Lecture 3: Networks

Message passing and RMI
Message passing

- Sequence of bits sent over the network.

- Purpose of messages:
  - Send requests
  - Send data
  - Send code to another machine
  - Instruct the machine to perform a task

- Messages can’t just be ad-hoc,
  - A protocol has to be adopted
Demo time!

Get up and come to the board
Is this the only way?

– No!

– Several programming models exist to ease communication.

– Such as:
  – Remote Procedure Call (RPC)
    – Lightweight method to execute code on remote machine
  – Remote Method Invocation (RMI)
    – Object oriented version of RPC
  – Common Object Request Broker Architecture (CORBA)
    – Provides remote procedure invocation through an intermediate layer called the object request broker.
Exercise time!
Remote Method Invocation (RMI)

Advantages:

- Constructed on top of some request-reply model
- Offers a level of transparency between local and remote calls
- You can use the full expressive power of an OOP language
  - Object references
  - Interfaces
  - Actions
  - Exceptions
  - Garbage collection
- You can work with unique object references
Remote objects

Figure 5.13  A remote object and its remote interface
How does this happen?

**Figure 5.15**  The role of proxy and skeleton in remote method invocation
Demo time!

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