In a rumor mongering algorithm, there is a/an ____ relationship between the traffic and the residue.

exponential

logarithmic

linear

quadratic

No, the answer is incorrect.

Score: 0

Accepted Answers:

exponential

1 point

Which of the following statements is/are correct regarding the rumor mongering protocol?

S1: There is a chance that updates might not reach a node

S2: It has a built-in termination protocol.

S1 is true and S2 is true

S1 is true and S2 is false

S1 is false and S2 is true

S1 is false and S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true and S2 is true

1 point

In the anti-entropy algorithm, if the number of infected nodes in the system is high, then a_____ based algorithm is preferred.

- push
- pull
- push-pull
- pull-push

Yes, the answer is correct.

Score: 1

Accepted Answers:

pull

1 point

In an epidemic protocol, a/an ____ node has not received the update.

- infective
- removed
- injured
- susceptible

Yes, the answer is correct.

Score: 1

Accepted Answers:

susceptible

1 point

Assume an anti-entropy algorithm that distributes an update across ‘n’ nodes. Any node can contact any other node. How much time does this take (approximately, asymptotically)?

- O(n)
- O(log(n))
- $O(n_2)$

O(n^3)

Yes, the answer is correct.

Score: 1

Accepted Answers:

O(log(n))

1 point

Consider the following statements.

S1: In Napster, a client can provide fake details such as IP addresses.

S2: In Napster, the main coordination entity handles incoming connections from peers.

S1 is true and S2 is true

S1 is true and S2 is false

S1 is false and S2 is true

S1 is false and S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false and S2 is false

1 point

In Gnutella, the ____ entity manages connections with other Gnutella peers.

Connection handler

Co-ordination instance

Download instance

Upload instance

Yes, the answer is correct.

Score: 1

Accepted Answers:

Connection handler

1 point

The co-ordination instance in Gnutella sends the ____ message back to the original client after updating the local database with information about remote peers.

ping

pong

search

client push

Yes, the answer is correct.

Score: 1

Accepted Answers:

pong

1 point

In Napster, a client connects to a/the ____ broker.

Least busy

Geographically nearest

Popular

Random

No, the answer is incorrect.

Score: 0

Accepted Answers:

Least busy

1 point

10. Which of the following statements is/are incorrect?

- Gnutella is resilient to network partitions.
- Napster ensures load balancing by finding the best broker.
- Gnutella is scalable due to its distributed architecture.
- None of the options

No, the answer is incorrect.

Score: 0

Accepted Answers:

Gnutella is scalable due to its distributed architecture.

Consider the following statements regarding distributed hash tables (DHTs).

S1: DHTs provide immunity against node failures due to the usage of extensive data replication.

S2: DHTs utilizes a dedicated central server to scale with the number of users.

- S1 is true, S2 is false
- S1 is true, S2 is true
- S1 is false, S2 is false
- S1 is false, S2 is true

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is false

1 point

The configuration parameter b in the Pastry network affects:

- The number of non-empty entries in the routing table only.
- The number of hops required only.
- The number of non-empty entries in the routing table AND the number of required hops.
- None of the options.

Yes, the answer is correct.

Score: 1

Accepted Answers:

The number of non-empty entries in the routing table AND the number of required hops.

1 point

While routing a request in Pastry, if the hash of the key (K) is in the range of the node's leaf set (L), then _____.

- forward K to L_i such that $|K - L_i|$ is minimal.
- forward K to L_i such that $|K - L_i|$ is maximal.
- forward K to L_i such that $|K - L_i|$ is negative.
- forward K to any random L_i.

Yes, the answer is correct.

Score: 1

Accepted Answers:

forward K to L_i such that $|K - L_i|$ is minimal.

1 point

Which of the following is/are the design goals of Freenet?

- Anonymity
- Deniability
- Reliability

All the options.

Yes, the answer is correct.

Score: 1

Accepted Answers:

All the options.

1 point

In Freenet, if the insertion of a file leads to a hash collision, then _____.

it drops the file.

it passes data back to the upstream requester.

it passes data to its neighbors.

it sends data to a subset of nodes from its neighbors.

