6 - RPC

Student version

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Question 1

Why are transport-level communication services often inappropriate for building distributed applications?

Question 2

Consider a procedure incr with two integer parameters. The procedure adds one to each parameter. Now suppose that it is called with the same variable twice, for example, as incr(i, i). If i is initially 0, what value will it have afterward if call-by-reference is used?

Question 3

C has a construction called a union, in which a field of a record (called a struct in C) can hold any one of several alternatives. At run time, there is no sure-fire way to tell which one is in there. Does this feature of C have any implications for remote procedure call? Explain your answer.

Question 4

One way to handle parameter conversion in RPC systems is to have each machine send parameters in its native representation, with the other one doing the translation, if need be. The native system could be indicated by a code in the first byte. However, since locating the first byte in the first word is precisely the problem, can this actually work?

Question 5

Assume a client calls an asynchronous RPC to a server, and subsequently waits until the server returns a result using another asynchronous RPC. Is this approach the same as letting the client execute a normal RPC? What if we replace the asynchronous RPCs with asynchronous RPCs?