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

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Questions

Process Migration Activities needs to handle which of the following activities?

- ☑ Immediate and Delayed blocking of the process
- ☑ Fast and Slow I/O Operations
- ☑ Pretransfer of Address Space
- ☐ Managing the message that are received at the source node after the process's execution has started on its destination node
- ☑ Managing the message that are received at the source node and the process's execution has not yet started on its destination node

Explain any one real time example of distributed system.

1.)Distributed search is a search engine model in which the tasks of Web crawling, indexing and query processing are distributed among multiple computers and networks.

2.) In Google's distributed search system, each computer involved in indexing crawls and reviews a portion of the Web, taking a URL and following every link available from it (minus those marked for exclusion). The computer gathers the crawled results from the URLs and sends that information back to a centralized server in compressed format. The centralized server then coordinates that information in a database , along with information from other computers involved in indexing.

3.) There are different servers at each stage of page search, keyword and fetching results and for displaying the results.
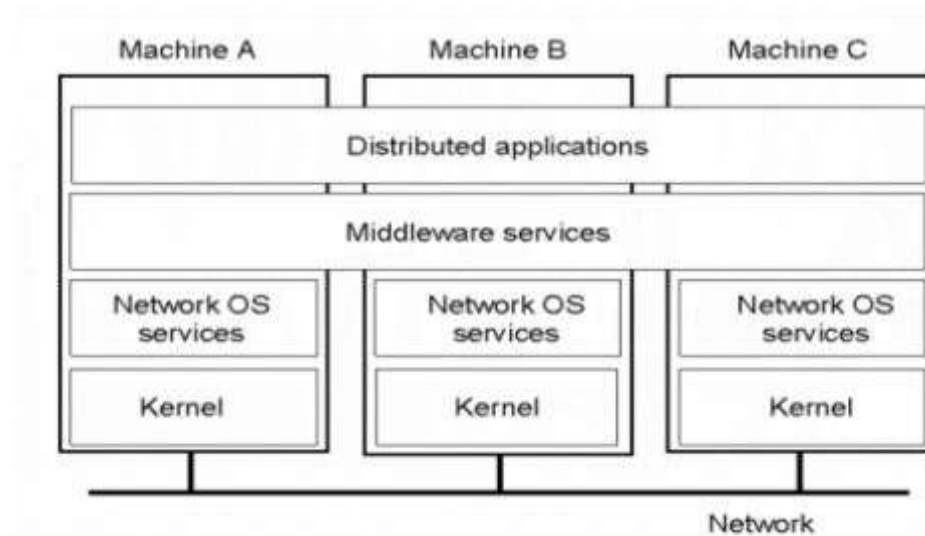
Which type of communication is therein given figure:
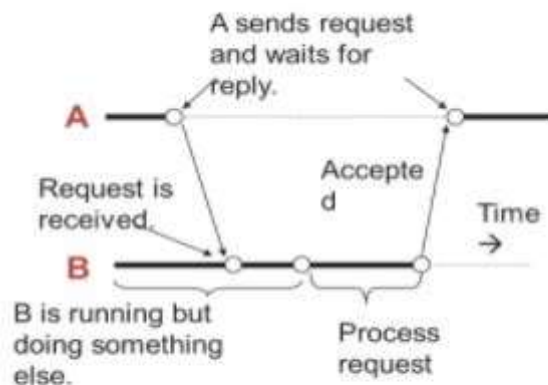
a) Traditional RPC
b) Delivery-based synchronous communication
c) Response-based synchronous communication
d) Remote Method Invocation

○ A

○ B

◉ C

○ D

Clear selection

Explain the importance of Middleware in below figure.

1.) Combines the scalability of network operating systems & distribution transparency of distributed operating systems.
2.) Messages are stored by middleware until receiver can accept it
3.) Common Services is provided for the local applications and independent set of services for the remote applications
4.) It provide the services such as locating the objects or interfaces by their names, finding the location of objects, maintaining the quality of services, handling the protocol information, synchronization, concurrency and security of the objects etc.

What are object servers and object adapters?

Object Server: 1.) An object server is a server

In RMI Architecture which layer intercepts method calls made by the client/redirects these calls to a remote RMI service?
a) Stub & Skeleton Layer
b) Application Layer
c) Remote Reference Layer
d) Transport Layer

🔘 A

⭕ B

⭕ C

⭕ D

Clear selection

How is three phase commit protocol different from two phase commit protocol?

1.) 2PC protocol is a blocking Two-Phase com

Requirements of Load Distribution are

☐ Speed Up

☐ Efficiency

☑ Data coherency

☑ Determinism

☑ Scalability

☑ Preemption

☑ Heterogeneity

Which of the following is not the strategies that client can follow during server crash?