Yes, the answer is correct.

Score: 1

Accepted Answers:

it passes data back to the upstream requester.

1 point

Consider the following statements regarding Freenet.

S1: Information about newly inserted files takes a considerable amount of time to spread across nodes.

S2: Newly inserted files are placed on nodes with similar keys.

S1 is true, S2 is false

S1 is true, S2 is true

S1 is false, S2 is false

S1 is false, S2 is true

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false, S2 is true

1 point

In the pre-routing mechanism, a message is encrypted with the _____.

last node’s private key

successive node’s public key

sender's public key

sender's private key

Yes, the answer is correct.

Score: 1

Accepted Answers:

successive node’s public key

1 point

If a requester receives a Reply.Restart message from downstream nodes in Freenet, then _____.

It extends its timer.

It shortens its timer.

It infers failure.

It resends the request.

No, the answer is incorrect.

Score: 0

Accepted Answers:

It extends its timer.

1 point

Which of the following statements is (are) correct regarding the TTL (time-to-live) field in Freenet?

- To reduce the network load, the TTL field can be dynamically decreased.
- Nodes consider the TTL field while deciding the next request to process.
- The TTL field is decremented at every hop
- All the options

Yes, the answer is correct.

Score: 1

Accepted Answers:

All the options

1 point

Which of the following entities is (are) part of the structure of a Pastry node?

- A routing table
- A neighborhood Table
- A leaf set
- All of the options

Yes, the answer is correct.

Score: 1

Accepted Answers:

All of the options

1 point

A _____ maintains a list of peers that contain the different pieces of a file in a BitTorrent network.

- torrent table
- tracker

swarm

None of the options

Yes, the answer is correct.

Score: 1

Accepted Answers:

tracker

1 point

Which of the following strategies is employed by the BitTorrent protocol, while downloading a file? [Choose the most appropriate answer]

A sender will preferentially send data to the nodes that are alive in the network for a longer duration of time.

A sender prioritizes traffic for those nodes whose network bandwidth is higher.

A sender will preferentially send data to the nodes that have sent it data in the past.

All of the options.

Yes, the answer is correct.

Score: 1

Accepted Answers:

A sender will preferentially send data to the nodes that have sent it data in the past.

1 point

Consider the following statements about the Chord DHT.

S1: It is not fully distributed.

S2: It is based on the consistent hashing technique.

S1 is correct, S2 is incorrect.

S1 is incorrect, S2 is correct.

Both S1 and S2 are correct.

Both S1 and S2 are incorrect.

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is incorrect, S2 is correct.

1 point

In general, the path length in the Chord DHT _____ with the number of nodes.

grows

shrinks

remains the same

may grow or shrink

Yes, the answer is correct.

Score: 1

Accepted Answers:

grows

1 point

Which of the following tasks is performed by Chord when a node n joins the network? [Choose the most appropriate answer]

Initialize the predecessor and fingers of node n.

Update the fingers and predecessors of existing nodes to reflect the addition of n.

Notify the higher layer software so that it can transfer states (e.g., values) associated with keys that the node is now responsible for.

All of the options

Yes, the answer is correct.

Score: 1

Accepted Answers:

All of the options

1 point

A Chord node requires information about at least ____ other nodes for efficient routing in an N-node system.

O(N)

O(N/2)

O(log(N))

$O(\log(N)_2)$

Yes, the answer is correct.

Score: 1

Accepted Answers:

O(log(N))

1 point

If a and b are two events and V_a and V_b represent the corresponding vector times of these events (using a vector clock), what can be said about the relation between a and b when $(V_a \leqslant V_b) \wedge (V_a \geqslant V_b)$?

a happens before b (a → b)

b happened before a (b → a)

a and b are concurrent (a ⋈ b)

There is no explicit relation.

Yes, the answer is correct.

Score: 1

Accepted Answers:

a and b are concurrent (a ⋈ b)

1 point

In the happens-before-relationship scheme, when process j receives an event a from process i, the clock is updated to _____, where τ_j and τ_i are the clocks of process j and i, respectively.

