CSCI 53700 – Fall 2019

Assignment Number 3

Due Date: November 14, 2019

This assignment is intended to emphasize the RPC principles. You are to develop a simple distributed computing environment consisting of multiple Clients and a Server. The system is to be implemented in C or C++ and using the *rpcgen* utility discussed in the class.

- Server: The Server will be multi-threaded and support the following functions:
  1. DateAndTime – Returns the Current date and time.
  2. Sort – Accepts a list of integers and returns a sorted list – sorting is achieved by any method. You will need to indicate, in the report, the sorting technique used.
  3. List – Returns a list of all files in the current directory.
  4. MatrixMultiply – Accepts two integer matrices (provided as inputs) and returns their product.
  5. ReverseEncryptedEcho – Returns an encrypted version (using any technique) of whatever a Client sends as an input (variable length) but in the reverse order. You will need to indicate, in the report, the encryption technique used.
- Clients: There will be multiple clients, running on different machines and they will concurrently invoke various functions on the server.

  The Server and the Clients will be deployed on these following machines:

```
in-csci-rrpc01.cs.iupui.edu 10.234.136.55
in-csci-rrpc02.cs.iupui.edu 10.234.136.56
in-csci-rrpc03.cs.iupui.edu 10.234.136.57
in-csci-rrpc04.cs.iupui.edu 10.234.136.58
in-csci-rrpc05.cs.iupui.edu 10.234.136.59
in-csci-rrpc06.cs.iupui.edu 10.234.136.60
```

Please employ good software engineering principles in your design and implementation. Provide adequate documentation of your programs. Create a *makefile (a modification of the default Makefile generated by the rpcgen)* and a *readme* file for your program. All files (source files, readme, sample input/output files, report, and makefile) should be submitted via the *submitd* command on tesla.cs.iupui.edu in a zipped folder with the following format (LastNameA3.zip) - e.g., RajeA3.zip. Also turn-in a hardcopy of your report, before the beginning of the class on the due date, that briefly discusses your design and its pros and cons.