CptS 464/564

Lecture 5

Sept 7, 2004

Client Issues

- **`CORBA::Object_var obj = orb->string_to_object(ior)`**
- What's with these …**`_var`** types?
- What does an IOR look like? What does it contain?

…_var types

- Automatic memory management in C++
- **`Foo_var`** contains a pointer to a **`Foo`**
  - Automatically releases storage for the **`Foo`** when the **`Foo_var`** goes out of scope
- Examples
  - ```
    CORBA::String_var message =
                CORBA::string_dup("Howdy!");
    ```
  - ```
    Messenger_var messenger =
                Messenger::_narrow(obj);
    ```

IORs

- Interoperable Object References
- Example
  - **IOR:013708081b00000049444c3a416c6d616e61632f47656f6772617068657 23a312e3000000100000000000078000000010102001300000070 6f6970752e656563732e7773752e65647500001dea000025000000abacab3131303433373332353235005f526f6f74504f410000cafebabe3e36182d00000000a700000100000001000000200000000100000100010002000000200001000100010500010100010000009010100**
- Contains Object ID (specific to a POA) along with contact information for the POA

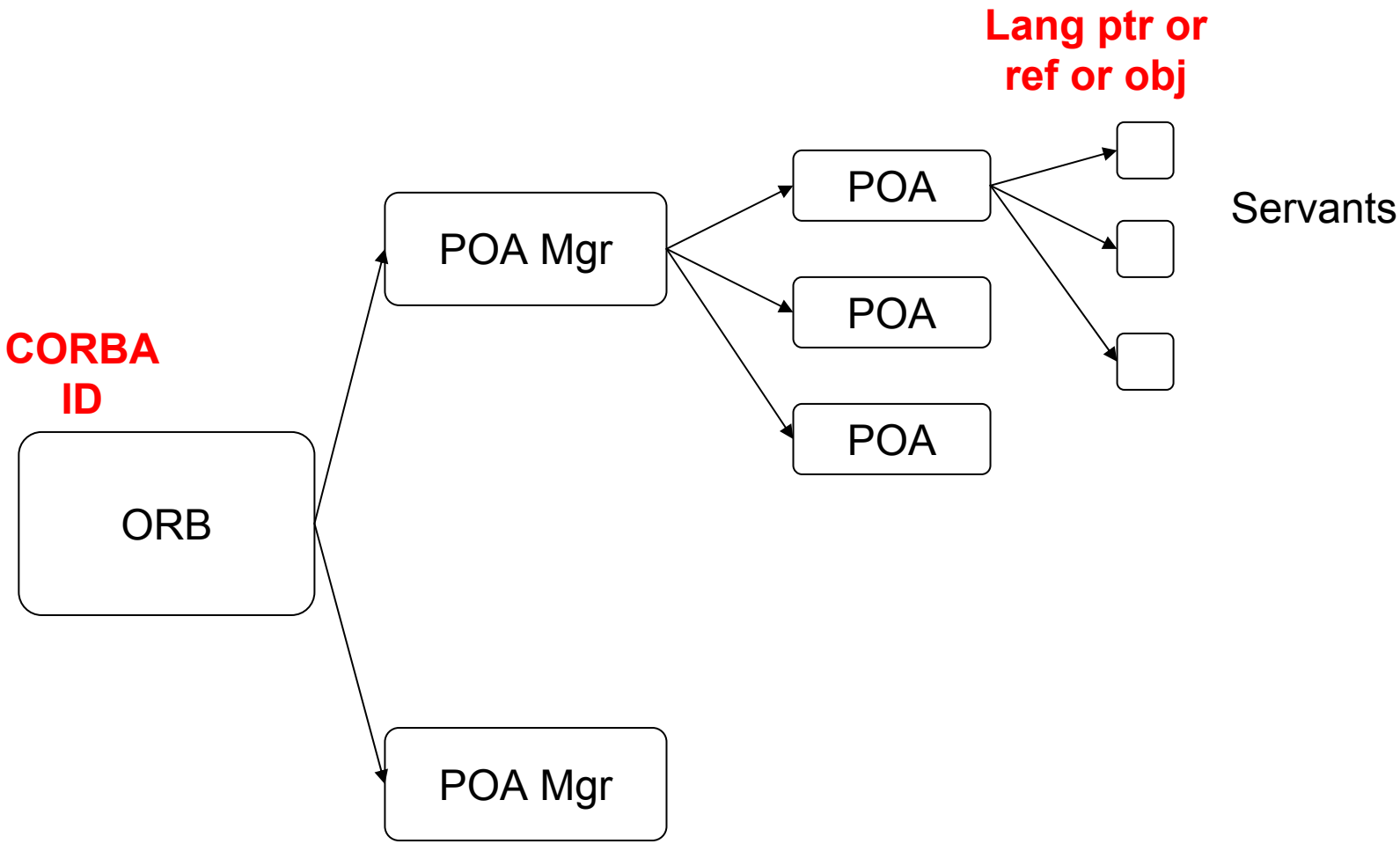
IOR Operations

- **`orb->string_to_object(iorstring)`** returns a **`CORBA::Object`**
- **`orb->object_to_string(corbaobject)`** returns a string
- Note use of **`Messenger::_narrow`** to convert the more general **`CORBA::Object`** to the more specific **`Messenger`** in a type-safe way
- Not allowed: comparisons, “looking inside” an IOR

Server Issues

- Overall server structure
- Servants
- Portable Object Adapter
  - Basic Object Adapter replaced by POA
  - RootPOA
- POA manager
- **`resolve_initial_references`**

Overall server request flow



Servants

- Language (C++, Java, Python,…) objects
- Need help to become CORBA::Object s.
- **`Messenger_impl`** inherits from **`POA_Messenger`**
- **`_this()`** member function implicitly creates a new **`CORBA::Object`** and registers the current object as a servant for it in the RootPOA
- **Watch out:** if you tell the **`idl`** compiler to generate impls (servants) the constructor requires a POA argument. Different from the Messenger example.

Portable Object Adapter

- Adapts language objects (servants) to CORBA::Object s
- Replaces “Basic Object Adapter” in CORBA specs
  - Allows servants to be portable between ORBs
- Many policies control the behavior of objects
  - Persistent/Transient
  - Threading model

POA Manager

- **Gatekeeper with 4 states**
  - **Holding (initial) – incoming messages are held (queued) and not passed to POA**
  - **Active**
    - **Incoming messages are passed to POA**
    - **Entered with `manager->activate()`**
  - **Discarding**
    - **Incoming messages are discarded and not passed to POA**
  - **Inactive**
    - **Last state before shutdown**