$\tau_j = \max(\tau_j + \tau_i (a)) + 1$

$\tau_j = \tau_j + 1$

$\tau_j = \tau_i (a)$

$\tau_j = \tau_i (a) + 1$

Yes, the answer is correct.

Score: 1

Accepted Answers:

$\tau_j = max(\tau_j + \tau_i (a)) + 1$

1 point

Assume that the sender sends a request to a receiver at its local time (t=10), the receiver receives the request at its local time (t=20) and sends a reply at its local time (t=25). The sender receives the reply at its local time (t = 15). Using Cristian's algorithm, the drift is __ units.

10 units.

5 units.

15 units

20 units

No, the answer is incorrect.

Score: 0

Accepted Answers:

10 units.

1 point

What is a server in the BitTorrent network that hosts a new file and distributes its torrent descriptor file called?

Leecher

Peer

Seeder

Tracker

Yes, the answer is correct.

Score: 1

Accepted Answers:

Seeder

Consider the following statements regarding the Chang-Roberts algorithm:

S1: The number of nodes taking part in the leader election is known a priori.

S2: Each node is uniquely numbered.

Both S1 and S2 are true.

S1 is true, but S2 is false.

S1 is false, but S2 is true.

S1 and S2 are both false.

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, but S2 is true.

1 point

In the Chang-Robert's leader election algorithm, if node p with state find, receives a message q from its neighbor such that if _____, then it changes the state to lost.

q = p

q > p

q < p

All the options

No, the answer is incorrect.

Score: 0

Accepted Answers:

q < p

1 point

In the Chang-Robert's algorithm, the message of the leader will propagate across ____ nodes in the ring.

log(n)

n

n-k

sqrt(n)

Yes, the answer is correct.

Score: 1

Accepted Answers:

n

1 point

In the optimized leader election algorithm with time complexity O(n (log n)), if a node receives (probe, j, k, d) from left such that j < id and d = 2^k, then send _____,.

(probe, j, k, d+1) to right

(probe, j, k+1, d) to right

(reply, j, k) to left

(reply, j, k+1) to right

Yes, the answer is correct.

Score: 1

Accepted Answers:

(reply, j, k) to left

1 point

In a tree-based leader election mechanism, at most _____ messages are sent on every edge.

Two

Four

Eight

One

No, the answer is incorrect.

Score: 0

Accepted Answers:

Four

1 point

In the Ricart-Agarwala algorithm, a process replies to all pending requests after it _____ the lock.

releases

requests

acquires

acknowledges.

Yes, the answer is correct.

Score: 1

Accepted Answers:

releases

1 point

In the Maekawa's algorithm, when a process P_j receives a relinquish message from process P_k, it signifies that _____.

P_k has a low priority.

P_k has released the lock.

P_k has received a failed message.

P_k has not yet acquired the lock.

No, the answer is incorrect.

Score: 0

Accepted Answers:

P_k has received a failed message.

1 point

In the Suzuki-Kasami algorithm, process P_j sends the token to P_i, if _____.

$seq_i[j] = C[i] + 1$

$seq_j[i] = C[j] + 1$

$seq_i[j] = C[j] + 1$

$seq_j[i] = C[i] + 1$

Yes, the answer is correct.

Score: 1

Accepted Answers:

$seq_j[i] = C[i] + 1$

1 point

In the Raymond's tree algorithm, the token is with the ___ of the tree.

one of the internal node

one of the leaf node

root

random node

No, the answer is incorrect.

Score: 0

Accepted Answers:

root

1 point

Which of the following statements are correct regarding the Raymond's tree algorithm?

S1: Circular wait cannot occur because all the nodes wait on the node that holds the token.

S2: Messages can get lost because all the time a token is held by the root node of the tree.

S1 is false and S2 is true.

S1 is true and S2 is false.

S1 is true and S2 is true.

S1 is false and S2 is false.

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true and S2 is false.

1 point

Consider the following statements regarding the minimum spanning tree (MST):

S1: If each edge of the graph has a unique weight, then the MST is unique.

S2: If F is a fragment and e is the least weight outgoing edge, then F $\cup$ e is also a fragment.

