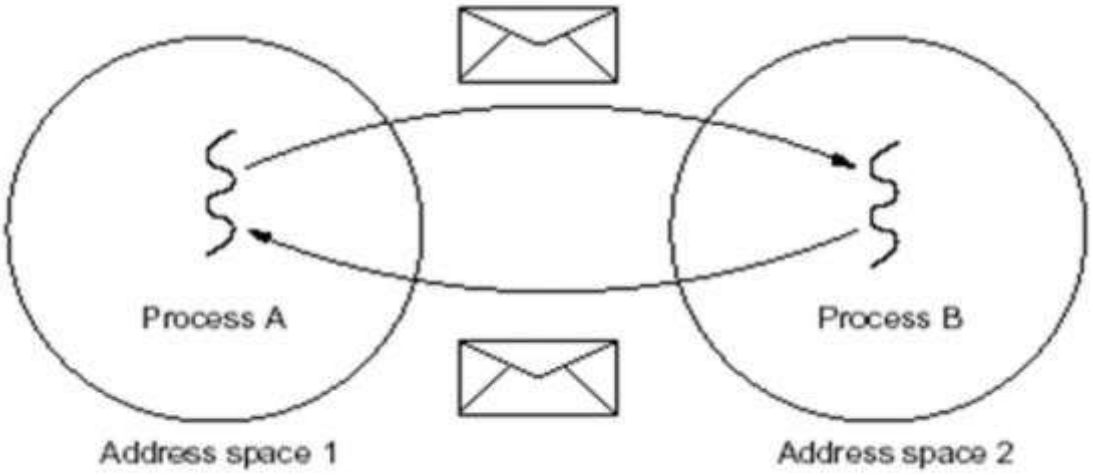
DISTRIBUTED OPERATING

Discuss the problem of replicated method invocation in below diagram.



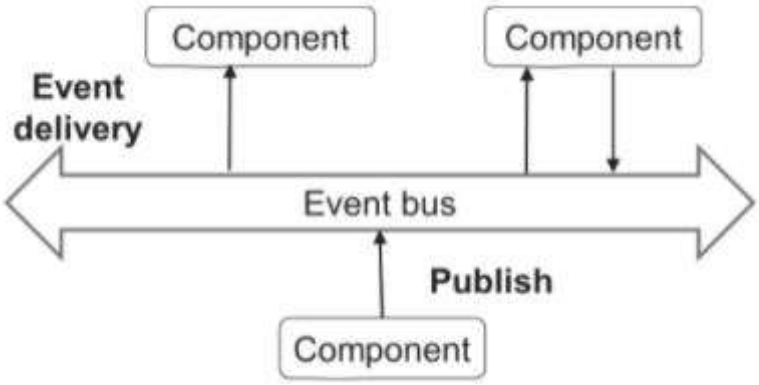
1.) When client replicates invocation request, a

Identify and explain type of communication in the below figure:



1.) It is Message Passing.
2.) It is used for communication over the network. It introduces higher chance of failure.
3.) It refers to means of communication between different thread within a process or different processes running on same node or different processes running on different nodes.

Explain the given figure.



1.) In event-based architectures, processes essentially communicate through the propagation of events, which optionally also carry data.
2.) The main advantage of event-based systems is that processes are loosely coupled.
3.) In principle, they need not explicitly refer to each other and so, this is also referred to as being decoupled in space, or referentially decoupled.

Define the following

1. Interface
2. Methods
3. Data

1.) An interface is a collection of definitions ar

The best architecture for a particular system depends only on the application requirements.

- (●) True
- ( ) False

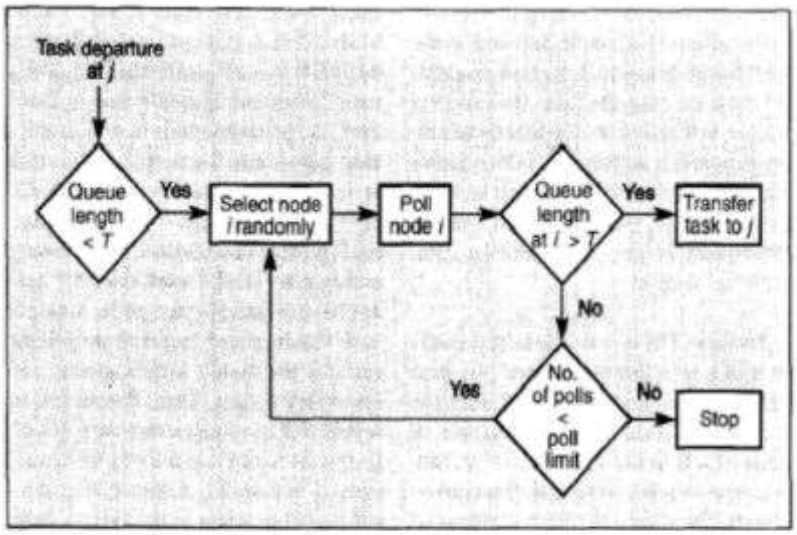
Clear selection

. Access to resources of various machines is done explicitly by:

a. Remote logging into the appropriate remote machine (telnet)
b. Transferring data from remote machines to local machines, via the File Transfer Protocol (FTP) mechanism
c. Only a
d. Both a & b

