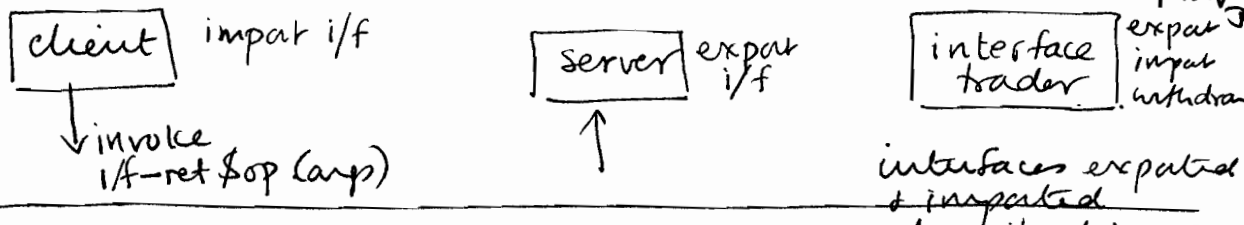
1999 Distributed Systems – Qu for Part 2 + Diploma. Papers 9+13

a) either (i) RPC or (ii) C(ORBS)A to be described – architectural components & basic operation. e.g. expansion of:- P9a1 P13a1

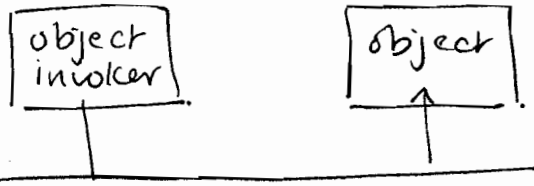
(i) RPC




RPC service layer (platform)
- RPC protocol eg R-R-A
- synchronization of request/response
- marshal/unmarshal data/arguments
- manage i/f ref – location for use of OS protocols

OS comms support eg. TCP/UDP – IP – physical.

(ii) ORB.




ORB (platform)
- naming of objects with UIDs & binding name – ID.
- name to location binding for use of OS protocols
- marshall/unmarshal argument
- synchronization using an RPC-like protocol: IOP

IDL needed for i/f spec$^n$ + cross-language bindings.

b) (i) polling.
clients ask server periodically whether event has occurred.
potentially slow response – can "just miss" event.
frequent tests ⇒ overload server & comms, infrequent ⇒ sluggish 3

(ii) synchronous callback.
clients subscribe to server (or mediator) and supply callback address
on event occurence, server must make RPC-like call to each interested client.
can't allow any/the client to hold up server
∴ need a thread in the server for each client call – complex 3

(iii) asynchronous notification
clients subscribe to server or mediator. On event occurence, server (or mediator) notifies each client (one-one asynchronous).
Can exploit reliability (adc) or multicast if available. 3
same registration overhead as synchronous callback.