Both S1 and S2 are true.

S1 is true, but S2 is false.

S1 is false, but S2 is true.

S1 and S2 are both false.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Both S1 and S2 are true.

1 point

In the Gallager Humblet Spira (GHS) algorithm, a fragment joins another fragment by identifying its _____ weight _____ edge.

least, incoming

highest, incoming

highest, outgoing

least, outgoing

Yes, the answer is correct.

Score: 1

Accepted Answers:

least, outgoing

1 point

When combining two fragments F_1 and F_2, all the nodes in F_1 take on the name and level of F_2 if _____.

level(F_1) < level(F_2)

level(F_1) > level(F_2)

level(F_1) = level(F_2)

All the options

Yes, the answer is correct.

Score: 1

Accepted Answers:

level(F_1) < level(F_2)

1 point

If a node p receives a < test, level', name' > message from node q such that name(p) = name' and status[q] = basic, then status[q] is set to ____.

basic

reject

branch

previous value

Yes, the answer is correct.

Score: 1

Accepted Answers:

reject

1 point

In the GHS algorithm, at every level, a node receives ___ messages.

3

1

2

5

Yes, the answer is correct.

Score: 1

Accepted Answers:

2

1 point

A/An _____ run in the FLP result is the one where at most one process is faulty and every message is eventually delivered. The value that is ultimately decided must have been proposed by some process.

admissible

deciding

strong

weak

Yes, the answer is correct.

Score: 1

Accepted Answers:

admissible

1 point

Consider the following statements regarding a partially correct consensus protocol:

S1: No accessible configuration has more than one decision value.

S2: None of the accessible configurations have a value that is either 0 or 1.

Both S1 and S2 are true.

S1 is true, but S2 is false.

S1 is false, but S2 is true.

S1 and S2 are both false.

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, but S2 is false.

1 point

What does the FLP result propose (primarily)?

Impossibility of distributed consensus with multiple faulty process.

Impossibility of distributed consensus with a single faulty process.

Possibility of consensus even with one faulty process.

Possibility of distributed consensus with multiple faulty process.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Impossibility of distributed consensus with a single faulty process.

1 point

Which of the following is true according to the proof of the FLP result?

A bivalent initial configuration always exists

A univalent initial configuration always exists

A bivalent initial configuration sometimes exists

None of the options.

Yes, the answer is correct.

Score: 1

Accepted Answers:

A bivalent initial configuration always exists

1 point

Which of the following is not a property of the asynchronous model used in the FLP result?

There is no upper bound on the amount of time a process might take to receive, process, and reply to an incoming message.

The links can be assumed to be reliable.

The processors fail according to the fail-stop model.

The computation can be divided into synchronous rounds.

No, the answer is incorrect.

Score: 0

Accepted Answers:

The computation can be divided into synchronous rounds.

1 point

Which of the following is a server state in the Raft Cluster?

Follower

Candidate

Leader

All the options

No, the answer is incorrect.

Score: 0

Accepted Answers:

All the options

1 point

If a server with a lower term number sends a message to a server with a higher term number, the latter _____.

accepts and responds to the message

rejects the message

degrades its term number to the smaller value

becomes a follower and responds to the message

No, the answer is incorrect.

Score: 0

Accepted Answers:

rejects the message

1 point

Consider the following steps in the leader election process for the Raft protocol:

1. A periodic heartbeat message is not received for a pre-specified duration.

2. Every server starts in the follower state.

3. The server transitions to the candidate state.

4. The process of electing a new leader starts.

Which of the following is the correct ordering of these steps?

- 2, 3, 1, 4
- 1, 2, 3, 4
- 2, 1, 4, 3
- 4, 2, 3, 1

No, the answer is incorrect.

Score: 0

Accepted Answers:

2, 1, 4, 3

1 point

Consider the following statements regarding the Raft consensus protocol:

S1: A leader can win an election even if its log does not contain all committed entries.

S2: The candidate's log should at least be as up to date as the log of the voter.

- Both S1 and S2 are true.
- S1 is true, but S2 is false.
- S1 is false, but S2 is true.

