Assignment2 RMI

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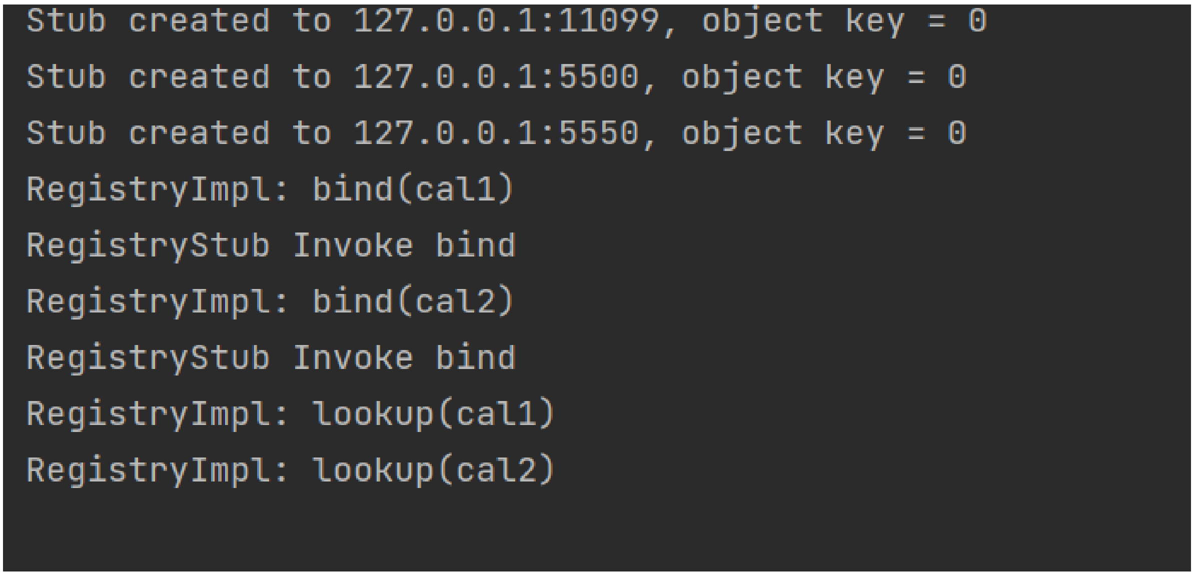
Stub/Skeleton communication design

At first, server call method in class `UnicastRemoteObject` to create and start a skeleton for a remote object. Then it create a stub according to the information. In the process of running a skeleton, the `StubInvocationHandler` class get the parameters concerned from socket (remote skeleton) and send them to `SkeletonReqHandler`. The latter class deal with the request and send the results back to the former class, during which invoking the methods in `Registry` interface. At last, the client can get the remote object through `lookup` method in Registry.

Tests for my design

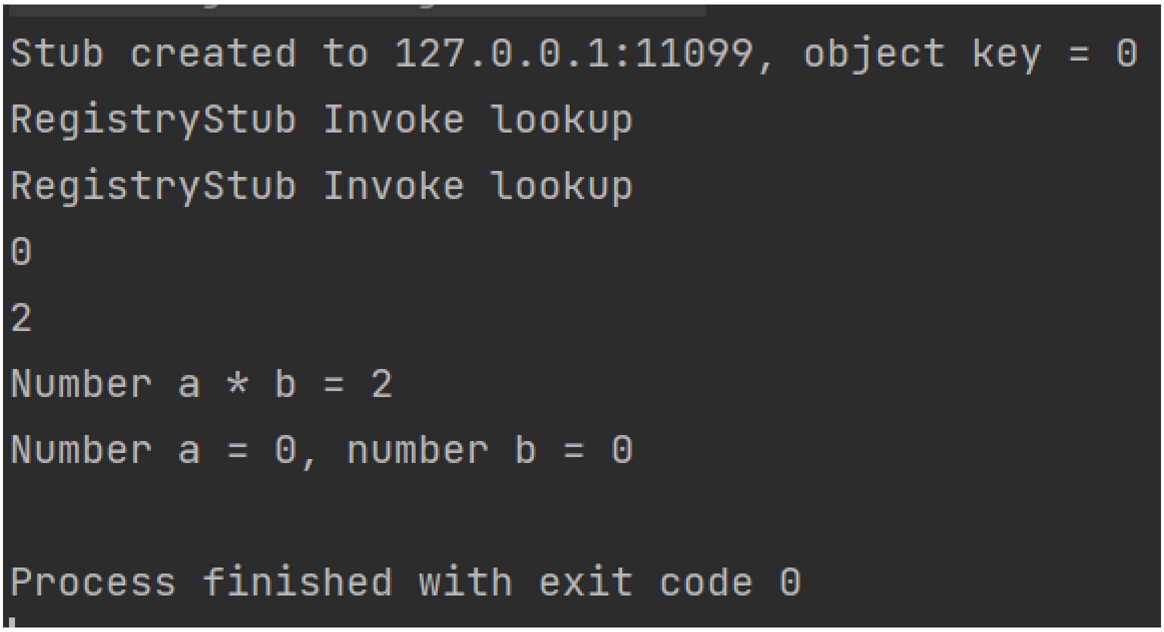
I implemented an interface `calculation` extending Remote, Serializable. Then two classes implementing the interface is created. In server testing class, I create two instances of each class mentioned above and bind them to registry. In client testing class, I look up the two instances in registry and call methods of each instance. The result shows that the remote object is sent correctly to the client.

server:



```
Stub created to 127.0.0.1:11099, object key = 0
Stub created to 127.0.0.1:5500, object key = 0
Stub created to 127.0.0.1:5550, object key = 0
RegistryImpl: bind(cal1)
RegistryStub Invoke bind
RegistryImpl: bind(cal2)
RegistryStub Invoke bind
RegistryImpl: lookup(cal1)
RegistryImpl: lookup(cal2)
```

client:



```
Stub created to 127.0.0.1:11099, object key = 0
RegistryStub Invoke lookup
RegistryStub Invoke lookup
0
2
Number a * b = 2
Number a = 0, number b = 0

Process finished with exit code 0
```

Difficulties

The Object[] args parameter is not serializable and was not able to be transmitted by outputStream.writeObject method. To solve the problem, I create a Arguments class implement Serializable to seal the Object[] args.