- ○ A
- ○ B
- ○ C
- ◉ D

Clear selection



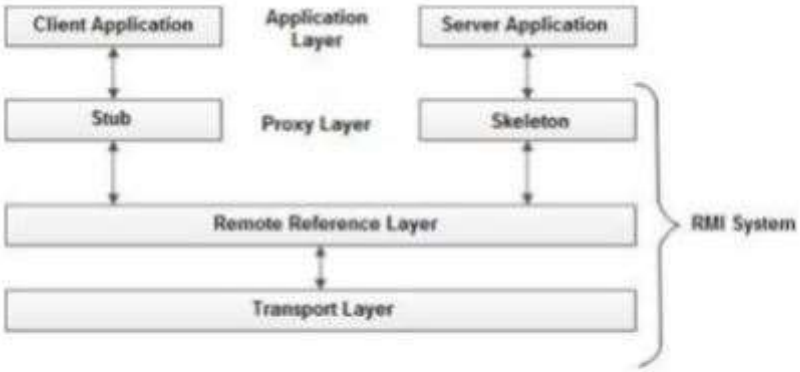
The given figure demonstrate

a) Receiver-Initiated Algorithm
b) Sender-Initiated Algorithm
c) The Above-Average Algorithm
d) The Symmetrically Initiated Algorithm

- (●) A
- ( ) B
- ( ) C
- ( ) D

Clear selection

What is the role of Remote Reference Layer in the below figure:



Archilecture of RMI

1.) It is the layer which manages the references made by the client to the remote object.
2.) The remote reference layer is responsible for carrying out the semantics of the invocation.
3.) For example the remote reference layer is responsible for determining whether the server is a single object or is a replicated object requiring communications with multiple locations.

Consider the given table and match the correct pair

A. Safety	I.	This is when a system is in a ready state, and is ready to deliver its functions to its corresponding users
B. Reliability	II.	If there is any failure, it can be noticed and fixed mechanically
C. Maintainability	III.	This is when a system fails to carry out its corresponding processes correctly and its operations are incorrect, but no shattering event happens.
D. Availability	IV.	This is the ability for a computer system run continuously without a failure

- ○ (A) : I ; (B): II ; (C): III ; (D): IV
- ○ (A) : II ; (B): IV ; (C): I ; (D): III
- ◉ (A) : III ; (B): IV ; (C): III ; (D): IV
- ○ (A) : III ; (B): II ; (C): I ; (D): IV

Clear selection

Following statements are true for ___

a. Sender A is waiting for response from Recipient B, so it is Synchronous.
b. Recipient B is not active, still the message is sent and not lost, so it is Persistent.

- ○ Persistent Asynchronous
- ◉ Persistent Synchronous
- ○ Transient Asynchronous
- ○ Transient Synchronous

Clear selection

Consider the following statements related to Process Failure models

1. Crash: In this model, a properly functioning process may fail by stopping to function from any instance thenceforth.
2. Receive omission: In this model, a properly functioning process may fail by intermittently sending only some of the messages sent to it.
3. Fail-stop: In this model, a properly functioning process may fail by stopping execution from some instant thenceforth
4. Value Failure: In this model, a node's request is wrong in terms of its actual value

- ◉ Only 1 & 3 are true
- ○ Only 1, 3 are 4 are true
- ○ Only 1 and 4 are true
- ○ All are True

Clear selection

A typical client-server application can be decomposed into

- ○ The interface,the coding and the data
- ◉ The interface,the application logic and the data
- ○ The interface,the backend and the data
- ○ The interface,the decision and evaluation and the data

Clear selection

Two issues that need to be solved for implementing entry consistency are

- ◉ Concurrency and Replication
- ○ Security and Replication
- ○ Concurrency and Reliability
- ○ Redundancy and Replication

Clear selection

When we compile add.x file, it will generate list of files.If we want to make our RPC Program then in which of the following files we have to do the changes:

- [x] add_clnt.c
- [x] add_svc.c
- [ ] add.h
- [x] makefile.add
- [x] add_client.c
- [ ] add_xdr.c
- [x] add_server.c

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