S1 and S2 are both false.

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false, but S2 is true.

1 point

What happens if a leader finds out about another leader or a server with a higher term id in the Raft Cluster?

Former leader becomes a follower.

Former leader becomes a candidate.

Former leader stays the leader and the latter one becomes a follower.

The latter leader becomes a candidate.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Former leader becomes a follower.

1 point

What happens if no leader is elected during the Raft leader election process?

Each candidate times out and starts a new election.

The old leader continues to be the leader.

Only the old leader starts a new election.

Only the followers start a new election

No, the answer is incorrect.

Score: 0

Accepted Answers:

Each candidate times out and starts a new election.

1 point

Consider the following statements regarding the Raft consensus protocol:

S1: Raft forces followers to replicate the leader's logs.

S2: If two entries in different logs have the same index and term, they store the same command.

Both S1 and S2 are true.

S1 is true, but S2 is false.

S1 is false, but S2 is true.

S1 and S2 are both false.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Both S1 and S2 are true.

1 point

If a proposal (n, v) is chosen, then every proposal with a number _____ than n that is chosen, has value v.

lesser

greater

equal

None of the options

No, the answer is incorrect.

Score: 0

Accepted Answers:

greater

1 point

Consider the following statements regarding the safety and liveness properties of concurrent systems:

S1: The safety property states that something wrong might happen.

S2: The liveness property states that something good will always happen

- Both S1 and S2 are true.
- S1 is true, but S2 is false.
- S1 is false, but S2 is true.
- S1 and S2 are both false.

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false, but S2 is true.

1 point

Which of the following statements is correct regarding Paxos?

- A node can be a proposer and acceptor at the same time.
- A node can only be either a proposer or an acceptor at the same time.
- A proposer contains a set of nodes that join the consensus protocol and learn the accepted value.
- An acceptor contains a set of nodes that propose a value.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A node can be a proposer and acceptor at the same time.

Which of the following statements are correct regarding the Byzantine Generals Problem?

S1. When a process has a fault, it always lets other processes know about it.

S2. For a “Byzantine failed” node, all kinds of malicious behavior are acceptable.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

What is the minimum number of generals required in a Byzantine agreement algorithm when there are 5 traitors?

11

15

16

20

Yes, the answer is correct.

Score: 1

Accepted Answers:

16

1 point

At each step of the Byzantine agreement algorithm, each general computes a/an _____ of the values.

majority

average

max

min

Yes, the answer is correct.

Score: 1

Accepted Answers:

majority

1 point

In the step OM(m-1) of the Byzantine agreement algorithm, general i receives _____ values (where m is greater than 0 and n is the total number of generals)?

n

n - 1

n - 2

n + 1

Yes, the answer is correct.

Score: 1

Accepted Answers:

n - 2

1 point

Which of the following statements are correct regarding the conditions of the Byzantine Generals Problem?

S1. IC1: Not all loyal lieutenant generals obey the same order.

S2. IC2: If the commander is loyal, every loyal general obeys the order that the commander issues.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Which statement is true regarding the commonly used semantics of one-to-one communication?

S1. Between the client and server, messages cannot get lost.

S2. Two commonly used semantics that servers typically provide are At-least-once and At-most-once semantics.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Which of the following statements are correct?

S1. To tolerate k fail-stop failures, we need k+1 processes.

S2. If processes produce arbitrary outputs, we need k+1 processes where there are k failures.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is false

1 point

Which of the following statements are correct regarding virtually synchronous multicast (Let us say that view V changes to view V*)?

S1. If a message m is sent to view V before the view change, then either all processes in (V ∩ V*) receive m, or none do.

S2. A message sent to view V can be delivered only to processes in V, and not to successive views.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true, S2 is true

1 point

Which of the following statements are correct regarding 2-Phase Commit?

S1. In Phase 1a, the coordinator sends a vote-request message to all participants.

S2. In Phase 1b, each participant returns either Vote-commit, Vote-abort, or None-of-All.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is false

1 point

In 3-Phase Commit, after the Coordinator has collected all the votes, it sends a _____ message if all the votes contain the message.

