Distributed Systems – Labs

Week 3

Object Serialisation in Java

Learning Outcomes:

1. Be able to write Java classes whose objects may be serialised.
2. Be able to serialise Java objects.

Tasks

Object Serialisation

1. Extract T1\`Serialise.java`. Note how the class Personnel in this file implements the java.io.Serializable interface. Any objects that can be serialised by Java MUST implement this interface.

Note also how the use of `ObjectInputStream` and `ObjectOutputStream` can allow instances of the Personnel class to be serialised to a file.

2. Serialisable objects can be written to files as we have seen in Step 1. However, they can also be written to any location for which we have an `OutputStream`, and read from anywhere we have an `InputStream`, such as our TCP sockets.

With this in mind, modify the `TCPEchoClient` and `TCPEchoServer` (from Week 2) so that rather than writing text, they pass instances of Person objects, where Person objects contain name, age and address attributes.
These objects should be created on the client side by the user entering required data, and should then be serialised and sent to the server which will print out the contents of the object.

ArrayLists

3. Extract T3\`ArrayListSerialise.java`

Note how this program creates three objects of class Personnel and then uses the add method of class ArrayList to place the objects into an ArrayList.

4. Read Serialization_Secure Coding Guidelines.pdf document containing Secure Coding Guidelines for Java serialization and deserialization

References

Most of today's lab came from Chapter 4 of Introduction to Network Programming in Java by Graba.

https://www.oracle.com/technetwork/java/seccodeguide-139067.html#8