CORBA

- Object model
- Architecture
- IDL
- Services

- Writing CORBA code

- Reading:
    http://www.dcs.qmw.ac.uk/research/distrib/dsbook

CORBA OMG

- “Specification for object-oriented architecture for applications”
- 1989/1990: Object Management Group
  - DEC, HP, Hyperlink, NCR, Object Design, SunSoft, …
  - http://www.omg.org
- Later updated to Version 1.2 and 2.0.
CORBA

- Metaphor: Object Request Broker (ORB)
- helps clients invoke method on an object
- locates
- activates
- communicates

- Object interfaces defined in CORBA Interface Definition Language (IDL)

- Corba vs. RPC:
  - interface to objects vs interface to servers
  - pass ROIDs as arguments or results

CORBA Object Model

- Clients send request messages to objects.
- Objects carry out methods.
- Objects are encapsulated; hidden data representation / code.

- Request message: recipient ROID, method, parameters

- Reply message: results, exceptions

- CORBA does not state how to implement remote objects (legacy code!)
  - handled by Object Adaptor
Limitations of CORBA Object Model

- CORBA does not directly support:
  - transactions
  - concurrency control
  - recovery
  - replication
  - object copying
  - caching?
- Some of this is managed in separate CORBA Services:

<table>
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<tr>
<th>Event Service</th>
<th>Security Service</th>
<th>Conc. Control Service</th>
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<tr>
<td>Transaction Service</td>
<td>Trading Service</td>
<td>Persistent Object Service</td>
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<td>Life Cycle Service</td>
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<td>Property Service</td>
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CORBA Architecture

- **Server**: process executing implementation of one or more remote objects.
- **Client Stubs, Server Stubs (IDL Skeletons)**
- **Object Adaptor** deals with everything that a client needs at run time in order to invoke a method in a remote object.
  - registers implementation in repository
  - activates object implementation in server
  - registers servers with activated objects
  - functions as ROID module (ROID creation, mapping between ROID and OID)
  - functions as dispatcher
  - Realization of Object Adaptor may be distributed.
CORBA Architecture (II)

- Object invocation:
  - e.g. server in C++:
  - skeleton is instance of a class in C++ with method for each method in IDL interface.
  - server in C?
  - what is the OID?
  - how is a method of an “object” called?

- Implementation Repository