○ Client can never reissue a request

◉ Client can decide to always reissue a request

○ Client can decide to reissue a request only if it did not receive an acknowledge

○ None of the above

Clear selection

Explain Client-Server Communication in the given figure.
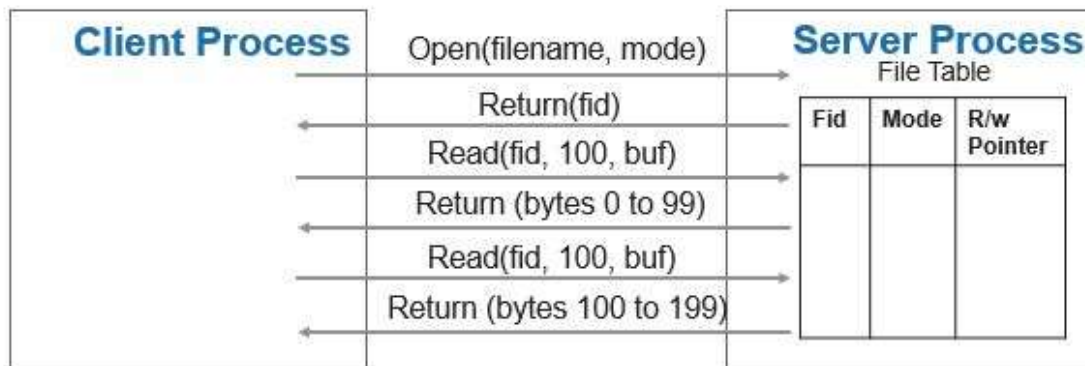
1.) After opening a file, if a client makes two subsequent Read (fid, 100, buf) requests, for the first request the first 100 bytes (bytes 0 to 99) will be read and
2.) for the second request the next 100 bytes (bytes 100 to 199) will be read.
Example of Stateful File Server.

In RPC, while a server is processing the call, the client is blocked
a) unless the client sends an asynchronous request to the server
b) unless the call processing is complete
c) for the complete duration of the connection
d) none of the mentioned

○ A

○ B

○ C

○ D

RPC works between two processes. These processes must be
(1) on the same computer
(2) on different computers connected with a network

Which of the above statements are correct?
    a) (1) only
    b) (2) only
    c) Both(1) and (2)
    d) Neither (1) nor (2)

○ A

○ B

◉ C

○ D

Clear selection
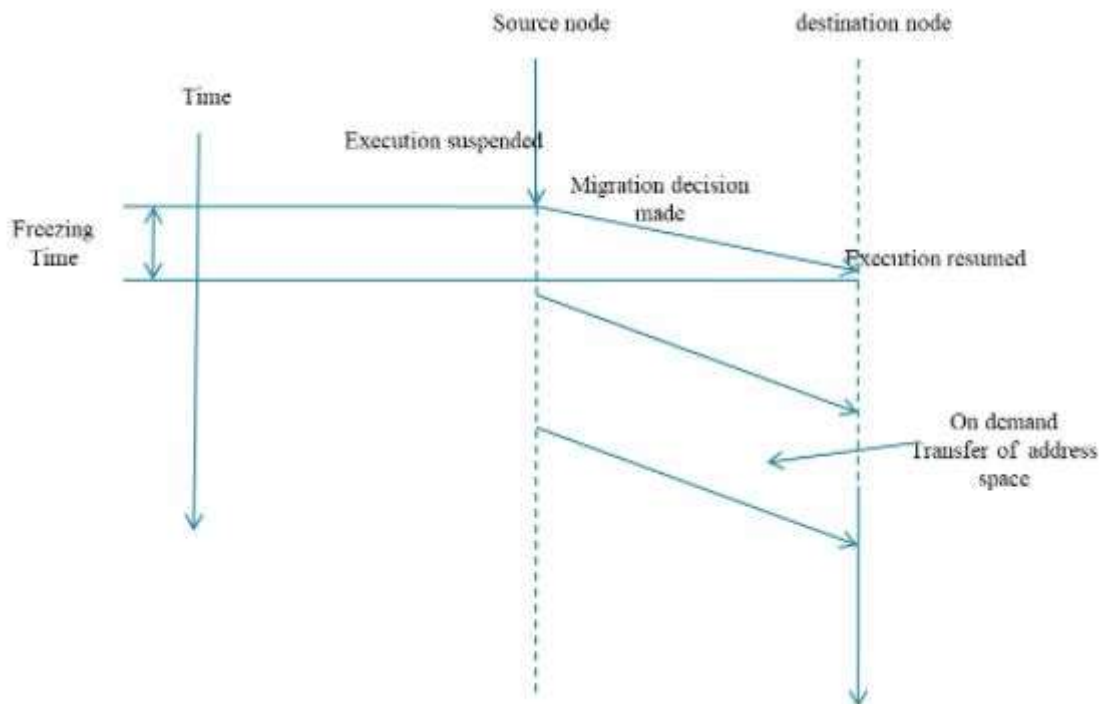
Characteristics of Stateless Server includes

- ☑ It does not maintain any state information
- ☐ It keeps track of states of different objects
- ☑ Easier to Implement
- ☐ It follows Encryption of Keys

To differentiate the many network services a system supports _____ are used.

