

1. What is the purpose of the marshaling procedure?

- A consistency checking of type information
- B to compress data structures**
- C to protect an application from unauthorized requests
- D to encode application layer structures in an external form

2. How are arguments passed in Java RMI?

- A call by reference only
- B call by copy only
- C remote objects as reference, all other as copies
- D serialized objects as reference, all other as copy**

3. Which invocation semantic is provided by Java RMI?

- A no guarantees
- B at least once
- C exactly once**
- D at most once

4. What level of transparency is provided by method invocation in Java RMI?

- A access transparency only since we need to explicitly describe the location
- B location transparency only since we need to capture remote exceptions**
- C access and location transparency
- D neither access nor location transparency

5. How do Erlang processes communicate?

- A only through global storage
- B synchronous message passing
- C asynchronous message passing**
- D modifying shared data structures

6. Does Erlang provide a form of location transparency?

- A No - you always need to know the node address of a process.
- B Yes - there are no explicit node addresses in the system.
- C Yes - a process can use a process identifier without having to know the address of the node where the process lives.**
- D No - since the address of a registered process contains the IP address of the node, there is no transparency in the system.

7. How is the destination defined in an Erlang send operation?

- A as a process identifier
- B as a process identifier or a local or remote registered name**
- C a registered name
- D an identifier and the binder to contact

8. What is a soft link in a file system?

- A a mapping of a name to a file
- B a link from a file to a path position
- C a path that is resolved to another path 3**
- D a link between two files

9. What is a hard link in a file system?

- A a mapping of a name to a file identifier 4**
- B a link from a file descriptor to a path position
- C a path that is resolved to another path
- D a link between two files

10. What is the purpose of the Unix lseek operation?

- A find the position of string in file
- B set the read/write pointer of an opened file**
- C find file descriptor matching name
- D search for name mapped to given file descriptor

11. How is a NFS client-side cache entry validated?

- A if the call-back promise is not older than t seconds
- B if the difference between the server modification time and the client modification time is less than t seconds
- C if the server modification time is equal to the client modification time
- D if the validity was checked less than t seconds ago or if the server modification time is equal to the client modification time**

12. How is authentication control handled in Sun NFS?

- A server keeps a log and only commit changes when client does final authentication
- B authentication is provided by RPC in each operation 5**
- C authentication is done when file is opened
- D authentication left to client, the server will trust all client operations

13. How does a NFS server know at what position to read and write an opened file?

- A it keeps a file table entry with a read/write position
- B NFS only allow read operations and therefore does not need position information
- C not needed since all read and write operations are on a whole file
- D each read and write operation holds the position 6**

14. How is AFS client side caching implemented?

- A the server promise to notify the client if a file is modified by another client**
- B the client will check the server status with each write operation
- C the client will check the last modified time of the server before each read
- D the consistency is checked only when a file is opened

15. Can two client have an inconsistent view of a file using AFS?

- A no, updates are not performed unless all call-backs have been confirmed
- B yes, since consistency is only checked when the file is opened
- C no, clients will check server status with each read and write operation
- D yes, if a call-back message is lost, a cached copy can be used although the original has been modified 7**

16. How are inconsistencies of the resolver cache handled in the DNS architecture?

- A each entry has a time-to-live 9**
- B changes in DNS servers will be pushed to resolvers with cached values
- C the resolver will check if an entry has changed since requested
- D a server will redirect requests to the new location

17. What is a dirty-read during a transaction?

- A reading a value that has been written by the same transaction
- B reading an old value that will be over written
- C reading a value that has not been committed**
- D reading ahead of a write operation

18. What is two-phase locking in a transaction?

- A not taking any locks once a lock has been released 17**
- B taking a read lock that is strengthened to a write lock
- C reserving all locks before taking the first
- D taking locks in a strict order

19. What does it mean that a transaction meets the atomicity property?

A intermediate results must not be visible to other transactions

B either all or no operations in the transaction are performed

C only one datum is allowed to be updated in each transaction

D the transaction can safely be duplicated resulting in the same server state

20. What does it mean that a transaction meets the isolation property?

A intermediate results must not be visible to other transactions

B either all or no operations in the transaction are performed

C effects of the transaction are isolated from server failures

D the transaction can safely be duplicated resulting in the same server