Prepare-commit

Ready-commit

Global-abort

Global-commit

Yes, the answer is correct.

Score: 1

Accepted Answers:

Prepare-commit

Which of the following statements are correct regarding BitTorrent?

S1. A BitTorrent client can simultaneously download the different pieces from different hosts.

S2. Each file has a dedicated torrent file.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true, S2 is true

1 point

In BitTorrent, a _____ has a list of peers in entire network.

tracker

seeder

descriptor file

uploader

No, the answer is incorrect.

Score: 0

Accepted Answers:

tracker

1 point

Which of the following statements are correct regarding BitTorrent?

S1. BitTorrent guarantees anonymity and user authentication.

S2. Mainline DHT is the largest DHT in the world with 10 million to 25 million connected computers.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false, S2 is true

1 point

Coda File System extends the _____, to provide more fault tolerance.

Andrew File System (AFS)

Google File System (GFS)

XFS

ext4

No, the answer is incorrect.

Score: 0

Accepted Answers:

Andrew File System (AFS)

1 point

In AFS, a file cached in the client is written back to the server when _____.

All read and write operations for the file are done

the file is opened

the file is closed

the multiple clients are writing at the same time

No, the answer is incorrect.

Score: 0

Accepted Answers:

the file is closed

1 point

Which of the following statements are correct regarding Coda File System?

S1. It uses the AFS caching mechanism as the baseline, which caches entire files in their disks.

S2. It allows disconnected operation and tolerates server failures by having replicas.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true, S2 is true

1 point

Which of the following conflicts cannot be resolved by Coda automatically?

Update/update conflict

Remove/update conflict

Name/name conflict

All the options

No, the answer is incorrect.

Score: 0

Accepted Answers:

All the options

1 point

In Coda File System, the client cache manager, named _____, keeps track of the subset of the VSG that is accessible.

AVSG

preferred server

Coda

Venus

No, the answer is incorrect.

Score: 0

Accepted Answers:

Venus

1 point

During network partitions, the Coda filesystem handles client operations by _____.

allowing only read-only operations.

blocking every operation.

allowing clients to continue working with cached data.

queueing operations until the network is restored.

No, the answer is incorrect.

Score: 0

Accepted Answers:

allowing clients to continue working with cached data.

1 point

In the Coda File System, _____ is a set of server with replicas of a volume.

Venus

preferred server

Coda

VSG

No, the answer is incorrect.

Score: 0

Accepted Answers:

VSG

Which of the following statements are correct regarding Dynamo?

S1. Dynamo is a highly available Key-Value Store.

S2. Dynamo achieves decentralization by employing a peer-to-peer network where each node participates equally in data storage and retrieval.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is true

1 point

Which ACID property is not provided by Dynamo?

Atomicity

Isolation

Consistency

Durablity

Yes, the answer is correct.

Score: 1

Accepted Answers:

Consistency

1 point

Which of the following is a key principle of Dynamo?

Incremental Scalability: Should be able to scale one node at a time.

Symmetry: Every node should have the same responsibility.

Decentralization: Peer to peer system.

All of them

Yes, the answer is correct.

Score: 1

Accepted Answers:

All of them

1 point

Which of the following statements are correct regarding Dynamo?

S1. Reads need to be very fast. Writes can be slow.

S2. The system should not lose a write request.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Which of the following statements are correct regarding Dynamo?

S1. Failure detection is done by gossip style protocols.

S2. It uses versioning for put operations with scalar clocks.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is false

1 point

Which of the following statements are true regarding Google's page rank algorithm?

S1. The page rank of an unpopular page is expected to be high.

S2. The page rank of a page is determined by the page rank of all the pages that link to it.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

To manage the vast Web, Google uses a/an _____.

Page Index

Inverted Index

Converted index

Web link

Yes, the answer is correct.

Score: 1

Accepted Answers:

Inverted Index

1 point

The _____ data structure is used to arrange links in Percolator.

Linked list

Tree

Inverted list

Hash table

Yes, the answer is correct.

