

Distributed systems

Java RMI 2-3 Exercise Session Report

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**The following classes are remotely accessible:**

**NamingServiceRemote:**

This remote interface is used by all sessions. Through this interface sessions can register new companies, unregister registered companies, acquire a company by name or acquire all registered companies from the naming service.

**ManagerSessionRemote:**

This remote interface is used by the manager clients. Through this interface manager clients can invoke methods on their manager sessions.

**ReservationSessionRemote:**

This remote interface is used by the reservation clients. Through this interface reservation clients can invoke methods on their reservation sessions.

**SessionManagerRemote:**

This remote interface is used by all clients. Through this interface clients can acquire new manager sessions or new reservation sessions

**ICarRentalCompany:**

This remote interface is used by all sessions. Through this interface sessions can invoke methods on registered companies.

**The following remote objects are serializable:**

ManagerSession, ReservationSession and SessionManager objects are all located at the same host.

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CarRentalCompany objects are located at a different host

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NamingService object is located at yet another host.

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**The following remote objects are registered via the built-in RMI registry:**

**NamingService:**

The naming service is registered via the built-in RMI registry. That way the host that runs all sessions can acquire a proxy object of the naming service so that the sessions can invoke methods on it (via the NamingServiceRemote interface).

**SessionManager:**

The session manager is registered via the built-in RMI registry. That way the host that runs the client code can acquire a proxy object of the session manager so that the client can invoke methods on it and acquire sessions from it (via the SessionManagerRemote interface).

**Life cycle management of sessions:**

Sessions are created when a client invokes the getManagerSessionRemote or getReservationSessionRemote methods on the session manager. Sessions only live on the host where they are created (there is a separate host which runs all sessions). Only proxy objects for sessions are sent over the wire and returned to the client.

Sessions are closed when the client invokes the closeManagerSession or closeReservationSession method on the session manager. When these methods are invoked, the session manager removes all references to that session.

We assume the client closes the session itself. Although, we can easily implement an automatic session closing system which uses a time out.

**Synchronization:**

Synchronization is necessary at the confirmQuote method in a CarRentalCompany. After all, multiple clients can all have their own individual session at the same time. That session can invoke methods on the same CarRentalCompany-object. When the company tries to confirm a quote, it checks whether it is able to do that. When multiple clients invoke this method at the same time, the integrity of the system is compromised (imagine two clients making the same reservation at the same time). Because of that reason, the method needs to be synchronized.