JAC444 - Lecture 11

Remote Method Invocation - RMI
Segment 1 - Basics

Remote Method Invocation

In this lesson you will be learning about:

- What is RMI and distributed computing in Java platform
- The RMI architecture
- The distributed object model defined and supported by RMI

Definition of Terms

- *Remote object* is an object whose methods can be invoked from another Java virtual machine.

- *Remote method invocation (RMI)* is the action of invoking a method on a remote object.

- *Remote interface* is an interface that declares a set of methods that may be implemented by a remote Java virtual machine.

```
public interface BankAccount extends java.rmi.Remote {

    public void deposit(float amount)
                throws java.rmi.RemoteException;

}
```

Distributed objects

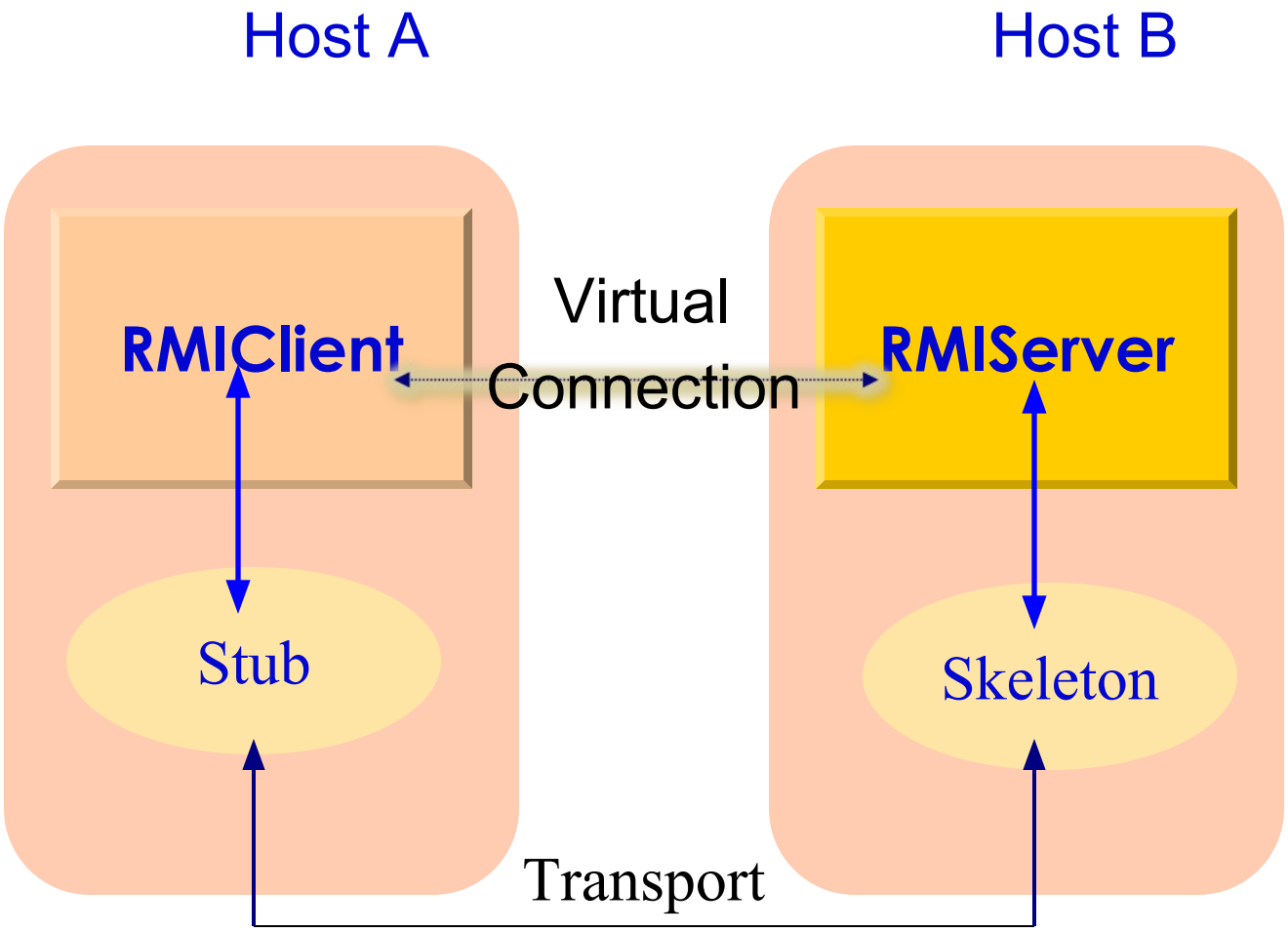
The RMI architecture is based on some important principles:

- The definition of behavior and the implementation of that behavior are two separate concepts:

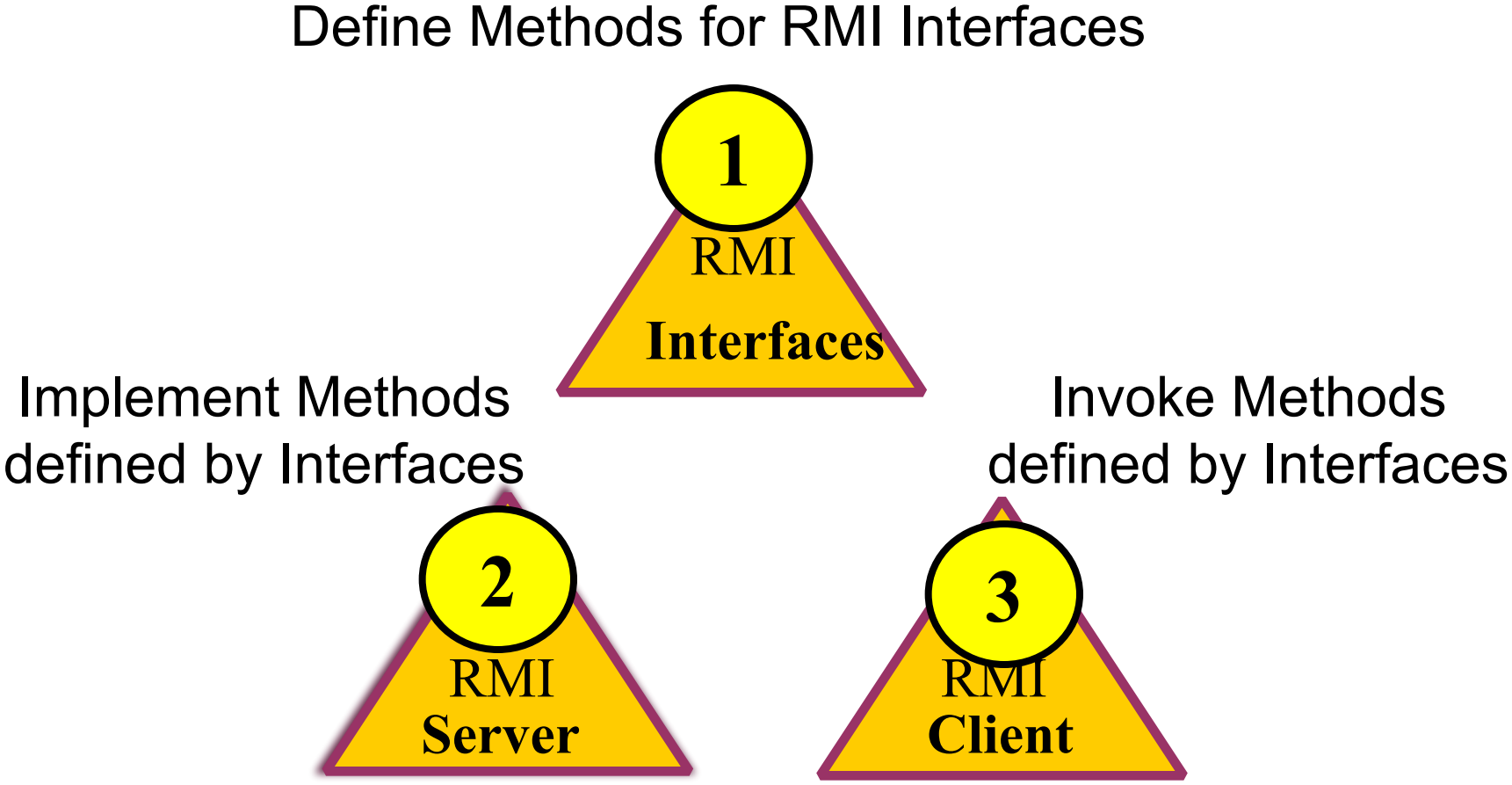
    1. **interfaces define behavior**
    2. **classes define implementation**

- RMI applications are comprised of two programs, a server and a client:
    - A RMI server application creates remote objects, makes references to them accessible, and waits for clients to invoke methods on these remote objects
    - A RMI client application gets a remote reference to one or more remote objects in the server and then invokes methods on them.

RMI Architecture



Design RMI System



RMI System

A working RMI system is composed of the following parts:

- Interface definitions for the remote services - *programmer*
- Implementations of the remote services - *programmer*
- A server to host the remote services – *programmer*
- A client program that needs the remote services – *programmer*
- RMI Naming service allows clients to find the remote services – *RMI system*

Building Calculator RMI System

1. Design and implement Java RMI Calculator interfaces
2. Develop Java code implementing classes defined by RMI Calculator interfaces
3. Develop code for Java RMI Calculator server
4. Develop code for Java RMI Calculator client program
5. Install and run RMI Calculator system

Conclusion

After completion of this lesson you should know:

- Distinguish Java RMI architecture
- Examine RMI components
- Categorize components of an RMI system