Score: 1

Accepted Answers:

Inverted list

1 point

Which of the following systems guarantees ACID properties for transactions?

Amazon Dynamo

Google Percolator

Apache Cassandra

Key-Value Store

Yes, the answer is correct.

Score: 1

Accepted Answers:

Google Percolator

1 point

Google’s distributed storage engine to design Percolator is _____.

Venus

Bigtable

GigaByte

RocksDB

Yes, the answer is correct.

Score: 1

Accepted Answers:

Bigtable

1 point

Corona uses a/an _____ based Overlay.

Chord

Pastry

tree-based

star-based

No, the answer is incorrect.

Score: 0

Accepted Answers:

Pastry

1 point

Which of the following statements are correct regarding Corona?

S1. The Corona resource allocation algorithm dedicates a group of nodes to monitor each channel.

S2. The Corona use an optimization toolkit to calculate the way the polling tasks should be distributed.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true, S2 is true

1 point

Which of the following best describes the aim of Corona-Fast?

Minimize the number of servers and maximize the number of clients.

Minimize the load on the servers and achieve the target update time.

Minimize network latency and reduce the size of each channel.

Reduce the number of channels and increase the number of nodes.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Minimize the load on the servers and achieve the target update time.

1 point

Which of the following statements are correct regarding Corona?

S1. Both Corona-Lite and Corona-Fast consider the rate of change of objects in the channel.

S2. Corona-Fair takes the respective weaknesses of Corona-Lite and Corona-Fast into account.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false, S2 is true

1 point

Cassandra uses a gossip system based on _____ to propagate membership information.

Topology-awareness

Application-specificity

Rumor mongering

Anti-entropy

No, the answer is incorrect.

Score: 0

Accepted Answers:

Anti-entropy

1 point

In Cassandra's read operation, which data structure is used to quickly determine that a set of files does not contain a particular key?

Inverted tree

Bloom filter

Hash table

Skip list

No, the answer is incorrect.

Score: 0

Accepted Answers:

Bloom filter

1 point

Which of the following statements are correct regarding the journaling mechanism of Cassandra?

S1. Cassandra uses a rolling commit log; after the old log has reached a certain size, it creates a new one.

S2. Each commit log maintains a bit vector corresponding to disk dumps, but commit log entries cannot be deleted even after persistence.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true, S2 is false

1 point

Which of the following statements are correct regarding Haystack?

S1. Haystack caches the metadata on the local disk.

S2. Haystack is organized as a DHT.

- S1 is true, S2 is true
- S1 is true, S2 is false
- S1 is false, S2 is true
- S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false, S2 is true

1 point

In Facebook's Haystack Store, metadata is required to access a photo. Which of the following is NOT stored in the metadata?

- Logical volume ID
- File offset
- Size of the photo
- Photo's contents

No, the answer is incorrect.

Score: 0

Accepted Answers:

Photo's contents

1 point

Which of the following statements are correct regarding Haystack?

S1. Its usage pattern is “Written once, rarely modified, rarely deleted”.

S2. It requires two disk operations per read.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is false, S2 is false

Which of the following statements are correct regarding LinkedIn’s Voldemort system?

S1. In LinkedIn’s Voldemort system, the build time increases linearly with an increase in the file size.

S2. Several other sites such eHarmony and Nokia also use the Voldemort system.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true, S2 is true

1 point

In LinkedIn's Voldemort system, which sequence is correct regarding a message that the driver program sends?

Trigger Build → Trigger Fetch →Trigger Swap

Trigger Fetch → Trigger Build →Trigger Swap

Trigger Fetch → Trigger Swap →Trigger Build

Trigger Swap → Trigger Build →Trigger Fetch

No, the answer is incorrect.

Score: 0

Accepted Answers:

Trigger Build → Trigger Fetch →Trigger Swap

1 point

Which of the following statements are correct regarding the storage format of the Voldemort system?

S1. The input data destined for a node is split into single chunk buckets, which is split into multiple chunk sets.

S2. Each chunk set has a data file and an index file.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Which of the following statements are correct regarding a Condor pool?

S1. Every pool has multiple matchmakers.