- ☐ Variables
- ☐ Sockets
- ☑ Ports
- ☐ Service names
- ☑ Ports and names

Explain the given figure.

1.) It represents Transfer on reference which is an adress space transfer mechanism
2.) Based on the assumption that the process tends to use only a relatively small part of their address space while executing.
3.) A page of the address space is transferred from its source node to destination node only when referenced.
4.) Demand-driven copy-on-reference approach. Switching time is very short and independent of the size of the address space.

What is orphan message ? Identify the orphan message in the below figure
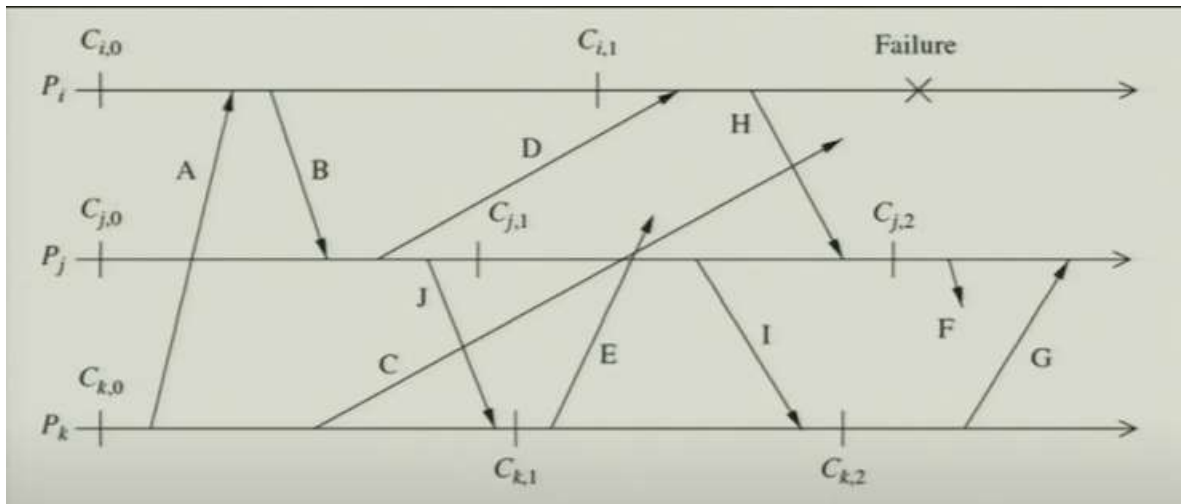
1.) Messages who receive events are recorded

.... Algorithm try to reduce the state in the system in which one computer lies idle while at the same time tasks argue for service at another computer.(1) Load balancing (2) Load Equivalence (3) Load sharing

    a) (1) and (3)
    b) (2) and (3)
    c) (1) and (2)
    d) (1) only
    e) (2) only
    f) (1) ,(2) and (3)

◉ A

○ B

○ C

○ D

○ E

○ F

Clear selection

Which of the following are true about Globe Distributed Shared Objects?

☑ Object in globe will determine how its state will be distributed over its replicas

☐ Globe controls the policies of all the objects .

☑ The communication sub object provides number of message passing primitives

☐ The control sub object is used to control the distributed shared object

Which type of bean retain no data or conversational state for a specific client? Explain about it.

1.) Stateless Session bean/ Message-driven be

Process migration involves
(1) Reducing average response time of processes
(2) Utilizing resources effectively
(3) Improving system reliability
(4) Data access locality

Which of the above statements are correct?
    (a) (1) & (3) only
    (b) (2) & (4) only
    (c) (1),(2) & (3)
    (d) (1),(2),(3) & (4)

○ A

○ B

◉ C

○ D

Clear selection

_____ is required when a system is brought from its present erroneous state back into a previously correct state

○ Grouping

○ Assurance

○ Validation

◉ Checkpointing

Clear selection

Choose the correct option

Statement 1: The second interception is in the client-side stub and can take decisions on where to forward the response.

Statement 2: The first interception is in client-side and it is needed when it turns out that caller is not replicated

Statement 3: The third interception is in the server-side and this interception is split into three.

○ Statement 1and Statement 2 are true

○ Statement 1 and Statement 3 are true

◉ Statement 2 and Statement 3 are true

○ None of the above

Clear selection

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