S2. Only agents can form a Condor pool.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is false

1 point

Which of the following entities manages messages sent by agents and resources, and pairs agents with resources?

MatchMaker

Resource

Agent

Sandbox

Yes, the answer is correct.

Score: 1

Accepted Answers:

MatchMaker

1 point

In Condor, the process of an agent reporting itself to multiple matchmakers and effectively joining multiple pools is known as _____.

match flocking

gateway flocking

direct flocking

resource flocking

No, the answer is incorrect.

Score: 0

Accepted Answers:

direct flocking

1 point

Which of the following statements are correct regarding Condor?

S1. Condor provides support for checkpointing and I/O marshaling.

S2. For secure communication, Condor uses a secure communication library called Cedar.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is true

1 point

Which of the following statements are correct regarding Dryad's system architecture?

S1. Fault tolerance is not the centralized job manager’s role.

S2. The centralized job manager monitors jobs and schedules processes.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Which of the following statements are correct regarding the overall Dryad system?

S1. A Dryad job is represented as a directed acyclic graph (DAG).

S2. In this graph, each vertex is a data channel and each edge is a program.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is false

1 point

After the job manager in the Dryad system terminates, DyadLINQ collates all the outputs and creates the _____ object.

node table

DryadTable

output table

ToDrayadTable

Yes, the answer is correct.

Score: 1

Accepted Answers:

DryadTable

Assignment submitted on 2025-10-08, 22:40 IST

1 point

In basic ACID semantics of databases, _____ means that operations either fully complete (commit) or fail in entirety.

Atomicity

Consistency

Isolated

Durable

Yes, the answer is correct.

Score: 1

Accepted Answers:

Atomicity

1 point

Which of the following statements are correct regarding continuous consistency?

S1. When reading a replica, we always get the accurate value and never encounter a stale value.

S2. Different replicas of variable x are loosely synchronized and are not exactly identical.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Which of the following statements are correct regarding Causal Consistency?

S1. Causally related writes must be observed in the same order by all processes.

S2. Writes without causal relationships must always be observed in the same order.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is false

1 point

Which of the following statements are correct regarding Ethereum?

S1. All machines (nodes) share a common world state, which is a shared state modified by transactions.

S2. Every machine maintains a private machine state in addition to the world state.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

No, the answer is incorrect.

Score: 0

Accepted Answers:

S1 is true, S2 is true

1 point

Which of the following statements are correct regarding Ethereum?

S1. There is only one function applied to the world state, which transfers money from account *A* to account *B*.

S2. The built-in currency is Ether.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Which of the following statements are correct regarding Ethereum?

S1. Ethereum is a blockchain that belongs to the category of permissioned systems.

S2. Ethereum uses a Merkle Patricia tree (MPT).

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

Consider the following statements about the Stellar consensus protocol:

S1. All nodes need to participate in the consensus protocol.

S2. A quorum contains at least one quorum slice of each of its members.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is false, S2 is true

1 point

In the Stellar consensus protocol, _____ is a decentralized agreement process, where each node chooses its own set of trusted nodes (quorum slices) to form a quorum.

Federated Byzantine Quorum System

Ethereum system

distributed system

blockchain system

Yes, the answer is correct.

Score: 1

Accepted Answers:

Federated Byzantine Quorum System

1 point

Which of the following statements are correct regarding federated voting properties?

S1. No duplication: Every correct node delivers at most one voted value.

S2. Validity: If all nodes vote for a value *a*, they eventually deliver a different value *a'*.

S1 is true, S2 is true

S1 is true, S2 is false

S1 is false, S2 is true

S1 is false, S2 is false

Yes, the answer is correct.

Score: 1

Accepted Answers:

S1 is true, S2 is false

1 point

Which of the following statements are incorrect regarding Byzantine Faults and Quorums?

Nodes can behave arbitrarily.

Nodes can behave maliciously.

Malicious nodes cannot collaborate with each other.

With $3f+1$ nodes, we can tolerate at most f Byzantine failures.

Yes, the answer is correct.

Score: 1

Accepted Answers:

Malicious nodes cannot collaborate with each other.